Cooring Caridalia	Fight (Round no.): 3 Roo	m: \underline{B} Stage: $\underline{3}$ Problem no.: $\underline{12}$
Scoring Guidelines	Juror: By land	Signature:
A report should include:	<u> </u>	

• 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 sec Don't punish missing 'answers' when n 	ction and <i>write it</i> in the corresponding box. o questions were posed or not finding short c	omings if there were none to find.
Rep.: Austria 5	Opp.: Kenya 5	Rev.: Autalia 5
Physics ±3	Physics ±3	Physics ±3
 ✓ Correct and relevant physics ✓ Scientific approach ✓ Validity of conclusions ✓ Accurate answers 	 ☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers 	 ☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers
Presentation ±1 +1/2	Presentation ±1	Presentation ±1 + 1/2
☐ Clear and understandable☐ Appropriate manner☐ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1 + 1/2
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
Structure	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed
□ Explanation of formulae and symbols□ Appropriate models, conformity	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
of dimensions. Slides, on-site experiments, audio,	Relevance of the questions Contribution to the discussion	Draws attention to points missed by the reporter or the opponent
video, as appropriate References, proper citations of ideas and input of others	— Contribution to the discussion	in he collected by the
☐ Novelty of the report ☐ Contribution to the discussion		This sheet will be come and fight assistant, so we can scan it and archive your partial grades — please do not bend

Final Grade: Opponent Final Grade: Reporter

Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03

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Fight (Round no.): 3 Room:		age:3_	_ Problem no.:	12
Juror: D. WHARAM	Signature:	AK	20,	>

Revised after IOC feedback and approved by EC on 2011-11-03

A report should includ	port	should	inclu	de:
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• 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

- 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.: AUSTRIA 5	Opp.: KENYA 5	Rev.: Australia 5	
Physics ±3	Physics ±3	Physics ±3	
Correct and relevant physics	Correct and relevant physics	☐ Correct and relevant physics	
Scientific approach	🗷 Scientific approach	☐ Scientific approach	
✓ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions	
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers	
Presentation ±1	Presentation ±1	Presentation ±1	
Clear and understandable	🗓 Clear and understandable	Clear and understandable	
☐ Appropriate manner	Appropriate manner	Appropriate manner	
Overall impression	Overall impression	Overall impression	
Reporter ±1	Opponent ±1	Reviewer ±1	
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion	
☑ Structure	Shows the strong and weak points	Expresses own opinion about	
Explanation of formulae and	of the report	topics presented or discussed	
symbols Appropriate models, conformity	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent	
of dimensions	Relevance of the questions	Draws attention to points missed	
Slides, on-site experiments, audio, video, as appropriate	Contribution to the discussion	Draws attention to points missed by the reporter or the opponent	
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and	
☐ Novelty of the report		fight assistant, so we com archive your partial grades – please	
Contribution to the discussion		do not bend	
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer	

Scoring Guidelines

Fight (Round no.): 3. Room: B Stage: 3. Problem no.: 12.

Juror: Chusana Report Signature: Shakat D

Revised after IOC feedback and approved by EC on 2011-11-03

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

- 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.

	,	go it diore were none to ima.
Rep.:5	Opp.:5	Rev.: 5
Physics ±3	Physics ±3	Physics ±3
 □ Correct and relevant physics ☑ Scientific approach □ Validity of conclusions □ Accurate answers 	☐ Correct and relevant physics☐ Scientific approach☐ Validity of conclusions☐ Accurate answers	☐ Correct and relevant physics☐ Scientific approach☐ Validity of conclusions☐ Accurate answers
Presentation ±1 +4	Presentation ±1	Presentation ±1
☐ Clear and understandable☐ Appropriate manner☑ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☒ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
Structure	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed
Explanation of formulae and symbols	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
Appropriate models, conformity of dimensions	Relevance of the questions	Draws attention to points missed by the reporter or the opponent
Slides, on-site experiments, audio, video, as appropriate	Contribution to the discussion	
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we con- archive your partial grades – please
☐ Contribution to the discussion		do not bend
		K-7

Scoring Guidelii	Fight (Round no.): 3 Room 105 Juror: Round no.): 4	n: B Stage: 3 Problem no.: 1		
application of appropriate mathematics • re	ts, theories and principles of the problem • an easonable experimental technique to gather and experimental findings to draw suitable conclusionable manner	record data (or demonstrate the phenomena if		
An opposition should show that: • the opponent <i>challenged</i> the <i>reporter's ur</i> *appropriate mathematics presented • the opponent appreciated and highlighted the st	nderstanding of the presented concepts, theories pponent critiqued the experimental technique use rengths and weaknesses of the report	and <i>principles</i> • the opponent understood the d and questioned the <i>validity</i> of the <i>data</i> • the		
important aspects (especially the controvers	ctive summary of the performances the reporter sial ones) • the reviewer's personal opinion was in the trivial and demonstrated, where possible, the red by the reporter and the opponent	evidence (not just superficial observations)		
The grade for each of the three teams consists of a partial grade for <i>physics</i> , <i>presentation</i> and for their <i>specific role</i> . The <i>reporter</i> , <i>opponent</i> and <i>reviewer</i> each <i>start with 5 points</i> . Consider the following <i>suggestions</i> to <i>add</i> to or <i>deduct</i> from the initial <i>5 points</i> . Select each partial grade from each section and <i>write it</i> 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.: Austria 5	Opp.: Kenya 5	Rev.: Australia 5		
Physics ±3	Physics ±3	Physics ±3		
☐ Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics		
Scientific approach	☐ Scientific approach	☐ Scientific approach		
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions		
Accurate answers	☐ Accurate answers	☐ Accurate answers		
Presentation ±1	Presentation ±1	Presentation ±1		
Clear and understandable	☐ Clear and understandable	☐ Clear and understandable		
☐ Appropriate manner	☐ Appropriate manner	☐ Appropriate manner		
J Overall impression	Overall impression	☐ Overall impression		
Reporter ±1	Opponent ±1	Reviewer ±1		
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion		
] Structure	☐ Shows the strong and weak points	Expresses own opinion about		
Explanation of formulae and symbols	of the report Finds shortcomings or errors in	topics presented or discussed Relevance of questions to both the		
Appropriate models, conformity of dimensions	the report Relevance of the questions	reporter and the opponent		
Slides, on-site experiments, audio, video, as appropriate	Contribution to the discussion	☐ Draws attention to points missed by the reporter or the opponent		
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and		
Novelty of the report		fight assistant, so we are archive your partial grades — please		

Final Grade: Opponent

☐ Novelty of the report

Final Grade: Reporter

☐ Contribution to the discussion

Final Grade: Reviewer

Revised after IOC feedback and approved by EC on 2011-11-03

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	Fight (Round no.): 3 Roor	n: B Stage: B Problem no.: B
Scoring Guidel	ines a -t	_ Signature:
A report should include:		
application of appropriate mathematics	cepts, theories and principles of the problem • and • reasonable experimental technique to gather and dexperimental findings to draw suitable conclusion tandable manner	record data (or demonstrate the phenomena if
An opposition should show that • the opponent challenged the reporter's appropriate mathematics presented • the opponent appreciated and highlighted the	s understanding of the presented concepts, theories e opponent critiqued the experimental technique use	and <i>principles</i> • the opponent understood the data • the
important aspects (especially the control	ojective summary of the performances the reporter versial ones) • the reviewer's personal opinion was in non-trivial and demonstrated, where possible, the rused by the reporter and the opponent	evidence (not just superficial observations)
 The reporter, opponent and review Consider the following suggestions Select each partial grade from each Don't punish missing 'answers' whe 	ns consists of a partial grade for <i>physics</i> , <i>presener</i> each <i>start with 5 points</i> . to <i>add</i> to or <i>deduct</i> from the initial <i>5 points</i> . section and <i>write it</i> in the corresponding box. In no questions were posed or not finding shortc	
Rep.: 5	Opp.:5	Rev.: 5
Physics ±3	Physics ±3	Physics ±3
☐ Correct and relevant physics	Correct and relevant physics	☐ Correct and relevant physics
☐ Scientific approach	Scientific approach	☐ Scientific approach
✓ Validity of conclusions✓ Accurate answers	☐ Validity of conclusions	☐ Validity of conclusions
	Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
🛮 Clear and understandable	Clear and understandable	Clear and understandable
☐ Appropriate manner	☐ Appropriate manner	Appropriate manner
Overall impression	☐ Overall impression	☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
☐ Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	☐ Shows the strong and weak points	Expresses own opinion about
Texplanation of formulae and	of the report	topics presented or discussed

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

Relevance of questions to both the reporter and the opponent

Draws attention to points missed by the reporter or the opponent

Final Grade: Opponent

Finds shortcomings or errors in

Relevance of the questions

☐ Contribution to the discussion

the report

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

☐ Contribution to the discussion

☐ Novelty of the report

Final Grade: Reporter

Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): _3 Room: Stage: _3 Problem no.:
Juror: Dina Ilach Signature: A Joak F

Revised after IOC feedback and approved by EC on 2011-11-03

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

- 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.

 Select each partial grade from each sec 	add to or deduct from the initial 5 points. Ition and write it in the corresponding box. O questions were posed or not finding shortco	omings if there were none to find.
Rep.: Austria 5 Paul worm Physics ±3	Opp.: <u>kenya</u> 5 Ar jun Physics ±3	Rev.: Austration 5 Tong Physics ±3
Correct and relevant physics Scientific approach Validity of conclusions Accurate answers	☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers	☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers
Presentation ±1 Clear and understandable Appropriate manner Overall impression	Presentation ±1 ☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	Presentation ±1 ☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression
Reporter ±1 -0.25	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
 ☐ Structure ☐ Explanation of formulae and symbols ☐ Appropriate models, conformity 	☐ Shows the strong and weak points of the report ☐ Finds shortcomings or errors in the report	Expresses own opinion about topics presented or discussed Relevance of questions to both the reporter and the opponent
 □ Appropriate models, conformity of dimensions □ Slides, on-site experiments, audio, video, as appropriate 	☐ Relevance of the questions ☐ Contribution to the discussion	Draws attention to points missed by the reporter or the opponent
References, proper citations of ideas and input of others Novelty of the report		This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please
Contribution to the discussion Final Grade: Reporter	Final Grade: Opponent	do not bend Final Grade: Reviewer

	·	3			
Scoring Guidelii	Fight (Round no.): 3 Room Note: Round no.): 3 Room Note: Round no.): 3 Room	Stage: Problem no.: Signature:			
application of appropriate mathematics • re	ts, theories and principles of the problem • an e easonable experimental technique to gather and a experimental findings to draw suitable conclusion dable manner	record data (or demonstrate the phenomena if			
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					
important aspects (especially the controvers such personal opinions were informative, no	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 reporter, opponent and reviewer Consider the following suggestions to Select each partial grade from each see 	 The grade for each of the three teams consists of a partial grade for <i>physics</i>, <i>presentation</i> and for their <i>specific role</i>. The <i>reporter</i>, <i>opponent</i> and <i>reviewer</i> each <i>start with 5 points</i>. Consider the following <i>suggestions</i> to <i>add</i> to or <i>deduct</i> from the initial <i>5 points</i>. Select each partial grade from each section and <i>write it</i> 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	Opp.: Austria 5	Rev.: Kanya 5			
Physics ±3	Physics ±3	Physics ±3			
Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics			
☐ Scientific approach	☐ Scientific approach	☐ Scientific approach			
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions			
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers			
Presentation ±1	Presentation ±1	Presentation ±1			
☐ Clear and understandable	☐ Clear and understandable	☐ Clear and understandable			
Appropriate manner	☐ Appropriate manner	☐ Appropriate manner			
Overall impression	Overall impression	Overall impression			
Reporter ±1	Opponent ±1	Reviewer ±1 —½			
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion			
☐ Structure ☐ Explanation of formulae and	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed			
symbols Appropriate models, conformity	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent			
of dimensions	Relevance of the questions	Draws attention to points missed			
Slides, on-site experiments, audio, video, as appropriate	☐ Contribution to the discussion	by the reporter or the opponent			
References, proper citations of ideas and input of others		This sheet will be collected by the			

Final Grade: Reporter

☐ Novelty of the report

Contribution to the discussion

Final Grade: Opponent

Final Grade: Reviewer

Revised after IOC feedback and approved by EC on 2011-11-03

do not bend

fight assistant, so we can scan it and archive your partial grades - please

Scoring Guidelin	Fight (Round no.): 3 Room Note: New York: New	: B Stage: 2 Problem no.: +6
application of appropriate mathematics • re	s, theories and principles of the problem • an e asonable experimental technique to gather and r perimental findings to draw suitable conclusio lable manner	ecord data (or demonstrate the phenomena if
An opposition should show that: • the opponent challenged the reporter's una appropriate mathematics presented • the oppoponent appreciated and highlighted the street.	derstanding of the presented concepts, theories a ponent critiqued the experimental technique use engths and weaknesses of the report	and <i>principles</i> • the opponent understood the dand questioned the <i>validity</i> of the <i>data</i> • the
important aspects (especially the controversisuch personal opinions were informative, nor principles and appropriate mathematics used The grade for each of the three teams of the reporter, opponent and reviewer e	onsists of a partial grade for <i>physics, present</i>	evidence (not just superficial observations) • viewer's understanding of concepts, theories,
Select each partial grade from each sect	tion and write it in the corresponding box. o questions were posed or not finding shortco	omings if there were none to find.
Rep.: AUSTRALIA 5	Opp.: AUSTRIA 5	Rev.: KENYA 5
hysics ±3	Physics ±3	Physics ±3
Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics
Scientific approach	☐ Scientific approach	☐ Scientific approach
] Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
Accurate answers	☐ Accurate answers	☐ Accurate answers
resentation ±1	Presentation ±1	Presentation ±1
Clear and understandable	Clear and understandable	Clear and understandable

Presentation ±1

☐ Scientific approach

☐ Accurate answers

☐ Validity of conclusions

Physics ±3

Clear and understandable Appropriate manner

☐ Correct and relevant physics

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

Final Grade: Reporter

Contribution to the discussion

Pres

 \Box

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

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

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: Opponent Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03

Scoring Guidelines

Fight (Round no.): _	<u>3, </u>	: <u> </u>	Stage:	_ Problem no.:	6
Juror: Esussarias	Parkeri	Signature	: Shile	mid 2	- 0

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 n	o questions were posed or not finding shortco	omings if there were none to find.
Rep.:5	Opp.: 5	Rev.: 5
Physics ±3	Physics ±3	Physics ±3
☐ Correct and relevant physics☐ Scientific approach☐ Validity of conclusions☐ Accurate answers	 ☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers 	 ☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
☐ Clear and understandable☐ Appropriate manner☐ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
Structure	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed
Explanation of formulae and symbols	☐ Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
Appropriate models, conformity of dimensions	Relevance of the questions	Draws attention to points missed by the reporter or the opponent
Slides, on-site experiments, audio, video, as appropriate	☐ Contribution to the discussion	
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		archive your partial grades
☐ Contribution to the discussion		do not bend
- the same of the	, market of	The state of the s

Final Grade: Opponent

Revised after IOC feedback and approved by EC on 2011-11-03

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Scoring Guideli		n: B Stage: 2 Problem no.:
Scoring Guiden	1185 Juror: Rogun Manyum	Signature: Houyum
A report should include:	9 0	V
	ots, theories and principles of the problem • an a	explanation of the observed phenomena • an
application of appropriate mathematics •	reasonable experimental technique to <i>gather</i> and experimental findings to draw suitable conclusion	record data (or demonstrate the phenomena if
An opposition should show that		
 the opponent challenged the reporter's u appropriate mathematics presented • the opponent appreciated and highlighted the s 	nderstanding of the presented concepts, theories apponent critiqued the experimental technique use trengths and weaknesses of the report	and <i>principles</i> • the opponent understood the data • the data • the
A review should show that:		
• the reviewer succeeded in giving an obje	ctive summary of the performances the reporter	and opponent • the reviewer appreciated the
such personal opinions were informative, n	sial ones) • the reviewer's personal opinion was in on-trivial and demonstrated, where possible, the re	n evidence (not just superficial observations) •
principles and appropriate mathematics use	d by the reporter and the opponent	
• The grade for each of the three teams	consists of a partial grade for physics, present	tation and for their specific role.
 The reporter, opponent and reviewer Consider the following suggestions to 	each start with 5 points. add to or deduct from the initial 5 points.	
 Select each partial grade from each se 	ction and write it in the corresponding box.	
Don't punish missing 'answers' when i	no questions were posed or not finding shortc	omings if there were none to find.
Rep.: Autralia	Jone A.A.	D
5	5	Rev.: Kenya 5
Physics ±3	Physics ±3	Physics ±3
☐ Correct and relevant physics	Correct and relevant physics	☐ Correct and relevant physics
Scientific approach	☐ Scientific approach	☐ Scientific approach
☐ Validity of conclusions ☐ Accurate answers	☐ Validity of conclusions ☐ Accurate answers	☐ Validity of conclusions
Accurate answers	☐ Accurate answers	Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
Clear and understandable	☐ Clear and understandable	☐ Clear and understandable
Appropriate manner	Appropriate manner	☐ Appropriate manner
U Overall impression	Overall impression	Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	☐ Shows the strong and weak points	Expresses own opinion about
Explanation of formulae and symbols	of the report	topics presented or discussed
☐ Appropriate models, conformity	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
of dimensions	☐ Relevance of the questions	☐ Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate	☐ Contribution to the discussion	by the reporter or the opponent

Contribution to the discussion Final Grade: Reporter

References, proper citations of ideas and input of others

☐ Novelty of the report

Final Grade: Opponent

Final Grade: Reviewer

Revised after IOC feedback and approved by EC on 2011-11-03

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This sheet will be collected by the

fight assistant, so we can scan it and archive your partial grades - please

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	Fight (Round no.): Roor	n: Stage: Problem no.:
Scoring Guideling	nes Juror: Hong Jung	_ Signature:
A report should include:		
application of appropriate mathematics • r	ets, theories and principles of the problem and easonable experimental technique to gather and experimental findings to draw suitable conclusion dable manner	record data (or demonstrate the phenomena if
An opposition should show that: • the opponent challenged the reporter's unappropriate mathematics presented • the opponent appreciated and highlighted the st	nderstanding of the presented concepts, theories pponent critiqued the experimental technique use	and <i>principles</i> • the opponent understood the ed and questioned the <i>validity</i> of the <i>data</i> • the
A review should show that:		
important aspects (especially the controvers	ctive summary of the performances the reporter sial ones) • the reviewer's personal opinion was in on-trivial and demonstrated, where possible, the red the reporter and the opponent	n evidence (not just superficial observations) .
 The reporter, opponent and reviewer Consider the following suggestions to Select each partial grade from each see 	consists of a partial grade for <i>physics</i> , <i>presen</i> each <i>start with 5 points</i> . add to or <i>deduct</i> from the initial <i>5 points</i> . ction and <i>write it</i> in the corresponding box. no questions were posed or not finding shortc	
Rep.: 5	Opp.:5	Rev.: 5
Physics ±3	Physics ±3	Physics ±3
☐ Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics
☐ Scientific approach	☐ Scientific approach	☐ Scientific approach
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
Accurate answers	☐ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
Clear and understandable	Clear and understandable	Clear and understandable
Appropriate manner	☐ Appropriate manner	Appropriate manner
Overall impression	☐ Overall impression	Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
] Structure	☐ Shows the strong and weak points	Expresses own opinion about
Explanation of formulae and symbols	of the report Finds shortcomings or errors in the report	topics presented or discussed Relevance of questions to both the
Appropriate models, conformity of dimensions	Relevance of the questions	reporter and the opponent Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate	Contribution to the discussion	by the reporter or the opponent
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
Novelty of the report		fight assistant, so we con- archive your partial grades – please
Contribution to the discussion		do not bend

Final Grade: Opponent

Final Grade: Reporter

Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03

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COMP.	All All A	额	æ	22	20		- CONTRACTOR OF THE PERSON OF	W 2	æ		Spilling.	M	8	3 1	ş	Charles of the last	Samp.

Fight (Round no.): 3 Room:	Stage: 2 Problem no.: 6
Juror: Dina Iyadi	Signature: Ladis

Revised after IOC feedback and approved by EC on 2011-11-03

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

- 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		
	add to or deduct from the initial 5 points.	
 Select each partial grade from each sec Don't punish missing 'answers' when n 	tion and <i>write it</i> in the corresponding box. o questions were posed or not finding shorted	omings if there were note to find
Don't panish missing answers when in	o questions were posed of not infamig shorted	onlings if there were none to find.
Rep.: Australia 5	Opp.: Austria 5	Rev.: kenya 5
Physics ±3	Physics ±3	Physics ±3
Correct and relevant physics	Correct and relevant physics	☐ Correct and relevant physics
Scientific approach	Scientific approach	Scientific approach
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
☐ Clear and understandable	Clear and understandable	☐ Clear and understandable
☐ Appropriate manner	Appropriate manner	Appropriate manner
Overall impression	☐ Overall impression	☐ Overall impression
Reporter ±1 0.25	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	☐ Shows the strong and weak points	Expresses own opinion about
☐ Explanation of formulae and	of the report	topics presented or discussed
symbols	Finds shortcomings or errors in the report	Relevance of questions to both the
Appropriate models, conformity of dimensions	Relevance of the questions	reporter and the opponent Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate	☐ Contribution to the discussion	Draws attention to points missed by the reporter or the opponent
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we con- archive your partial grades – please
☐ Contribution to the discussion—		do not bend
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer

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Fight (Round no.): 3 Room: B Stage: 1 Problem no.: Juror: By (and Signature: 5)
s and principles of the problem • an explanation of the observed phenomena • an experimental technique to gather and record data (or demonstrate the phenomena if al findings to draw suitable conclusions • an attempt to communicate difficult or ner
ng of the presented concepts, theories and principles • the opponent understood the itiqued the experimental technique used and questioned the validity of the data • the id weaknesses of the report
nary of the performances the <i>reporter</i> and <i>opponent</i> • the reviewer appreciated the the reviewer's <i>personal opinion</i> was in evidence (<i>not</i> just <i>superficial observations</i>) • and demonstrated, where possible, the reviewer's <i>understanding</i> of <i>concepts</i> , <i>theories</i> ,

Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03

A report should include:

• a presentation of the appropriate concepts, theorie: application of appropriate mathematics • reasonable appropriate) . linking of theoretical and experiments complex ideas in an effective and understandable mani

An opposition should show that:

• the opponent challenged the reporter's understanding appropriate mathematics presented • the opponent cr. opponent appreciated and highlighted the strengths an

- the reviewer succeeded in giving an objective summ important aspects (especially the controversial ones) such personal opinions were informative, non-trivial ar 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.

	tion and <i>write it</i> in the corresponding box. o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Kenya 5	Opp.: Australia 5	Rev.: Austria 5
Physics ±3	Physics ±3	Physics ±3 +2
Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics
☐ Scientific approach	☐ Scientific approach	☐ Scientific approach
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
☐ Clear and understandable	☐ Clear and understandable	☐ Clear and understandable
☐ Appropriate manner	☐ Appropriate manner	☐ Appropriate manner
Overall impression	Overall impression	☐ Overall impression
Reporter ±1 $-\frac{1}{2}$	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	☐ Shows the strong and weak points	☐ Expresses own opinion about
☐ Explanation of formulae and	of the report	topics presented or discussed
symbols Appropriate models, conformity	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
of dimensions	☐ Relevance of the questions	Draws attention to points missed by the reporter or the opponent
Slides, on-site experiments, audio, video, as appropriate	☐ Contribution to the discussion	
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
Novelty of the report		fight assistant, so we con- archive your partial grades — please
Contribution to the discussion —		do not bend
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer

		Fight (Round no.): Room:
Scoring	Guidelines	Wron D. WHARAMS

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 n 	o questions were posed or not finding shortco	omings if there were none to find.
Rep.: KENYA 5	Opp.: AUSTRALIA 5	Rev.: AUSTRIA 5
Physics ±3	Physics ±3	Physics ±3
Correct and relevant physics Scientific approach Validity of conclusions Accurate answers	Correct and relevant physics Scientific approach Validity of conclusions	Correct and relevant physics Scientific approach Validity of conclusions
Presentation ±1	Presentation ±1	✓ Accurate answers Presentation ±1
☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	Clear and understandable Appropriate manner Overall impression	Clear and understandable Appropriate manner Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1 6
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed
Explanation of formulae and symbols	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
Appropriate models, conformity of dimensions	Relevance of the questions	☐ Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate	Contribution to the discussion	by the reporter or the opponent
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we do archive your partial grades – please
☐ Contribution to the discussion ☐		do not bend
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Final Grade: Opponent

Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03



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						Secret 1							-0	-	-		-	-	

Fight (Round no.):	3 Room:	s	tage:	Problem	no.: 13,
Juror Zswsaug	Rafeorit	Signature:	Eleil	ants!	

Final Grade: Reviewer Revised after IOC feedback and approved by EC on 2011-11-03

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

- 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 	o questions were posed or not finding shortco	omings if there were none to find.
Rep.: 5	Opp.:5	Rev.: 5
Physics ±3	Physics ±3	Physics ±3
☐ Correct and relevant physics	☐ Correct and relevant physics	☑ Correct and relevant physics
☐ Scientific approach	☐ Scientific approach	☐ Scientific approach
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1 +1
Clear and understandable	☐ Clear and understandable	🗹 Clear and understandable
☐ Appropriate manner	☐ Appropriate manner	☐ Appropriate manner
Overall impression	Overall impression	☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	Shows the strong and weak points	Expresses own opinion about
☐ Explanation of formulae and	of the report	topics presented or discussed
symbols Appropriate models, conformity	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
 Appropriate models, conformity of dimensions 	☐ Relevance of the questions	☐ Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate	☐ Contribution to the discussion	by the reporter or the opponent
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we con archive your partial grades – please
Contribution to the discussion		do not bend
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer

Scoring Guideli	Fight (Round no.): 3 Room Nanyum Pagun Manyum	
A report should include:		
application of appropriate mathematics • r	ets, theories and principles of the problem • an easonable experimental technique to gather and experimental findings to draw suitable conclusionable manner	record data (or demonstrate the phenomena if
An opposition should show that: • the opponent challenged the reporter's unappropriate mathematics presented • the opponent appreciated and highlighted the st	nderstanding of the presented concepts, theories pponent critiqued the experimental technique use	and <i>principles</i> • the opponent understood the ed and questioned the <i>validity</i> of the <i>data</i> • the
A review should show that:		
important aspects (especially the controvers	ctive summary of the performances the reporter sial ones) • the reviewer's personal opinion was intrivial and demonstrated, where possible, the red by the reporter and the opponent	n evidence (not just superficial observations) .
 The reporter, opponent and reviewer Consider the following suggestions to Select each partial grade from each set 	consists of a partial grade for <i>physics, presen</i> each <i>start with 5 points.</i> add to or deduct from the initial <i>5 points.</i> ction and write it in the corresponding box. no questions were posed or not finding shortc	
Rep.: Kenya 5	Opp.: Australia 5	Rev.: Autria 5
Physics ±3	Physics ±3	Physics ±3
Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics
Scientific approach	Scientific approach	☐ Scientific approach
☐ Validity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
☐ Clear and understandable	☐ Clear and understandable	Clear and understandable
☐ Appropriate manner☐ Overall impression	☐ Appropriate manner	Appropriate manner
	U Overall impression	☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	☐ Shows the strong and weak points	☐ Expresses own opinion about
Explanation of formulae and symbols	of the report Finds shortcomings or errors in	topics presented or discussed Relevance of questions to both the
Appropriate models, conformity of dimensions	the report Relevance of the questions	reporter and the opponent
Slides, on-site experiments, audio, video, as appropriate	☐ Relevance of the questions ☐ Contribution to the discussion	Draws attention to points missed by the reporter or the opponent
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we can a please archive your partial grades – please

Final Grade: Reporter

☐ Contribution to the discussion

Final Grade: Opponent

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		Fight (Round no.):	Room:	Stage:	: Prob	lem no.:
Scoring	Guidelines	Juror: Hong	Jung	Signature:	bon	Jung
				-		0

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 n 	o questions were posed or not finding shortco	omings if there were none to find.
Rep.: 5	Opp.: 5	Rev.: 5
Physics ±3 Correct and relevant physics Scientific approach Validity of conclusions Accurate answers	Physics ±3 Correct and relevant physics Scientific approach Validity of conclusions Accurate answers	Physics ±3 Correct and relevant physics Scientific approach Validity of conclusions Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
Clear and understandable	🗖 Clear and understandable	Clear and understandable
Appropriate manner	☐ Appropriate manner	☐ Appropriate manner
Overall impression	Overall impression	Overall impression
Reporter ±1	Opponent ±1	
/	obbonent 11	Reviewer ±1
Quality of experimental technique(s) no dwarf	Response to the reporter's solution	Reviewer ±1 Provides a thorough review of report and discussion
Quality of experimental ,	Response to the reporter's solution Shows the strong and weak points	Provides a thorough review of report and discussion
Quality of experimental technique(s) no discontinuous Structure Explanation of formulae and	Response to the reporter's solution Shows the strong and weak points of the report	Provides a thorough review of
Quality of experimental technique(s) no doctor Structure Explanation of formulae and symbols	Response to the reporter's solution Shows the strong and weak points of the report Finds shortcomings or errors in	Provides a thorough review of report and discussion Expresses own opinion about topics presented or discussed Relevance of questions to both the
Quality of experimental technique(s) no discontinuous Structure Explanation of formulae and	Response to the reporter's solution Shows the strong and weak points of the report Finds shortcomings or errors in the report	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
Quality of experimental technique(s) no doctor Structure Explanation of formulae and symbols	Response to the reporter's solution Shows the strong and weak points of the report Finds shortcomings or errors in	Provides a thorough review of report and discussion Expresses own opinion about topics presented or discussed Relevance of questions to both the
Quality of experimental technique(s) no doctor Structure Explanation of formulae and symbols Appropriate models, conformity of dimensions Slides, on-site experiments, audio.	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	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
Quality of experimental technique(s) no documental technique and symbols Appropriate models, conformity of dimensions Slides, on-site experiments, audio, video, as appropriate	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	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
Quality of experimental technique(s) no documental technique and symbols Appropriate models, conformity of dimensions Slides, on-site experiments, audio, video, as appropriate References, proper citations of ideas and input of others	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	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: Opponent

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A report should include: • a presentation of the appropriate concepts, theories and	sht (Round no.): <u>3</u> Room: <u>B</u> Stage: <u>†</u> Problem no.: <u>/</u>
• a presentation of the appropriate concepts, theories and	ror: Dina Stadi Signature:
application of appropriate mathematics • reasonable experappropriate) • linking of theoretical and experimental fin complex ideas in an effective and understandable manner	principles of the problem • an explanation of the observed phenomena • an imental technique to gather and record data (or demonstrate the phenomena if dings to draw suitable conclusions • an attempt to communicate difficult or
An opposition should show that:	
• the opponent <i>challenged</i> the <i>reporter's understanding</i> of	the presented concepts, theories and principles • the opponent understood the

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complex ideas in an effective and understandable mann An opposition should show that:

• the opponent challenged the reporter's understanding 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

- 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>kenya</u> 5	Opp.: Australia 5	Rev.: Austria 5
Physics ±3	Physics ±3	Physics ±3
Correct and relevant physics	☐ Correct and relevant physics	Correct and relevant physics
☐ Scientific approach	Scientific approach	Scientific approach
☐ Validity of conclusions	☑ Validity of conclusions	☐ Validity of conclusions
☐ Accurate answers	☐ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1 -0.25
Clear and understandable	Clear and understandable	☐ Clear and understandable
Appropriate manner	☐ Appropriate manner	☐ Appropriate manner
Overall impression	Overall impression	☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
☐ Structure	☐ Shows the strong and weak points	☐ Expresses own opinion about
☐ Explanation of formulae and	of the report	topics presented or discussed
symbols	☐ Finds shortcomings or errors in the report	Relevance of questions to both the
Appropriate models, conformity of dimensions	Relevance of the questions	reporter and the opponent Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate	Contribution to the discussion	by the reporter or the opponent
References, proper citations of ideas and input of others		This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we con archive your partial grades — please
Contribution to the discussion		do not bend
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer