

# Scoring Guidelines

Fight (Round no.): 1 Room: 1 Stage: 1 Problem no.: 14  
 Juror: A. K. J. J. J. Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

Physics  $\pm 3$  +0.6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.6

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: 5

Physics  $\pm 3$  +0.8

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.2

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

Physics  $\pm 3$  +0.6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 1 Problem no.: 14  
 Juror: Nature Signature: NS

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- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Taiwan 5

Physics  $\pm 3$  +1  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  +0.5  
☐ Clear and understandable  
☐ Appropriate manner  
☒ Overall impression

Reporter  $\pm 1$  +0.5  
☐ Quality of experimental technique(s) *use tracker measure if possible*  
☐ Structure  
☐ Explanation of formulae and symbols  
☐ Appropriate models, conformity of dimensions  
☒ Slides, on-site experiments, audio, video, as appropriate  
☐ References, proper citations of ideas and input of others  
☐ Novelty of the report  
☒ Contribution to the discussion

Final Grade: Reporter

Opp.: Brazil 5

Physics  $\pm 3$  +1  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  +0.5  
☐ Clear and understandable  
☐ Appropriate manner  
☒ Overall impression

Opponent  $\pm 1$  +0.5  
☐ Response to the reporter's solution  
☒ Shows the strong and weak points of the report  
☐ Finds shortcomings or errors in the report  
☐ Relevance of the questions  
☒ Contribution to the discussion  
*keep asking ~ with the reporter didn't do. - 0.5*

Final Grade: Opponent

Rev.: Singapore 5

Physics  $\pm 3$  +1  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  +0.5  
☐ Clear and understandable  
☐ Appropriate manner  
☒ Overall impression

Reviewer  $\pm 1$  +1  
☒ Provides a thorough review of report and discussion  
☒ Expresses own opinion about topics presented or discussed  
☒ Relevance of questions to both the reporter and the opponent  
☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

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# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 1 Problem no.: \_\_\_\_\_  
 Juror: Lobyshev Signature: Shok

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Rep.: \_\_\_\_\_ 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: \_\_\_\_\_ 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: \_\_\_\_\_ 5

Physics  $\pm 3$  +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 9

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 1 Problem no.: 14  
 Juror: Julian Ronacher Signature: J. Ronacher

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Rep.: Taiwan

5

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

1

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0.4

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

0.2

Final Grade: Reporter

7

Opp.: Brazil

5

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

1.7

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

-0.5

## Opponent $\pm 1$

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

0.5

Final Grade: Opponent

7

Rev.: Singapore

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

2

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer $\pm 1$

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

0.7

Final Grade: Reviewer

8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): I Room: 1 Stage: 1 Problem no.: 14

Juror: Ming Fong Signature: Ming Fong

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Rep.: Taiwan 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: B 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: S 5

Physics  $\pm 3$  +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): V Room: 1 Stage: 1 Problem no.: 14  
 Juror: Timoshchenko Signature: [Signature]

## A report should include:

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Rep.: Taiwan

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-1.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

7

Opp.: \_\_\_\_\_

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

0

Final Grade: Opponent

5

Rev.: \_\_\_\_\_

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

+1.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+0

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): V Room: 1 Stage: 2 Problem no.: 2  
 Juror: Spalding Signature: [Signature]

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Rep.: 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: 5

Physics  $\pm 3$  +0.4

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.4

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.8

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

7

Rev.: 5

Physics  $\pm 3$  +0.4

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.4

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

6

# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 2 Problem no.: 2  
 Juror: Nam Signature: NS

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Rep.: Brazil

5

## Physics $\pm 3$

-0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

+0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter  
good setup but not good QC.

5

Opp.: Singapore

5

## Physics $\pm 3$

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

+1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Taiwan

5

## Physics $\pm 3$

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

+0.5

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

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Final Grade: Reviewer

7



# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 2 Problem no.:         
 Juror: Lobyshev Signature: V. Hohn

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brasil 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Singap 5

Physics  $\pm 3$   

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$   

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Taiwan 5

Physics  $\pm 3$   

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer 7

# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 2 Problem no.: 2  
 Juror: Julian Rencher Signature: J. Rencher

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil

5

## Physics $\pm 3$

-1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

4

Opp.: Singapore

5

## Physics $\pm 3$

0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

-0.5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Trinidad

5

## Physics $\pm 3$

0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

0.7

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

6



# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 2 Problem no.: 2

Juror: Ming Feng Signature: Ming Feng

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: B 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: S 5

Physics  $\pm 3$  +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: T 5

Physics  $\pm 3$  +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): V Room: 1 Stage: 2 Problem no.: 2  
 Junor: Times before to Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Brazil 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Singapore 5

Physics  $\pm 3$  +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Taiwan 5

Physics  $\pm 3$  +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 1 Room: 1 Stage: 3 Problem no.: 4  
 Juror: A. K. Gupta Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

Opp.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

Rev.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 3 Problem no.: 4  
 Juror: Nasun Signature: MS

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  +0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Taiwan 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$  +1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Brazil 5

Physics  $\pm 3$  -

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

ask ~ parallel and give explanation of his an exp. -0.5



# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 3 Problem no.: \_\_\_\_\_  
 Juror: Lobyshev Signature: V. Hohn

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singap. 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Taiwan 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Brasil 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 3 Problem no.: 4  
 Juror: Julian Romack Signature: J. Romack

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore 5

Physics  $\pm 3$  2,5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0,5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

8

Opp.: Timor 5

Physics  $\pm 3$  0,2

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Brazil 5

Physics  $\pm 3$  0,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0,5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0,7

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

7



# Scoring Guidelines

Fight (Round no.): 5 Room: 1 Stage: 3 Problem no.: 4

Juror: Ming Fung Signature: Ming Fung

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SG 5

Physics  $\pm 3$  +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: T 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: B 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): V Room: 1 Stage: 3 Problem no.: 4  
 Juror: Vinushchenko Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Singapore 5

Physics  $\pm 3$  +2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.7

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.8

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 9

Opp.: Taiwan 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Brazil 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



Round: 5 Room: 1 Fight Assistants: Mr. Komsan Papaway, Mr. Thanundon Kongrak

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	Taiwan	Brazil	Singapore	Brazil	Singapore	Taiwan	Singapore	Taiwan	Brazil			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Asseo Kyuldjiev (Chair)	6	6	6	6	7	6	5	5	5			
Narumon Suwanjandee	7	7	8	5	7	7	7	8	6			
Valentin Lobyshiev	8	7	9	5	6	7	8	6	7			
Julian Ponacher	7	7	8	4	5	6	8	5	7			
Ming Feng	7	6	8	6	7	7	7	6	6			
Igor Timoshchenko	7	5	7	6	7	8	9	7	6			
Acting Team Member	Yin-Chieh Cheng	Thiago Boss-White Bergamaschi	Lee Yu Tse	Matheus Henrique de Almeida Camacho	Yu Jun Shen	Samuel Lam	Lin Jin Ming	Yin-Chieh Cheng	Matheus Henrique de Almeida Camacho			
Rejected Problems												
Accepted Problem	1A. Clarity of light			2. plane of source			4. liquid film polar					

Signature Fight Assistant: Michael Double-checked with Scoring Guidelines by second Fight Assistant (signature): J. 2005

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 1 Problem no.: 11  
 Juror: S. Bylandt Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus

5

## Physics ±3

4/5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

## Reporter ±1

-1/2

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Bulgaria

5

## Physics ±3

4/5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

## Opponent ±1

0

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: USA

5

## Physics ±3

4/5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer ±1

0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

6



# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 1 Problem no.: 11  
 Juror: Hung-Chih Kao Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BY 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: BG 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

### Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

7

Rev.: US 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 1 Problem no.: 11  
 Juror: Olga Ivishcheva Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BY 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 6

Opp.: BG 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 7

Rev.: US 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 1 Room: 2 Stage: 1 Problem no.: 11  
 Juror: PANOSIOVA DAGAR Signature: Pan.

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belarus

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+1/2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

+1/2

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

1

Opp.: Bulgaria

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+1/2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

+1/2

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

1

Rev.: USA

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

+1/2

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 1 Problem no.: 14  
 Juror: Zakhar Marchuk Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Belgium

5

## Physics $\pm 3$

+1,5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

+0,5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

7

Opp.: Belgium

5

## Physics $\pm 3$

+1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: USA

5

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

5



# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 1 Problem no.: 11  
 Juror: Praveen Kalavaram Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
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Rep.: 5

Physics  $\pm 3$  4

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  4

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: 5

Physics  $\pm 3$  4

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$  0

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 1

Rev.: 5

Physics  $\pm 3$  4

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  4

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 2 Problem no.: 5  
 Juror: S. Byland Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria 5

Physics  $\pm 3$   $+\frac{1}{2}$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$   $+\frac{1}{2}$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: USA 5

Physics  $\pm 3$   $+\frac{1}{2}$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$   $+\frac{1}{2}$

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Belarus 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$   $-\frac{1}{2}$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$   $+\frac{1}{2}$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 2 Problem no.: 5  
 Juror: Hung-Chih Kan Signature: see

<p><b>A report should include:</b></p> <ul style="list-style-type: none"> <li>• a presentation of the appropriate concepts, theories and principles of the problem</li> <li>• an explanation of the observed phenomena</li> <li>• an application of appropriate mathematics</li> <li>• reasonable experimental technique to gather and record data (or demonstrate the phenomenon if appropriate)</li> <li>• linking of theoretical and experimental findings to draw suitable conclusions</li> <li>• an attempt to communicate difficult or complex ideas in an effective and understandable manner</li> </ul>	<p><b>An opposition should show that:</b></p> <ul style="list-style-type: none"> <li>• the opponent challenged the reporter's understanding of the presented concepts, theories and principles</li> <li>• the opponent understood the appropriate mathematics presented</li> <li>• the opponent critiqued the experimental technique used and questioned the validity of the data</li> <li>• the opponent appreciated and highlighted the strengths and weaknesses of the report</li> </ul>	<p><b>A review should show that:</b></p> <ul style="list-style-type: none"> <li>• the reviewer succeeded in giving an objective summary of the performances the reporter and opponent</li> <li>• the reviewer appreciated the important aspects (especially the controversial ones)</li> <li>• the reviewer's personal opinion was in evidence (not just superficial observations)</li> <li>• such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent</li> </ul>
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- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: B6 5

Physics  $\pm 3$  1

Correct and relevant physics ☒

Scientific approach ☒

Validity of conclusions ☒

Accurate answers ☒

Presentation  $\pm 1$    

Clear and understandable ☒

Appropriate manner ☒

Overall impression ☒

Reporter  $\pm 1$    

Quality of experimental technique(s) ☒

Structure ☒

Explanation of formulae and symbols ☒

Appropriate models, conformity of dimensions ☒

Slides, on-site experiments, audio, video, as appropriate ☒

References, proper citations of ideas and input of others ☒

Novelty of the report ☒

Contribution to the discussion ☒

Final Grade: Reporter 6

Opp.: NS 5

Physics  $\pm 3$  1.5

Correct and relevant physics ☒

Scientific approach ☒

Validity of conclusions ☒

Accurate answers ☒

Presentation  $\pm 1$  0.5

Clear and understandable ☒

Appropriate manner ☒

Overall impression ☒

Opponent  $\pm 1$  1

Response to the reporter's solution ☒

Shows the strong and weak points of the report ☒

Finds shortcomings or errors in the report ☒

Relevance of the questions ☒

Contribution to the discussion ☒

Final Grade: Opponent 8

Rev.: B7 5

Physics  $\pm 3$    

Correct and relevant physics ☒

Scientific approach ☒

Validity of conclusions ☒

Accurate answers ☒

Presentation  $\pm 1$    

Clear and understandable ☒

Appropriate manner ☒

Overall impression ☒

Reviewer  $\pm 1$    

Provides a thorough review of report and discussion ☒

Expresses own opinion about topics presented or discussed ☒

Relevance of questions to both the reporter and the opponent ☒

Draws attention to points missed by the reporter or the opponent ☒

Final Grade: Reviewer 5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 2 Problem no.: 5  
 Juror: Olga Inisheva Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BG 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics *good experiment*
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  +0.5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: US 5

Physics  $\pm 3$  +0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.25

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$  +0.5

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Belarus 5

Physics  $\pm 3$  +0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): V Room: 2 Stage: II Problem no.: 5  
 Juror: THANONG DACHAR Signature: Phu

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: BULGARIA

5

## Physics $\pm 3$

+1/2

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+1/2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

+1/2

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

6

Opp.: GERMANY

5

## Physics $\pm 3$

0

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-1/2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

+1/2

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

5

Rev.: UZBEKISTAN

5

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-1/2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

+1/2

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

5

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 2 Problem no.: 5  
 Juror: Zakhar Marichis Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Bulgaria

5

## Physics $\pm 3$

-1.5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: USA

5

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Belarus

5

## Physics $\pm 3$

-0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

5



# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 3 Problem no.: 5  
 Juror: Praveen Kalasam Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 3 Problem no.: 13  
 Juror: S. Byland Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: USA 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Belarus 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1/2

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Belarus 5

Physics  $\pm 3$  +1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1/2

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 3 Problem no.: 13  
 Juror: Hung-Chih Kan Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: US 5

Physics  $\pm 3$  2

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 1

Opp.: BY 5

Physics  $\pm 3$  1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 1

Rev.: BG 5

Physics  $\pm 3$  1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 3 Problem no.: 13  
 Juror: Olga Ivisheva Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: USA 5

Physics  $\pm 3$  -0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach AC?
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  -0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Belarus 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Bulgary 5

Physics  $\pm 3$  +0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): V Room: 1 Stage: 4 Problem no.: 13  
 Juror: PAULINA JAGMAR Signature: Pau.

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: USA

5

## Physics $\pm 3$

0

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-1/2

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

-1/2

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: Belarus

5

## Physics $\pm 3$

+1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

+1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Bulgaria

5

## Physics $\pm 3$

+1/2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-1/4

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

+1/2

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 3 Problem no.: 13  
 Juror: Zohar Mavzelis Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: USA 5

Physics  $\pm 3$  -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Belarus 5

Physics  $\pm 3$  +2

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Bulgaria 5

Physics  $\pm 3$  +1.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 2 Stage: 3 Problem no.: \_\_\_\_\_

Juror: Pruef Kalasumar Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: \_\_\_\_\_ 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: \_\_\_\_\_ 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: \_\_\_\_\_ 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Round: 5 Room: 2 Fight Assistants: Kornam Polanong / Jimpon Saengjae

Team	Stage 1			Stage 2			Stage 3			Stage 4		
	Belarus	Bulgaria	USA	Bulgaria	USA	Belarus	USA	Belarus	Bulgaria	Rep	Opp	Rev
<b>Juror</b>	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Samuel Byland	5	6	6	6	6	5	6	6	6			
Hung - Chih Kan	6	7	5	6	8	5	7	7	6			
Olga Inisheva	6	7	5	7	6	6	4	7	6			
Dagmar Panosova	6	6	5	6	5	5	4	7	6			
Zakhar Maizelis	7	6	5	4	5	5	4	7	7			
Pruet Kalasuwon	7	6	6	5	6	7	6	6	7			
Acting Team Member	Dmitriy BARANOV	Dilyan Hristov	Karl SEVICK	Nikolay NIKOLAY	John LUKOWSKI	Anton RUSANOV	John LUKOWSKI	Dmitriy BARANOV	Dilyan Hristov			
Rejected Problems												
Accepted Problem	11			5			13					

Signature Fight Assistant: K. Polanong Double-checked with Scoring Guidelines by second Fight Assistant (signature): Jimpon Saengjae



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: 13  
 Juror: F. SONG Signature: F. Song

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HU 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

7

Opp.: SWitzerland 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Australia 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the flight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: 13  
 Juror: Andreas Krüger Signature: Krueger

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary

András Lovas

5

## Physics ±3

+2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

+1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter ±1

+1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

9

Opp.: Switzerland

Linda Kern Bach

5

## Physics ±3

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent ±1

0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: Australia

Kevin Zhang

5

## Physics ±3

+0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer ±1

+0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: \_\_\_\_\_  
 Juror: Kulinkyi V. Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary  
A. Caule 5

Physics  $\pm 3$  1  
☒ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0.5  
☐ Clear and understandable  
☒ Appropriate manner  
☐ Overall impression

Reporter  $\pm 1$  0.5  
☐ Quality of experimental technique(s)  
☒ Structure  
☐ Explanation of formulae and symbols  
☐ Appropriate models, conformity of dimensions  
☐ Slides, on-site experiments, audio, video, as appropriate  
☐ References, proper citations of ideas and input of others  
☐ Novelty of the report  
☐ Contribution to the discussion

Final Grade: Reporter

7

Opp.: Switzerland  
Lioba Heimann 5

Physics  $\pm 3$  0.5  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$    
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Opponent  $\pm 1$    
☐ Response to the reporter's solution  
☐ Shows the strong and weak points of the report  
☐ Finds shortcomings or errors in the report  
☐ Relevance of the questions  
☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Australia  
Kevin Zhang 5

Physics  $\pm 3$  1  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0.5  
☒ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reviewer  $\pm 1$  0.5  
☒ Provides a thorough review of report and discussion  
☐ Expresses own opinion about topics presented or discussed  
☐ Relevance of questions to both the reporter and the opponent  
☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: 13  
 Juror: Mossam Kinnikay Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Hungary

5

## Physics $\pm 3$

+1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+1.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

+0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

8

Final Grade: Reporter

Opp.: Switzerland

5

## Physics $\pm 3$

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

+1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

7

Final Grade: Opponent

Rev.: Australia

5

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

+0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

6

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: 13  
 Juror: STANISLAV PAVOS Signature: Pavos E

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: HUNGARY 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: SWITZERLAND 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: AUSTRALIA 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 1 Problem no.: 13  
 Juror: Tony Jay Signature: Tony

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thommy  
Andrews 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Sarkis  
Lin 5

Physics  $\pm 3$  1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

*questions re validity of conditions of T&E models*  
*not well answered*  
*not clear*

Final Grade: Opponent 7

Rev.: Andrews  
Kelvin 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

*provided*  
*not clear*  
*not clear*  
*not clear*

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 2 Problem no.: 4  
 Juror: F. Song Signature: F. Song

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sweden 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

Opp.: Australia 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

Rev.: Hungary 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 2 Problem no.: 4  
 Juror: Andreas K. K. K. Signature: K. K. K.

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland  
Harold Poggenmüller

5

## Physics ±3

+2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

+0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter ±1

+0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

8

Opp.: Australia  
Aditya K. K.

5

## Physics ±3

+0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent ±1

-0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Hungary  
Noel Plaszkó

5

## Physics ±3

+0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer ±1

-0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: II Problem no.: 4  
 Juror: Kulinskiy V. Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland  
M. Roggenmoser 5

Physics  $\pm 3$  0,5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0,5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Australia  
Aditya Seti 5

Physics  $\pm 3$  1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0,5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Hungary  
Noel Pardo 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 2 Problem no.: 4  
 Juror: Narissom Kunsukhanyim Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

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- Consider the following suggestions to add to or deduct from the initial 5 points.
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- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

7

Opp.: Australia

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: Hungary

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 2 Problem no.: 4  
 Juror: STANISLAV PAVLOV Signature: Pavlov

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
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- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: SWITZERLAND  
AUSTRIA 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: AUSTRALIA 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: HUNGARY 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 2 Problem no.: \_\_\_\_\_  
 Juror: Tom Fry Signature: T Fry

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Switzerland  
Michael 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Australia  
Aditya 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Hungary  
Noel 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 3 Problem no.: 16  
 Juror: F. SONG Signature: F. Song

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Hungary 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Switzerland 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 9

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 3 Problem no.: 16  
 Juror: Andrei Kirilov Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia  
Aditya Seltis

5

## Physics $\pm 3$

+0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Hungary  
Abel Borog

5

## Physics $\pm 3$

+0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

-0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: Switzerland  
Kathrin Loebner

5

## Physics $\pm 3$

+0.2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

+1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: III Problem no.: \_\_\_\_\_  
 Juror: Kulinskyi V. Signature: \_\_\_\_\_

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia  
Aditya Sethi 5

Physics  $\pm 3$

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Hungary  
Abel Bócs 5

Physics  $\pm 3$  1.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Switzerland  
Kathrin Lamber 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0.5

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6 = 5 + 1

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 3 Problem no.: 16  
 Juror: Hansson Kurohikarilasa Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

5

Opp.: Hungary

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

+0.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

+0.5

Final Grade: Opponent

6

Rev.: Switzerland

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

+0.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

+0.5

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 3 Problem no.: 16  
 Juror: STANISLAV PAULOS Signature: Pm-2

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: AUSTRALIA 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: HUNGARY 5

Physics  $\pm 3$  0

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 7

Rev.: SWITZERLAND 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 3 Stage: 3 Problem no.: 16  
 Juror: Tim Juy Signature: Tim Juy

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Australia

5

## Physics ±3

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

-0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter ±1

-0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Hungary

5

## Physics ±3

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

+0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent ±1

+0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

• Good as q's and a's  
 • def of colour but could not push further to colour  
 • Rep: ans  
 • focus on general concepts

Final Grade: Opponent

6

Rev.: Switzerland

5

## Physics ±3

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

+0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer ±1

+0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

7



Round: 5 Room: 3 Fight Assistants: Jaru Jatimosik : Rojnana Thannas

Team	Stage 1			Stage 2			Stage 3			Stage 4		
	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Juror												
Feng Song	7	7	6	5	5	5	4	6	9			
Andrei Klishin	9	6	6	8	5	5	5	6	8			
Volodymyr Kulinskyi	7	5	7	6	7	7	5	8	6			
Norosom Kundhikanjana	8	7	6	7	6	6	5	6	6			
Stanislav Panos	7	7	8	7	6	7	5	7	7			
Joy Tan	6	7	6	8	7	7	5	6	7			
Acting Team Member	Andra's Lauko	Lioba Heimbach	Kevin Zhang	Michael Rogenmoser	Aditya Sethi	Noel László Pásekó	Aditya Sethi	Ábel Beregi	Kathrin Laxhuber			
Rejected Problems												
Accepted Problem	13. Magnetic Pendulum			4. Liquid Film Motor			16. Wet and Dark					

Signature Fight Assistant: Jaru Jatimosik Double-checked with Scoring Guidelines by second Fight Assistant (signature): Rojnana Thannas

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: 14  
 Juror: Kerry Parker Signature: Kerry Parker

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Amirhossein Ekahi 5

Physics  $\pm 3$  1

- ☐ Correct and relevant physics ✓
- ☐ Scientific approach ✓
- ☐ Validity of conclusions?
- ☐ Accurate answers?

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner ✓
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☐ Quality of experimental technique(s) ← u. not clear
- ☒ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Chin Hok Leong 5

Physics  $\pm 3$  -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: Ann-Kathrin Raab 5

Physics  $\pm 3$  -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 4

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: 14  
 Juror: Michael Smith Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.3

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.3

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Macao 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Iran 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: 14  
 Juror: Felicia Ullsted Signature: Felicia Ullsted

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany  
Ann-Kristin Reus 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics +
- ☐ Scientific approach +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions +
- ☐ Slides, on-site experiments, audio, video, as appropriate ++
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Macao  
Chin Hok Leung 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report + -
- ☐ Finds shortcomings or errors in the report + -
- ☐ Relevance of the questions + -
- ☐ Contribution to the discussion -

Final Grade: Opponent 4

Rev.: Iran  
Amir Hossein Ebadi 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics - +
- ☐ Scientific approach
- ☐ Validity of conclusions -
- ☐ Accurate answers -

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent - + +
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: 14  
 Juror: Germa Exner Signature: dy

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem • an explanation of the observed phenomena • an application of appropriate mathematics • reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate) • linking of theoretical and experimental findings to draw suitable conclusions • an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles • the opponent understood the appropriate mathematics presented • the opponent critiqued the experimental technique used and questioned the validity of the data • the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent • the reviewer appreciated the important aspects (especially the controversial ones) • the reviewer's personal opinion was in evidence (not just superficial observations) • such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany 5

Physics  $\pm 3$  -1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Macao 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Iran 5

Physics  $\pm 3$  6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer 5

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: \_\_\_\_\_  
 Juror: Gökçe Sarda Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: \_\_\_\_\_ 5

Physics  $\pm 3$  3

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -1

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: \_\_\_\_\_ 5

Physics  $\pm 3$  -

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -0.5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: \_\_\_\_\_ 5

Physics  $\pm 3$  +0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  -0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 1 Problem no.: \_\_\_\_\_

Juror: D. Keller Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Germany 5

Physics  $\pm 3$  6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Macao 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Iran 5

Physics  $\pm 3$  6

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 2 Problem no.: 5  
 Juror: D. Keller Signature: D. Keller

## A report should include:

• a presentation of the appropriate concepts, theories and principles of the problem • an explanation of the observed phenomena • an application of appropriate mathematics • reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate) • linking of theoretical and experimental findings to draw suitable conclusions • an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

• the opponent challenged the reporter's understanding of the presented concepts, theories and principles • the opponent understood the appropriate mathematics presented • the opponent critiqued the experimental technique used and questioned the validity of the data • the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

• the reviewer succeeded in giving an objective summary of the performances the reporter and opponent • the reviewer appreciated the important aspects (especially the controversial ones) • the reviewer's personal opinion was in evidence (not just superficial observations) • such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Mucac 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

Opp.: Iran 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

Rev.: Germany 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 2 Problem no.: 5  
 Juror: Gideon Lander Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Maceo 5

Physics  $\pm 3$  -0.5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Man 5

Physics  $\pm 3$  -0.5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -0.5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Gideon Lander 5

Physics  $\pm 3$  +0.5

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  -

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 2 Problem no.: 5  
 Juror: Ginva Exner Signature: duy

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: France 5

Physics  $\pm 3$  3

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

8

Opp.: Iran 5

Physics  $\pm 3$  0

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Germany 5

Physics  $\pm 3$  2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

7



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 2 Problem no.: 5  
 Juror: Felicia Ulstad Signature: Felicia Ulstad

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macao  
Jingyi Xie 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics +
- ☐ Scientific approach +
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -0.5

- ☐ Quality of experimental technique(s) +
- ☐ Structure +
- ☐ Explanation of formulae and symbols +
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate +
- ☐ References, proper citations of ideas and input of others +
- ☐ Novelty of the report
- ☐ Contribution to the discussion +

Final Grade: Reporter

3

Opp.: Iran  
Vasim Masum 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics +
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable +
- ☐ Appropriate manner +
- ☐ Overall impression

Opponent  $\pm 1$  -0.5

- ☐ Response to the reporter's solution +
- ☐ Shows the strong and weak points of the report +
- ☐ Finds shortcomings or errors in the report +
- ☐ Relevance of the questions +
- ☐ Contribution to the discussion +

Final Grade: Opponent

4

Rev.: Germany  
Sine Horting 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics +
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed +
- ☐ Relevance of questions to both the reporter and the opponent +
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

6

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 2 Problem no.: 5  
 Juror: Michael Smith Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Macau 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: Iran 5

Physics  $\pm 3$  -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Germany 5

Physics  $\pm 3$  0.2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 2 Problem no.: 5  
 Juror: Kerry Parker Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sina Harting  
Macau

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

4

Final Grade: Reporter

Opp.: Yasamin Masbumi  
Iran

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

5

Final Grade: Opponent

Rev.: Jingyi Xie  
Germany

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

5

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 3 Problem no.: 6  
 Juror: Ginca Exner Signature: dy

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem • an explanation of the observed phenomena • an application of appropriate mathematics • reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate) • linking of theoretical and experimental findings to draw suitable conclusions • an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles • the opponent understood the appropriate mathematics presented • the opponent critiqued the experimental technique used and questioned the validity of the data • the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent • the reviewer appreciated the important aspects (especially the controversial ones) • the reviewer's personal opinion was in evidence (not just superficial observations) • such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Iran

5

## Physics ±3

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter ±1

6

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

5

Opp.: MO

5

## Physics ±3

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent ±1

0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: DE

5

## Physics ±3

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation ±1

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer ±1

6

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

5



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 3 Problem no.: 6  
 Juror: Colin Scudler Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Jon

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-0.5

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

-0.5

## Reporter $\pm 1$

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

-1

Final Grade: Reporter

4

Opp.: Benay

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

-0.5

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

-0.5

Final Grade: Opponent

4

Rev.: Malco

5

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-2

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

+0.5

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

+0.5

Final Grade: Reviewer

4

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 3 Problem no.: 6  
 Juror: D. Keller Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Irps 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  6

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Germany 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Malaga 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 3 Problem no.: 6  
 Juror: Kem Parker Signature: Kem Parker

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ahmad  
Naghdiabak  
Iran

5  
-1

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: Jonas Langguth  
Germany

5  
-1

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

4

Rev.: Philip Naderov  
Pilagutan  
Macao

5  
-1

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

4

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 3 Problem no.: 6  
 Juror: Michael F. Smith Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Iran 5

Physics  $\pm 3$  0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Germany 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Nacuo 5

Physics  $\pm 3$  -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 4

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 4 Stage: 3 Problem no.: 6  
 Juror: Felicia Ullrich Signature: Felicia Ullrich

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem • an explanation of the observed phenomena • an application of appropriate mathematics • reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate) • linking of theoretical and experimental findings to draw suitable conclusions • an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles • the opponent understood the appropriate mathematics presented • the opponent critiqued the experimental technique used and questioned the validity of the data • the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent • the reviewer appreciated the important aspects (especially the controversial ones) • the reviewer's personal opinion was in evidence (not just superficial observations) • such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Iran

Ghazal Moghaddam

5

## Physics $\pm 3$

-1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: Germany

Jonas Langgraf

5

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Macao

Philip Maderer

5

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

5

Round: 5 Room: 4 Fight Assistants: Ram Phingroenpham, Adithip Butraburisi

Team	Stage 1			Stage 2			Stage 3			Stage 4		
	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Felicia Ullsland	7	4	5	3	1	6	4	5	5			
Michael F. Smith	5	5	7	6	5	6	7	6	1			
Kerry Parker	7	3	4	4	5	5	4	4	4			
Daniel Keller	7	6	7	5	6	8	1	7	6			
Sandu Mirel Golcea	7	4	5	4	5	6	1	1	4			
Gijinka Exner	4	5	5	8	5	7	5	5	5			
Acting Team Member	Aun-Kathrin Rasb	Chin Hoke Leong	Amithussein Esadi	Jingyi Xue	Yasamin M.	Sing Julia Hartung	Chazal Naghibate	Jonas Landgraf	Philip Nardorev L.			
Rejected Problems												
Accepted Problem	No. 14 Circle of Light.			No. 5 Two Balloons.			No. 6 Magnus Glider					

Signature Fight Assistant: Ram Phingroenpham Double-checked with Scoring Guidelines by second Fight Assistant (signature): Adithip Butraburisi



# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 1 Problem no.: 10

Juror: Kim Fielmann Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  4.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Czech Rep 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Kenya 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  -1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 3

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 1 Problem no.: 10

Juror: PETER FEJEL Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: POLAND

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

1

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

1

## Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

1

Opp.: CZECH REP

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

0

Final Grade: Opponent

0

Rev.: KENYA

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0

Final Grade: Reviewer

0

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 1 Problem no.: 10

Juror: Dina Ikadi Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland

5

Robost

## Physics $\pm 3$

-0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

-0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: Czech

5

Paula Beresova

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

6

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Kenya

5

Nathan

## Physics $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

5

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 1 Problem no.: \_\_\_\_\_  
 Juror: M.H. Kwon Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Radest

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

1

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

6

Opp.: Pasola

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

1

Final Grade: Opponent

6

Rev.: Nathan

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 8 Room: 5 Stage: \_\_\_\_\_ Problem no.: \_\_\_\_\_  
 Juror: Narit Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: <u>Petard Radost Warzkeicz</u>	Opp.: <u>Pavla Beresova</u>	Rev.: <u>Nathan Antrobs</u>
5	5	5
Physics $\pm 3$	Physics $\pm 3$	Physics $\pm 3$
<input checked="" type="checkbox"/> Correct and relevant physics <input checked="" type="checkbox"/> Scientific approach <input type="checkbox"/> Validity of conclusions <input type="checkbox"/> Accurate answers	<input type="checkbox"/> Correct and relevant physics <input checked="" type="checkbox"/> Scientific approach <input type="checkbox"/> Validity of conclusions <input type="checkbox"/> Accurate answers	<input type="checkbox"/> Correct and relevant physics <input type="checkbox"/> Scientific approach <input checked="" type="checkbox"/> Validity of conclusions <input type="checkbox"/> Accurate answers
1	0	0
Presentation $\pm 1$	Presentation $\pm 1$	Presentation $\pm 1$
<input checked="" type="checkbox"/> Clear and understandable <input type="checkbox"/> Appropriate manner <input type="checkbox"/> Overall impression	<input type="checkbox"/> Clear and understandable <input type="checkbox"/> Appropriate manner <input checked="" type="checkbox"/> Overall impression	<input checked="" type="checkbox"/> Clear and understandable <input checked="" type="checkbox"/> Appropriate manner <input type="checkbox"/> Overall impression
1	0	1
Reporter $\pm 1$	Opponent $\pm 1$	Reviewer $\pm 1$
<input type="checkbox"/> Quality of experimental technique(s) <input type="checkbox"/> Structure <input type="checkbox"/> Explanation of formulae and symbols <input type="checkbox"/> Appropriate models, conformity of dimensions <input type="checkbox"/> Slides, on-site experiments, audio, video, as appropriate <input type="checkbox"/> References, proper citations of ideas and input of others <input type="checkbox"/> Novelty of the report <input type="checkbox"/> Contribution to the discussion	<input type="checkbox"/> Response to the reporter's solution <input checked="" type="checkbox"/> Shows the strong and weak points of the report <input type="checkbox"/> Finds shortcomings or errors in the report <input type="checkbox"/> Relevance of the questions <input type="checkbox"/> Contribution to the discussion	<input type="checkbox"/> Provides a thorough review of report and discussion <input type="checkbox"/> Expresses own opinion about topics presented or discussed <input type="checkbox"/> Relevance of questions to both the reporter and the opponent <input type="checkbox"/> Draws attention to points missed by the reporter or the opponent
0	0	0
7	5	6
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 1 Problem no.: \_\_\_\_\_  
 Juror: G. Jennings Signature: G. Jennings

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Poland

5

Radost W

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

+0.25

+0.25

Final Grade: Reporter

6

Opp.: Czech Rep.

5

Paula B

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

+1/2

0

Final Grade: Opponent

6

Rev.: Kenya

5

Nathan A

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Reviewer $\pm 1$

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

0

0

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 2 Problem no.: 13  
 Juror: Kim Frimann Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Geck Rep 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Kenya 5

Physics  $\pm 3$  0.4

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.3

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Poland 5

Physics  $\pm 3$  2

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 2 Problem no.: 13  
 Juror: PETER JENEI Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CZECH REP 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: KENYA 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 3

Rev.: POLAND 5

Physics  $\pm 3$  2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 2 Problem no.: 13

Juror: Dina Idradi Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Czech 5  
Pavel

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Kenja 5  
Samman

Physics  $\pm 3$  -0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Poland 5

Physics  $\pm 3$  1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 2 Problem no.: \_\_\_\_\_  
 Juror: M.H. Kwon Signature: Summary

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Pavel 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Summary 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: Anger 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 2 (5) Room: 5 Stage: \_\_\_\_\_ Problem no.: 13  
 Juror: Nariff Signature: [Signature]

Magnetic Pendulum

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Barel Stepanek 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: Kanya 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Poland 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 2 Problem no.: 13  
 Juror: G. Jennings Signature: G. Jennings

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Greek Rep  
Pavel Stepanov

5

Physics  $\pm 3$

$-\frac{1}{2}$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

$+\frac{1}{2}$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$

0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Kenya  
Samman S

5

Physics  $\pm 3$

$-\frac{1}{2}$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$

$-0.2$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$

$-0.3$

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

3

Rev.: Poland  
Ania

5

Physics  $\pm 3$

$+\frac{1}{2}$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers  $+\frac{1}{2}$

Presentation  $\pm 1$

$+\frac{1}{2}$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$

$+\frac{1}{2}$

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 3 Problem no.: 1  
 Juror: Kim Freeman Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Kenya 5

Physics  $\pm 3$  -2  
☒ Correct and relevant physics  
☒ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  -0.5  
☒ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reporter  $\pm 1$  -0.5  
☒ Quality of experimental technique(s)  
☐ Structure  
☐ Explanation of formulae and symbols  
☐ Appropriate models, conformity of dimensions  
☐ Slides, on-site experiments, audio, video, as appropriate  
☐ References, proper citations of ideas and input of others  
☐ Novelty of the report  
☐ Contribution to the discussion

Final Grade: Reporter 2

Opp.: Poland 5

Physics  $\pm 3$  +1  
☒ Correct and relevant physics  
☒ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0.5  
☒ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Opponent  $\pm 1$  -0.5  
☐ Response to the reporter's solution  
☒ Shows the strong and weak points of the report  
☐ Finds shortcomings or errors in the report  
☐ Relevance of the questions  
☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Geek Rep 5

Physics  $\pm 3$  +0.5  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0.5  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reviewer  $\pm 1$  0  
☐ Provides a thorough review of report and discussion  
☐ Expresses own opinion about topics presented or discussed  
☐ Relevance of questions to both the reporter and the opponent  
☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 3 Problem no.: 1  
 Juror: PETER BENEI Signature: 72

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: KENYA 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: POLAND 5

Physics  $\pm 3$  2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: CZECH REP 5

Physics  $\pm 3$  1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 1

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 3 Problem no.: 1  
 Juror: Dina Isxadi Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sam Suke

5

Kenya

Physics  $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Poland

5

Rabest

Physics  $\pm 3$

4

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$

0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Okela

5

Paula

Physics  $\pm 3$

4

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reviewer

6

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 3 Problem no.: \_\_\_\_\_  
 Juror: M.H. Kwon Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Sonsuke 5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: Radost 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Paola 5

Physics  $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer 6



# Scoring Guidelines

Fight (Round no.): 3(5) Room: 5 Stage: \_\_\_\_\_ Problem no.: 1  
 Juror: Narit Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Konya 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

3

Opp.: Poland 5

Physics  $\pm 3$  1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  1

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: Check 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

6

# Scoring Guidelines

Fight (Round no.): 5 Room: 5 Stage: 3 Problem no.: 1  
 Juror: G. Jennings Signature: G. Jennings

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Kenya  
Sansuke N

5

Physics  $\pm 3$

-1.5

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

-0.2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

-0.3

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

3

Opp.: Poland  
Radost W

5

Physics  $\pm 3$

+1

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

+0.3

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$

+0.3

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Czech Rep.  
Pavla B.

5

Physics  $\pm 3$

+0.5

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$

+0.2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$

+0.3

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



Round: 5 Room: 5 Fight Assistants: Wanchaleem Pansahet

Team	Stage 1			Stage 2			Stage 3			Stage 4		
	Poland	Czech Rep.	Kenya	Czech Rep.	Kenya	Poland	Kenya	Poland	Czech Rep.	Rep	Opp	Rev
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Kim Freimann	7	5	3	4	5	8	2	6	6			
Peter Jenei	7	5	5	5	3	8	5	8	7			
Dina Izadi	4	5	5	5	4	6	5	7	6			
Myeung Hoi Kwon	6	6	5	5	4	7	4	7	6			
Narit Triamnak	7	5	6	4	5	5	3	8	6			
Gavin Jennings	6	6	5	5	3	7	3	7	6			
Acting Team Member	Radost Waszkiewicz	Paula Bérésová	Nathan Antrobus	Pavel Stepanek	Samman Vohra	Anna Wald	Sousuke Nambu	Radost Waszkiewicz	Paula Bérésová			
Rejected Problems	1			1			1					
Accepted Problem	⑩ Singing Blades of grass			⑬ Magnetic Pendulum			⑪ Packing					

Signature Fight Assistant: Wanchaleem Pansahet Double-checked with Scoring Guidelines by second Fight Assistant (signature):

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 1 Problem no.: 11  
 Juror: J. BALCOMBE Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  +0.5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☒ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

8

Opp.: Taiwan 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$  -0.5

- ☐ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

4

Rev.: NIGERIA 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  0

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

5



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 1 Problem no.: 11  
 Juror: LARS GISEN Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

8

Opp.: THAILAND 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: NIGERIA 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 1 Problem no.: 11  
 Juror: KUMRAK Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

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- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
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- the reviewer's personal opinion was in evidence (not just superficial observations)
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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +2

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  +0.5

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

8

Opp.: THAILAND 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

4

Rev.: LIBERIA 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 1 Problem no.: 11  
 Juror: IAT NENG CHAN Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
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- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: CHINA 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Thailand 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 5

Rev.: Nigeria 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer 4

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 1 Problem no.: \_\_\_\_\_  
 Juror: L. Grodzinski Signature: L. Grodzinski

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China

5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-1

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

1

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0.5

Final Grade: Reporter

6

Opp.: Thailand

5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-2

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0.5

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

0.5

Final Grade: Opponent

4

Rev.: Nigeria

5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-3

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0.5

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0.5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

3



# Scoring Guidelines

Fight (Round no.): 5 Room: B Stage: 1 Problem no.: \_\_\_\_\_

Juror: Lyn MARCHEN Signature: \_\_\_\_\_

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: China  
Kehan Lu 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: Thailand  
Pinn Pannatongpan 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

4

Rev.: Nigeria  
Yusuf Shiller 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 2 Problem no.: 10  
 Juror: J. BALCOMBE Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: THAILAND 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reporter  $\pm 1$  0

- ☒ Quality of experimental technique(s)
- ☒ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter 4

Opp.: NIGERIA 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 4

Rev.: CHINA 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  +1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer 7



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 2 Problem no.: 10  
 Juror: LARS GOSLUND Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: THAILAND

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-0.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

-0.5

Final Grade: Reporter

5

Opp.: NIGERIA

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-1

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

-1

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

-1

Final Grade: Opponent

2

Rev.: CHINA

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

1

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0.5

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 2 Problem no.: 10  
 Juror: KONDRALIK Signature: Unarai

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: THAILAND

5

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-2

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+0.5

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

+0.5

Final Grade: Reporter

4

Opp.: NIGERIA

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-2

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+0.5

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

-0.5

Final Grade: Opponent

3

Rev.: GHANA

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

+2

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 2 Problem no.: 10  
 Juror: JAT NENG CHAN Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

4

Rev.: 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

8

# Scoring Guidelines

Fight (Round no.): 5th Room: 8 Stage: 2 Problem no.: \_\_\_\_\_  
 Juror: L. Groenewijk Signature: L. Groenewijk

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: \_\_\_\_\_ 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

4

Opp.: \_\_\_\_\_ 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5.5

Rev.: \_\_\_\_\_ 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

7



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 2 Problem no.: 10  
 Juror: Kya Kae Teneue Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Thailand  
Charatip  
Thanasak

Physics  $\pm 3$  +1  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reporter  $\pm 1$  -1  
☐ Quality of experimental technique(s)  
☐ Structure  
☐ Explanation of formulae and symbols  
☐ Appropriate models, conformity of dimensions  
☐ Slides, on-site experiments, audio, video, as appropriate  
☐ References, proper citations of ideas and input of others  
☐ Novelty of the report  
☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Nigeria  
Philip  
Elusade

Physics  $\pm 3$  0  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Opponent  $\pm 1$  +1  
☐ Response to the reporter's solution  
☐ Shows the strong and weak points of the report  
☐ Finds shortcomings or errors in the report  
☐ Relevance of the questions  
☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: China  
Jiahong  
Yi

Physics  $\pm 3$  +2  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reviewer  $\pm 1$  +1  
☐ Provides a thorough review of report and discussion  
☐ Expresses own opinion about topics presented or discussed  
☐ Relevance of questions to both the reporter and the opponent  
☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 3 Problem no.: 6  
 Juror: J. BARCROFT Signature: HR B

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☒ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

3

Opp.: CHINA 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

7

Rev.: TAIWAN 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  +1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☒ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 7 Problem no.: 6  
 Juror: LAOS GUSVIA Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-0.5

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

-0.5

Final Grade: Reporter

4

Opp.: CHINA

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

1

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Opponent ±1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

1

Final Grade: Opponent

7

Rev.: THAILAND

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

1

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer ±1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

1

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 3 Problem no.: 6  
 Juror: KUNDRAEN Signature: Umdraen

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: NIGERIA 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -1

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

3

Opp.: CHINA 5

### Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☒ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: THAILAND 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  +0.3

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Final Grade: Reviewer

6



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 3 Problem no.: 6  
 Juror: IAT NENG CHAN Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

3

Opp.: CHINA 5

Physics  $\pm 3$  +0.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

8

Rev.: THAILAND 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 3 Problem no.: 6  
 Juror: L. Gladeruk Signature: L. Chudakov

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria 5

Physics  $\pm 3$  -2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

3

Opp.: China 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  .5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  .5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Thailand 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 8 Stage: 3 Problem no.: 6  
 Juror: Ugo Martene Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Nigeria  
Abdullahi

5

Physics  $\pm 3$

-2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

-1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

2

Opp.: China  
Kehan Lu

5

Physics  $\pm 3$

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$

+1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Thailand  
Panithan

5

Physics  $\pm 3$

0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

-1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

4

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

Q

Round: 5 Room: 8 Fight Assistants: Samchon 8 Jadsada

	Stage 1			Stage 2			Stage 3			Stage 4		
Team	China	Thailand	Nigeria	Thailand	Nigeria	China	Nigeria	China	Thailand			
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
John Bulcombe (Chair)	6	4	5	4	4	7	3	7	6			
Lars Gislén	8	6	5	5	2	7	4	7	7			
František Kundratick	8	4	3	4	3	7	3	6	6			
Lat Nong Chan	7	5	4	6	4	8	3	6	5			
Leszek Gładczuk	6	4	3	4	5	7	3	5	5			
Ilya Martchenko	6	4	5	5	6	8	2	7	4			
Acting Team Member	Kehan Lu	Pian Panakapan	Yusuf Shifto	Chantip Thanasornthong Chasen	Philip Flushade	Jiahong Yi	Ahmad Abdullahi	Kehan Lu	Panithon Jeerasuwanakul			
Rejected Problems												
Accepted Problem	(11)			(10)			(13)					

Signature Fight Assistant: Samchon Double-checked with Scoring Guidelines by second Fight Assistant (signature): Jadsada



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 14  
 Juror: REGNER Signature: Regner

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine  
Kirill Eugene  
 Physics  $\pm 3$  5  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reporter  $\pm 1$  +0.5  
☐ Quality of experimental technique(s)  
☐ Structure  
☐ Explanation of formulae and symbols  
☐ Appropriate models, conformity of dimensions  
☐ Slides, on-site experiments, audio, video, as appropriate  
☐ References, proper citations of ideas and input of others  
☐ Novelty of the report  
☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: Romania  
Andreea Gules  
 Physics  $\pm 3$  5  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  -0.5  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Opponent  $\pm 1$  -0.5  
☐ Response to the reporter's solution  
☐ Shows the strong and weak points of the report  
☐ Finds shortcomings or errors in the report  
☐ Relevance of the questions  
☐ Contribution to the discussion

Final Grade: Opponent

3

Rev.: Russia  
Nikolai Binglew  
 Physics  $\pm 3$  5  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reviewer  $\pm 1$  +0.5  
☐ Provides a thorough review of report and discussion  
☐ Expresses own opinion about topics presented or discussed  
☐ Relevance of questions to both the reporter and the opponent  
☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 14  
 Juror: Roman Wuttannakorn Signature: Mr. Q

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

6

Final Grade: Reporter

Opp.: Romania

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☒ Contribution to the discussion

6

Final Grade: Opponent

Rev.: Russia

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Reviewer $\pm 1$

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

8

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 14  
 Juror: YE YEO Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine  
Malayk

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

5

Opp.: Romania  
Anca Goldis

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+1/2

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

+1/2

Final Grade: Opponent

6

Rev.: Rumia  
Nikolay

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+1

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

+1

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 14

Juror: TATYANA G.S. Signature: TGS

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKRAINE  
Михайло Буга

5

## Physics ±3

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

0

## Presentation ±1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter ±1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

5

Opp.: ROMANIA  
Anca Gudea

5

## Physics ±3

- ☒ Correct and relevant physics - 0.1
- ☐ Scientific approach
- ☒ Validity of conclusions - 0.25
- ☐ Accurate answers

-0.5

## Presentation ±1

- ☐ Clear and understandable
- ☒ Appropriate manner - 0.25
- ☐ Overall impression

-0.25

## Opponent ±1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

+0.5

Final Grade: Opponent

5

Rev.: RUSSIA  
Nikolay

5

## Physics ±3

- ☒ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers

+1.0

## Presentation ±1

- ☒ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

+0.5

## Reviewer ±1

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

+0.5

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 14  
 Juror: Zuzana Cocubina Signature: Cocubina

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing "answers" when no questions were posed or not finding shortcomings if there were none to find.

Rep.: UKRAINE

5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

1

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

### Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

0

Final Grade: Reporter

6

Opp.: ROMANIA

5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

-1

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

### Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

-1

Final Grade: Opponent

3

Rev.: RUSSIA

5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

1

### Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

1

### Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

0

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 1 Problem no.: 14  
 Juror: Mathias Anderson Signature: M. A.

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Ukraine

5

Physics  $\pm 3$

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$

0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

6

Opp.: Romania

5

Physics  $\pm 3$

+1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$

0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: Russia

5

Physics  $\pm 3$

+1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$

0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$

+0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 6  
 Juror: Reaver Signature: Ugav

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three beams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Russia 5

Physics  $\pm 3$  +1.5

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: Ukraine 5

Physics  $\pm 3$  +1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 45 Room: 9 Stage: 2 Problem no.: 6 (Magus glider)  
 Juror: Roman Matveevskiy Signature: h2 25

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate *no exp. video*
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Russia 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Opponent  $\pm 1$  +1

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☒ Contribution to the discussion

Final Grade: Opponent

7

Rev.: Ukraine 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

Reviewer  $\pm 1$  -0.5

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

5

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 6  
 Juror: YE YEO Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania  
Horu 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Russia  
Vitalii 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Ukraine  
Nikita 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +1/2

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +1/2

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 6

Juror: TATYANA G.S. Signature: TGS

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: ROMANIA  
HORIA MARCEA  
5

Physics  $\pm 3$  -0.5

- ☒ Correct and relevant physics +0.25
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☒ Accurate answers +0.25

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  -0.5

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☒ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 4

Opp.: RUSSIA  
VIKAL MATIONIN  
5

Physics  $\pm 3$  3.0

- ☒ Correct and relevant physics +0.25
- ☒ Scientific approach +0.5
- ☒ Validity of conclusions +0.25
- ☒ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  -1

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report  $\rightarrow$  NOISE THEORY
- ☒ Finds shortcomings or errors in the report X
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 7

Rev.: UKRAINE  
NIKITA KOLODOV  
5

Physics  $\pm 3$  +1

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  0.5

- ☐ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed +0.25
- ☒ Relevance of questions to both the reporter and the opponent +0.25
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 6  
 Juror: Luxana Coculovici Signature: Lucina

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  -1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 5

Opp.: Russia 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0,5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  0

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Ukraine 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 2 Problem no.: 6  
 Juror: Mattias Andersen Signature: M.A.

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania 5

Physics  $\pm 3$  +2  
☐ Correct and relevant physics +  
☐ Scientific approach +  
☐ Validity of conclusions +  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable -  
☐ Appropriate manner  
☐ Overall impression

Reporter  $\pm 1$  0  
☐ Quality of experimental technique(s)  
☐ Structure +  
☐ Explanation of formulae and symbols  
☐ Appropriate models, conformity of dimensions  
☐ Slides, on-site experiments, audio, video, as appropriate  
☐ References, proper citations of ideas and input of others  
☐ Novelty of the report  
☐ Contribution to the discussion

Final Grade: Reporter 7

Opp.: Russia 5

Physics  $\pm 3$  +2  
☐ Correct and relevant physics +  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression -

Opponent  $\pm 1$  +1  
☐ Response to the reporter's solution +  
☐ Shows the strong and weak points of the report +  
☐ Finds shortcomings or errors in the report +  
☐ Relevance of the questions  
☐ Contribution to the discussion

Final Grade: Opponent 8

Rev.: Ukraine 5

Physics  $\pm 3$  +1.5  
☐ Correct and relevant physics  
☐ Scientific approach  
☐ Validity of conclusions  
☐ Accurate answers

Presentation  $\pm 1$  0  
☐ Clear and understandable  
☐ Appropriate manner  
☐ Overall impression

Reviewer  $\pm 1$  +0.5  
☐ Provides a thorough review of report and discussion +  
☐ Expresses own opinion about topics presented or discussed +  
☐ Relevance of questions to both the reporter and the opponent  
☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 13  
 Juror: RECOVER Signature: kgw

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
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- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  +1

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 8

Opp.: Ukraine 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  0

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  +0.5

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Romania 5

### Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  +0.5

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  +0.5

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 13  
 Juror: Roman Matkowsky Signature: hi 25

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

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- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
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- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
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- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia

5

## Physics $\pm 3$

+2

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Reporter $\pm 1$

+0.5

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☒ Appropriate models, conformity of dimensions
- ☒ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☒ Contribution to the discussion

Final Grade: Reporter

8

Opp.: Ukraine

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+0.5

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Opponent $\pm 1$

+0.5

- ☒ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

6

Rev.: Romania

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

+1

- ☒ Clear and understandable
- ☒ Appropriate manner
- ☒ Overall impression

## Reviewer $\pm 1$

+1

- ☒ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

7

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 13  
 Juror: YE YEO Signature: [Signature]

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
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- an attempt to communicate difficult or complex ideas in an effective and understandable manner

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- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Romania Vitalie

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter

5

Opp.: Ukraine Nikita

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent

5

Rev.: Romania Dimitrie Horia

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer

8

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 13

Juror: TATIANA G.S. Signature: TGS

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
- the reviewer appreciated the important aspects (especially the controversial ones)
- the reviewer's personal opinion was in evidence (not just superficial observations)
- such personal opinions were informative, non-trivial and demonstrated, where possible, the reviewer's understanding of concepts, theories, principles and appropriate mathematics used by the reporter and the opponent

- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: RUSSIA

Vitali

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☒ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

+0.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reporter $\pm 1$

- ☒ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

+0.5

Final Grade: Reporter

6

Opp.: UKRAINE

natyrk egor

5

## Physics $\pm 3$

- ☒ Correct and relevant physics
- ☒ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

+0.25

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Opponent $\pm 1$

- ☒ Response to the reporter's solution
- ☒ Shows the strong and weak points of the report
- ☒ Finds shortcomings or errors in the report
- ☒ Relevance of the questions
- ☐ Contribution to the discussion

+0.25

Final Grade: Opponent

5

Rev.: ROMANIA

Dumitru Horia

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☒ Validity of conclusions
- ☐ Accurate answers

+0.5

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

0

## Reviewer $\pm 1$

- ☒ Provides a thorough review of report and discussion
- ☒ Expresses own opinion about topics presented or discussed
- ☒ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

+0.5

Final Grade: Reviewer

6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 13  
 Juror: Luciana Coculova Signature: Coculova

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
- an attempt to communicate difficult or complex ideas in an effective and understandable manner

## An opposition should show that:

- the opponent challenged the reporter's understanding of the presented concepts, theories and principles
- the opponent understood the appropriate mathematics presented
- the opponent critiqued the experimental technique used and questioned the validity of the data
- the opponent appreciated and highlighted the strengths and weaknesses of the report

## A review should show that:

- the reviewer succeeded in giving an objective summary of the performances the reporter and opponent
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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
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Rep.: Russia 5

Physics  $\pm 3$  0

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reporter  $\pm 1$  0

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols
- ☐ Appropriate models, conformity of dimensions
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

Final Grade: Reporter 6

Opp.: Ukraine 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Opponent  $\pm 1$  1

- ☐ Response to the reporter's solution
- ☐ Shows the strong and weak points of the report
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

Final Grade: Opponent 6

Rev.: Romania 5

Physics  $\pm 3$  -1

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

Presentation  $\pm 1$  1

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

Reviewer  $\pm 1$  1

- ☐ Provides a thorough review of report and discussion
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

Final Grade: Reviewer 6

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend

# Scoring Guidelines

Fight (Round no.): 5 Room: 9 Stage: 3 Problem no.: 13  
 Juror: Mattias Andersson Signature: M.A.

## A report should include:

- a presentation of the appropriate concepts, theories and principles of the problem
- an explanation of the observed phenomena
- an application of appropriate mathematics
- reasonable experimental technique to gather and record data (or demonstrate the phenomena if appropriate)
- linking of theoretical and experimental findings to draw suitable conclusions
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- the opponent appreciated and highlighted the strengths and weaknesses of the report

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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.
- Select each partial grade from each section and write it in the corresponding box.
- Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.

Rep.: Russia

5

## Physics $\pm 3$

- ☐ Correct and relevant physics +
- ☐ Scientific approach +
- ☐ Validity of conclusions -
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable -
- ☐ Appropriate manner
- ☐ Overall impression

## Reporter $\pm 1$

- ☐ Quality of experimental technique(s)
- ☐ Structure
- ☐ Explanation of formulae and symbols -
- ☐ Appropriate models, conformity of dimensions -
- ☐ Slides, on-site experiments, audio, video, as appropriate
- ☐ References, proper citations of ideas and input of others
- ☐ Novelty of the report
- ☐ Contribution to the discussion

6

Final Grade: Reporter

Opp.: Ukraine

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Opponent $\pm 1$

- ☐ Response to the reporter's solution +
- ☐ Shows the strong and weak points of the report +
- ☐ Finds shortcomings or errors in the report
- ☐ Relevance of the questions
- ☐ Contribution to the discussion

6

Final Grade: Opponent

Rev.: Romania

5

## Physics $\pm 3$

- ☐ Correct and relevant physics
- ☐ Scientific approach
- ☐ Validity of conclusions
- ☐ Accurate answers

## Presentation $\pm 1$

- ☐ Clear and understandable
- ☐ Appropriate manner
- ☐ Overall impression

## Reviewer $\pm 1$

- ☐ Provides a thorough review of report and discussion +
- ☐ Expresses own opinion about topics presented or discussed
- ☐ Relevance of questions to both the reporter and the opponent
- ☐ Draws attention to points missed by the reporter or the opponent

6

Final Grade: Reviewer

This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades - please do not bend



Round: 5 Room: 9 Fight Assistants: .....

Team	Stage 1			Stage 2			Stage 3			Stage 4		
	Ukraine	Romania	Russia	Romania	Russia	Ukraine	Russia	Ukraine	Romania	Rep	Opp	Rev
Juror	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev	Rep	Opp	Rev
Ulrike Regner chair	6	3	6	6	7	6	8	6	6			
Pornrat Wattanakasitwich	6	6	8	5	7	5	8	6	7			
Ye Yeo	5	6	7	7	8	7	5	5	8			
Tatyana Gercalves Stalencu	5	5	7	4	7	7	6	5	6			
Zuzana Coculová	6	3	7	5	8	7	6	6	6			
Mattias Andersson	6	6	7	7	8	7	6	6	6			
Acting Team Member	Yevhen Melnyk	Anca Goldis	Nikolay Sibiychuk	Horia Magureanu	Vitalii Matiutin	Mykyta Rohovyi	Vitalii Matiutin	Mykyta Rohovyi	Horia Magureanu			
Rejected Problems	—			—			—					
Accepted Problem	14			6			13					

Signature Fight Assistant: ..... Double-checked with Scoring Guidelines by second Fight Assistant (signature): .....