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	Fight (Round no.):\$_Roor	n: Problem no.:
Scoring Guideling	1es Juror: Plya MARTENEDA	and the second s
application of appropriate mathematics • re	ts, theories and principles of the problem • an e easonable experimental technique to gather and experimental findings to draw suitable conclusion	explanation of the observed phenomena • an 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 rengths and weaknesses of the report	and <i>principles</i> • the opponent understood the ed and questioned the <i>validity</i> of the <i>data</i> • the
important aspects (especially the controvers	stive summary of the performances the reporter sial ones) • the reviewer's personal opinion was in the reviewer of the reporter and the opponent	n evidence (not just superficial observations) •
<ul> <li>The reporter, opponent and reviewer</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each sec</li> </ul>	consists of a partial grade for <i>physics, 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.  to questions were posed or not finding shortc	
Rep.: Indonesia 5	Opp.: Sweden 5	Rev.: Belake, 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  ☐ 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  Quality of experimental technique(s)	Opponent ±1  Response to the reporter's solution	Reviewer ±1  Provides a thorough review of report and discussion
☐ Structure ☐ Explanation of formulae and symbols	☐ Shows the strong and weak points of the report ☐ Finds shortcomings or errors in	Expresses own opinion about topics presented or discussed  Relevance of questions to both the
<ul> <li>□ Appropriate models, conformity of dimensions</li> <li>□ Slides, on-site experiments, audio, video, as appropriate</li> </ul>	the report  Relevance of the questions  Contribution to the discussion	reporter and the opponent  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		do not bend

Final Grade: Reporter

Final Grade: Opponent





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Fight (Round no.): _	Room:	Stage:	Problem no.: 7
Juror: Meethics	Müller	Signature:	1

## 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:

Final Grade: Reporter

- 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

<ul> <li>The reporter, opponent and reviewer e</li> <li>Consider the following suggestions to e</li> <li>Select each partial grade from each sec</li> </ul>	consists of a partial grade for <i>physics, present</i> each <i>start with 5 points</i> .  add to or <i>deduct</i> from the initial <i>5 points</i> .  ation and <i>write it</i> in the corresponding box.  To questions were posed or not finding shorter	
Rep.: Indonesia 5	Opp.: Sweden 5	Rev.: Belarus 5
Physics ±3	Physics ±3	Physics ±3
<ul><li>☐ Correct and relevant physics</li><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li><li>☐ Accurate answers</li></ul>	<ul><li>☑ Correct and relevant physics</li><li>☑ Scientific approach</li><li>☑ Validity of conclusions</li><li>☐ Accurate answers</li></ul>	<ul> <li>□ Correct and relevant physics</li> <li>□ Scientific approach</li> <li>□ Validity of conclusions</li> <li>□ Accurate answers</li> </ul>
Presentation ±1	Presentation ±1	Presentation ±1
<ul><li>☐ Clear and understandable</li><li>☐ Appropriate manner</li><li>☐ Overall impression</li></ul>	<ul><li>☐ Clear and understandable</li><li>☐ Appropriate manner</li><li>☐ Overall impression</li></ul>	<ul><li>☑ Clear and understandable</li><li>☑ Appropriate manner</li><li>☑ Overall impression</li></ul>
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
<ul><li>Explanation of formulae and symbols</li><li>Appropriate models, conformity</li></ul>	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
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		This sheet will be collected by the
□ Novelty of the report		This sheet will be com- fight assistant, so we can scan it and archive your partial grades – please
Contribution to the discussion		do not bend
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Final Grade: Opponent L

Scoring Guidelines	Fight (Round no.): S Room: D Stage: I Problem no.: Tuguer: Request 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

<ul> <li>The reporter, opponent and reviewer expensions.</li> <li>Consider the following suggestions to a select each partial grade from each second</li> </ul>	consists of a partial grade for <i>physics, present</i> each <i>start with 5 points</i> .  Endd to or <i>deduct</i> from the initial <i>5 points</i> .  It tion and <i>write it</i> in the corresponding box.  To questions were posed or not finding shortco	, ,		
Rep.: Indones ia Elect Datai 5	Opp.: Suider Haran Pélan 5	Rev.: Sdowns Engening Church 5		
Physics ±3	Physics ±3	Physics ±3		
<ul><li>☐ Correct and relevant physics</li><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li><li>☐ Accurate answers</li></ul>	<ul><li>☐ Correct and relevant physics</li><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li><li>☐ Accurate answers</li></ul>	<ul> <li>☐ Correct and relevant physics</li> <li>☐ Scientific approach</li> <li>☐ Validity of conclusions</li> <li>☐ Accurate answers</li> </ul>		
Presentation ±1	Presentation ±1	Presentation ±1		
<ul><li>☐ Clear and understandable</li><li>☐ Appropriate manner</li><li>☐ Overall impression</li></ul>	☐ 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		
<ul><li>☐ Structure</li><li>☐ Explanation of formulae and</li></ul>	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed		
symbols	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent		
<ul><li>□ Appropriate models, conformity of dimensions</li><li>□ Slides, on-site experiments, audio,</li></ul>	☐ 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	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	F	do not bend		
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer		

Final Grade: Opponent

Cooring Cuidali	Fight (Round no.): Roon	m: D Stage: Problem no.:
Scoring Guideli	nes Juror: BORGET	_ Signature: Whoy
application of appropriate mathematics • 1	ots, theories and principles of the problem • an reasonable 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 copponent appreciated and highlighted the s	inderstanding of the presented concepts, theories apponent 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
important aspects (especially the controver	ctive summary of the performances the reporter rsial ones) • the reviewer's personal opinion was i on-trivial and demonstrated, where possible, the red by the reporter and the opponent	n evidence (not just superficial observations) .
<ul> <li>The reporter, opponent and reviewer</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each se</li> </ul>	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> .  action and <i>write it</i> in the corresponding box.  no questions were posed or not finding shorter.	
- Don't punish missing answers when	. C questions were posed or not inding shortd	* *
Rep.:	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
Appropriate models, conformity of dimensions	Relevance of the questions	reporter and the opponent  Draws attention to points missed by the reporter or the opponent
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
Novelty of the report		This sheet will be conscan it and fight assistant, so we can scan it and archive your partial grades — please
Contribution to the discussion		do not bend
Final Grade: Reporter	Final Grade: Opponent Revised	Final Grade: Reviewer after IOC feedback and approved by EC on 2011-11-03

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Fight (Round no.)	: Room	: S1	tage:(	_ Problem no.: _	7
luror: Steve	2 MAGA	Signatura	S.F.C	<b>\</b>	<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:

Final Grade: Reporter

- 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.

<ul> <li>Select each partial grade from each section and write it in the corresponding box.</li> <li>Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.</li> </ul>							
Rep.: Intonesia 5	Opp.: Sweden 5	Rev.: Belanis 5					
Physics ±3  Correct and relevant physics -2  Scientific approach No EXPT.  Validity of conclusions No quant.  Accurate answers	Physics ±3  Correct and relevant physics +1  Scientific approach Validity of conclusions  Accurate answers	Physics ±3  Correct and relevant physics Scientific approach Validity of conclusions Confusions Accurate answers					
Presentation ±1 ○ S □ Clear and understandable/ +0.5 □ Appropriate manner □ Overall impression	Presentation ±1  ☐ Clear and understandable ☐ Appropriate manner / ☐ Overall impression	Presentation ±1  ☐ Clear and understandable  ☐ Appropriate manner ☐ Overall impression					
Reporter ±1	Opponent ±1	Reviewer ±1 -0.5					
☐ Quality of experimental technique(s) - 1 NONE	Response to the reporter's solution	Provides a thorough review of report and discussion					
<ul><li>☐ Structure ✓</li><li>☐ Explanation of formulae and</li></ul>	☐ Shows the strong and weak points of the report	Expresses own opinion about Law 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 Value.					
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		This sheet will be collected by the fight assistant, so we can scan it and					
☐ Novelty of the report		fight assistant, so we do not be asset archive your partial grades – please					
Contribution to the discussion		do not bend					

Scoring Guide		9/	ine	25
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Fight (Round no.): S Room:

## 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 noints

<ul><li>Consider the following suggestions to a</li><li>Select each partial grade from each sec</li></ul>	add to or deduct from the initial 5 points. ction and write it in the corresponding box. o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Mdoneg 6 5	Opp.: Sweden 5	Rev.: Belane 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	Expresses own opinion about topics presented or discussed
symbols	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
<ul> <li>Appropriate models, conformity of dimensions</li> </ul>	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 are archive your partial grades – please
Contribution to the discussion		do not bend
powerful and the control of the cont		grande de descripción de la constante de la co

Final Grade: Reporter

Final Grade: Opponent

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Fight (Round no.): Room: Stage: Problem no.: _	6
Juror: Leya MARTCHENEW Signature:	wso

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

#### 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*.

<ul> <li>Select each partial grade from each sec</li> </ul>	each start with 5 points. add to or deduct from the initial 5 points. stion and write it in the corresponding box. o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Sweden 5	Opp.: Belavers 5	Rev.: Indonesia 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	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	
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

Scoring Guidelin	Fight (Round no.): Roon  100  Juror: Matthias Müller	n: Stage: Problem no.: Signature:
application of appropriate mathematics • re	s, theories and principles of the problem • an easonable experimental technique to gather and in experimental findings to draw suitable conclusions and in the manner	record data (or demonstrate the phenomena if
An opposition should show that: • the opponent challenged the reporter's un appropriate mathematics presented • the op opponent appreciated and highlighted the str	derstanding of the presented concepts, theories ponent critiqued the experimental technique use engths 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	tive summary of the performances the reporter is in the reviewer's personal opinion was in the relativish and demonstrated, where possible, the relativish the reporter and the opponent	evidence (not just superficial observations) •
<ul> <li>The reporter, opponent and reviewer e</li> <li>Consider the following suggestions to c</li> <li>Select each partial grade from each sec</li> </ul>	consists of a partial grade for <i>physics, present</i> ach <i>start with 5 points</i> .  Indeed to or <i>deduct</i> from the initial <i>5 points</i> .  It is the corresponding box.  Indeed to or write it in the corresponding box.  Indeed to or understood or not finding shorted	
Rep.: Sweden 5	Opp.: Belarus 5	Rev.: Judonesia 5
Physics ±3	Physics ±3	Physics ±3
	Correct and relevant physics	☐ Correct and relevant physics
Scientific approach	☐ Scientific approach	☐ Scientific approach
☑ Validity of conclusions	☐ Validity of conclusions	
Accurate answers	□ Accurate answers	☐ Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
Clear and understandable		☐ Clear and understandable
Appropriate manner	☐ Appropriate manner	☐ Appropriate manner
Overall impression	Overall impression	☐ Overall impression

0 Reporter ±1 Opponent ±1 Reviewer ±1 ☐ Quality of experimental Response to the reporter's ☐ Provides a thorough review of technique(s) solution report and discussion ☐ Shows the strong and weak points Expresses own opinion about of the report topics presented or discussed symbols Finds shortcomings or errors in ☐ Relevance of questions to both the the report 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, ☐ Contribution to the discussion video, as appropriate This sheet will be collected by the References, proper citations of ideas and input of others fight assistant, so we can scan it and archive your partial grades - please ☐ Novelty of the report do not bend ☐ Contribution to the discussion

Final Grade: Opponent

Final Grade: Reporter

Final Grade: Reviewer

Scoring Guidelines	S	CO					g		J	U		d	e	SERVICE CONTRACTOR			7	e	5	
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Fight (Round no.): Room:	: <u> </u>	Stage: 2 Problem no.: 6
Juror: Ricay Reaven	Signature	: Melm

#### 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

<ul> <li>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>.</li> <li>The <i>reporter</i>, <i>opponent</i> and <i>reviewer</i> each <i>start with 5 points</i>.</li> </ul>						
	add to or deduct from the initial 5 points.					
<ul> <li>Select each partial grade from each section and write it in the corresponding box.</li> </ul>						
Don't punish missing 'answers' when no questions were posed or not finding shortcomings if there were none to find.						
Rep.: Sander Freds: h Sovall 5	Opp.: Belavus Onder Khudyuh 5	Rev.: Indonaia Samul Wirajoga 5				
Physics $\pm 3$ $+0.5$	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 -0.5	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		reporter and the opponent				
	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 the arrange of please archive your partial grades — please				
Contribution to the discussion		do not bend				

Final Grade: Reporter

Final Grade: Opponent

Scoring Guidelines	Fight (Round no.): 5 Room: 5 Stage: 7 Problem no.: 6  Juror: 8 ORGIET Signature: 9 Problem no.: 6
application of appropriate mathematics • reasonable e appropriate) • linking of theoretical and experimento complex ideas in an effective and understandable mann	and principles of the problem • an explanation of the observed phenomena • an experimental technique to gather and record data (or demonstrate the phenomena if all findings to draw suitable conclusions • an attempt to communicate difficult or ler
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

<ul> <li>The grade for each of the three teams</li> </ul>	consists of a partial grade for <i>physics, presen</i> t	tation and for their specific role.					
• The reporter, opponent and reviewer each start with 5 points.							
	add to or deduct from the initial 5 points.						
Don't nunish missing 'answers' when n	ction and write it in the corresponding box.  o questions were posed or not finding shortco						
bon change answers when i	o questions were posed or not finding shortco	omings if there were none to find.					
Rep.: 5	Opp.: 5	Rev.: 5					
Physics ±3 +1	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 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					
<ul> <li>Appropriate models, conformity of dimensions</li> </ul>	Relevance of the questions						
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 archive your partial grades – please					
☐ Contribution to the discussion		do not bend					
Final Grade: Reporter	Final Grade: Opponent	5-16 1 a · [7-]					

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

Conina	Cuidaliana	Fight (Round no.):
Scoring	Guidelines	wron STELLE 6

ight (	Round no.):	Room:		Stage: _	2 Proble	em no.:
uror.	STELLE	1 MAGA	Ciapatura	. <	T (0a	

Α	report	should	include:
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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

#### A review should show that:

Final Grade: Reporter

- 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

<ul> <li>Select each partial grade from each sec</li> </ul>	tion and write it in the corresponding box.  o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Sweden 5	Opp.: Belarus 5	Rev.: 1200012 5
Physics ±3  Correct and relevant physics	Physics ±3	Physics ±3
S 0 22 A. L.	Correct and relevant physics +1	Correct and relevant physics
Scientific approach	Scientific approach	
validity of conclusions start,	☐ Validity of conclusions	☐ Validity of conclusions
Cood questrate expl.	☐ Accurate answers Stibus	☐ 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 + ○ . C.	☐ Overall impression
Reporter ±1	Opponent ±1	Reviewer ±1 0.5
Quality of experimental 0 = 0.6 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
symbols	Finds shortcomings or errors in the report	Relevance of questions to both the reporter and the opponent
Appropriate models, conformity of dimensions 0.5.	☐ Relevance of the questions	☐ Draws attention to points missed
Slides, on-site experiments, audio, video, as appropriate + 0.5	☐ Contribution to the discussion	by the reporter or the opponent
References, proper citations of ideas and input of others	too much form on spring to non-hamonic oscillar.	This sheet will be collected by the fight assistant, so we can scan it and
☐ Novelty of the report	What about friction at pole	fight assistant, so we com- archive your partial grades – please
☐ Contribution to the discussion	4 WA branches;	do not bend

Final Grade: Opponent

Final Grade: Reviewer

		Fight (Round no.):	Room: S	tage: Prol	b
Scoring	Guidelines	Juror: FRANCIS IGN	WGTSignature:	South Sel	K

A	report	should	incl	ude:
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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

#### A review should show that:

Final Grade: Reporter

- 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.

<ul> <li>Select each partial grade from each sec</li> </ul>	add to or deduct from the initial 5 points. tion and write it in the corresponding box. o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Sweden 5	Opp.: Belarus 5	Rev.: Indonesia 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 by the reporter or the opponent
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		archive your partial grades
☐ Contribution to the discussion		do not bend

Final Grade: Opponent

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		- 0.00	***	100	MP	Same of	~~	(SOOP)	-4000-	9 1		400-00	46990p	as:	200	ADT SO	4000	, ,	950

Final Grade: Reporter

			Stage:	1.0			
Scoring Guidel	A SAN AND AND						
scoring duraci	Juror: Uga	MARTCHENK	Signature:	C.			
	V		<u></u>				
A report should include:  • a presentation of the appropriate con application of appropriate mathematics appropriate) • linking of theoretical an complex ideas in an effective and unders.	<ul> <li>reasonable experimental tech</li> <li>d experimental findings to dra</li> </ul>	i <mark>nique</mark> to <i>gather</i> and <i>re</i>	cord data (or demonstrate	the <i>phenomena</i> if			
An opposition should show that the opponent challenged the reporter	s <i>understanding</i> of the presente	ed concepts, theories as	nd <i>principles</i> • the oppone	nt understood the			
appropriate mathematics presented • th opponent appreciated and highlighted the	e opponent <i>critiqued</i> the <i>experi</i> e s <i>trengths and weaknesses</i> of t	<i>mental technique</i> used the report	and questioned the <i>validit</i>	y of the data • the			
A review should show that:							
<ul> <li>the reviewer succeeded in giving an olimportant aspects (especially the control such personal opinions were informative principles and appropriate mathematics</li> </ul>	<pre>versial ones) • the reviewer's pe non-trivial and demonstrated,</pre>	e <b>rsonal opinion</b> was in e where possible, the rev	evidence ( <i>not</i> just <i>superfic</i> i	ial observations) •			
The grade for each of the three tear The <i>reporter</i> , <i>opponent</i> and <i>review</i> Consider the following <i>suggestions</i> Select each partial grade from each Don't punish missing 'answers' whe	<i>er</i> each <i>start with 5 points</i> . to <i>add</i> to or <i>deduct</i> from the section and <i>write it</i> in the co	initial <i>5 points</i> . rresponding box.					
lep.: Belakus 5	Opp.: Indone	zsia 5	Rev.: Swede	5			
hysics ±3	Physics ±3		Physics ±3	+1			
Correct and relevant physics	☐ Correct and relev	ant physics	☐ Correct and relevant physics				
Scientific approach	Scientific approac	1	☐ Scientific approach				
Validity of conclusions	☐ Validity of conclu	1	☐ Validity of conclu	sions			
Accurate answers	☐ Accurate answers	; I	☐ Accurate answers				

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

<ul> <li>Don't punish missing 'answers' when n</li> </ul>	o questions were posed or not finding shortco	omings if there were none to find.				
Rep.: Belakus 5	Opp.: Indonesia 5	Rev.: Sweden 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	Finds shortcomings or errors in	Relevance of questions to both the				
☐ Appropriate models, conformity	the report	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 fight assistant, so we can scan it and				
☐ Novelty of the report		fight assistant, 30 Me archive your partial grades – piease				
Contribution to the discussion		do not bend				

Final Grade: Opponent

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Rep.: Belarus

Correct and relevant physics

Presentation ±1

☐ Clear and understandable

Contribution to the discussion

Appropriate manner

□ Overall impression

Reporter ±1

Physics ±3

	Fight (Round no.): Roo	om: Stage: Problem no.:					
Scoring Guideli	nes Juror: Matthing Miller	Signature: M. A.					
A report should include:							
application of appropriate mathematics •	reasonable experimental technique to gather and experimental findings to draw suitable conclus	explanation of the observed phenomena • an a record data (or demonstrate the phenomena if ions • an attempt to communicate difficult or					
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, theorie apponent critiqued the experimental technique u	s and <i>principles</i> • the opponent understood the sed and questioned the <i>validity</i> of the <i>data</i> • the					
A review should show that:							
important aspects (especially the controve	ective summary of the performances the reporte rsial ones) • the reviewer's personal opinion was con-trivial and demonstrated, where possible, the ed by the reporter and the opponent	in evidence (not just superficial observations) .					
The <i>reporter, opponent</i> and <i>reviewer</i> Consider the following <i>suggestions</i> to Select each partial grade from each se	s consists of a partial grade for <i>physics, prese</i> . Teach <i>start with 5 points</i> . To add to or <i>deduct</i> from the initial <i>5 points</i> . Tection and <i>write it</i> in the corresponding box. The no questions were posed or not finding short.						
Rep.: Belarus 5	Opp.: Judonesia 5	Rev.: Sweden 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					
Appropriate manner	☐ Appropriate manner	☐ Appropriate manner					
Overall impression	☐ Overall impression	☐ Overall impression					
eporter ±1	Opponent ±1	Reviewer ±1 0					
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  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 are fight assistant as a fight assistant as a fight assistant as a fight assistant as a fight a					
Contribution to the discussion		do not bend					

Final Grade: Reporter

☐ Novelty of the report

Final Grade: Opponent

6

Final Grade: Reviewer

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Fight (Round no.): Room:	$\frac{1}{2}$ Stage: $\frac{3}{2}$ Problem no.: $\frac{12}{2}$
Juror: Ricky Reaver	Signature: May

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

#### A review should show that:

Final Grade: Reporter

- 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.

<ul> <li>Select each partial grade from each sec</li> </ul>	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.: Bellerus 5	Opp.: Indeusie 5	Rev.: Sweder 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 of dimensions	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 fight assistant, so we can scan it and
☐ Novelty of the report		fight assistant, so we define archive your partial grades – please
☐ Contribution to the discussion		do not bend
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Scoring Guidel	ines	Fight (Round no.)				m no.:		
A report should include:  • a presentation of the appropriate concapplication of appropriate mathematics appropriate) • linking of theoretical and complex ideas in an effective and understand	reasonable <b>e</b> dexperimenta	xperimental technique of the second s	ue to <i>gather</i> and i	record data (or den	nonstrate the phe	nomena if		
An opposition should show tha • the opponent challenged the reporter's appropriate mathematics presented • the opponent appreciated and highlighted the	understandin opponent crit	tiqued the experimen	i <b>tal technique</b> use	and <i>principles</i> • th d and questioned t	e opponent unde he <i>validity</i> of the	rstood the <b>data •</b> the		
A review should show that: • the reviewer succeeded in giving an obimportant aspects (especially the controv such personal opinions were informative, principles and appropriate mathematics under the control of the co	<i>ersial</i> ones) <b>•</b> <i>non-trivial</i> and	the reviewer's <i>perso</i> i d demonstrated, whe	<i>nal opinion</i> was in re possible, the re	n evidence (not just	superficial obser	vations) e		
<ul> <li>The grade for each of the three team</li> <li>The reporter, opponent and reviewe</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each so</li> <li>Don't punish missing 'answers' when</li> </ul>	er each start to add to or a section and พ	with 5 points. Heduct from the initurite it in the corres	ial <i>5 points</i> . ponding box.					
Rep.: Bil 5	Орр.	TA	5	Rev.:	Sw	5		
Physics ±3	Physic	cs ±3	1	Physics ±3				
Correct and relevant physics	T Cor	rect and relevant	physics	Correct a	nd relevant phy	/sics		
Scientific approach	☐ Scie	entific approach		☐ Scientific				
☐ Validity of conclusions		idity of conclusion	ıs	☐ Validity o	f conclusions			
☐ Accurate answers	L Acc	urate answers	posessionissionissionissionissionissionis	☐ Accurate	answers			
Presentation ±1	Prese	ntation ±1	0.4	Presentation	on ±1	0		
Clear and understandable	1 E	ar and understand		1 1	understandabl	е		
<ul><li>□ Appropriate manner</li><li>□ Overall impression</li></ul>	وسأوس	ropriate manner		Appropria				
Overall impression	□ Ove	rall impression	granounina	│	pression			
Reporter ±1	Орро	nent ±1	0	Reviewer ±	:1			
Quality of experimental technique(s)	☐ Res	ponse to the repo	rter's	Provides a report and	thorough revi	ew of		
Structure	4 Sho	ws the strong and	weak points	Expresses own opinion about				
Explanation of formulae and symbols	Find	s shortcomings o	Relevance	sented or discu of auestions to	issed a both the			
Appropriate models, conformity of dimensions	ì	report vance of the que	stions	Draws atte	na the oppone ention to point:	nt s missed		
Slides, on-site experiments, audio video, as appropriate		Draws attention to point by the reporter or the open tribution to the discussion			ponent			
References, proper citations of ideas and input of others					will be collected ant, so we can see	22.1		
Novelty of the report				fight assist archive yo	ant, so we can so ur partial grades	– please		

Final Grade: Opponent

 $\Box$  Contribution to the discussion

Final Grade: Reporter

Final Grade: Reviewer

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

do not bend

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Fight (Round no.): 5 Room: Stage: Problem no.: 12 Juror: STEVE ADAMS Signature: S.F. 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

<ul> <li>The reporter, opponent and reviewer e</li> <li>Consider the following suggestions to a</li> <li>Select each partial grade from each sec</li> </ul>	consists of a partial grade for <i>physics, present</i> each <i>start with 5 points</i> .  Find to or <i>deduct</i> from the initial <i>5 points</i> .  It tion and <i>write it</i> in the corresponding box.  It oquestions were posed or not finding shortcomes.	
Rep.: Belarus 5	Opp.: Intonesia 5	Rev.: Sweden 5
Physics ±3	Physics ±3	Physics ±3
☐ Correct and relevant physics ☐ Scientific approach ☐ Did not ☐ Validity of conclusions to rop ☐ Accurate answers	<ul><li>☐ Correct and relevant physics</li><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li><li>☐ Accurate answers</li></ul>	<ul> <li>□ Correct and relevant physics</li> <li>□ Scientific approach</li> <li>□ Validity of conclusions</li> <li>□ Accurate answers</li> </ul>
Presentation ±1	Presentation ±1	Presentation ±1
☐ Clear and understandable ☐ Appropriate manner Rushid Equition ☐ Overall impression	☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	<ul><li>☐ Clear and understandable</li><li>☐ Appropriate manner</li><li>☐ Overall impression</li></ul>
Reporter ±1	Opponent ±1	Reviewer ±1
Quality of experimental -0.5 technique(s)	Response to the reporter's solution	Provides a thorough review of report and discussion
Structure minimum time.	Shows the strong and weak points of the report	Expresses own opinion about According 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 archive your partial grades – please
☐ Contribution to the discussion		do not bend
Final Grade: Reporter	Final Grade: Opponent Revised	Final Grade: Reviewer after IOC feedback and approved by EC on 2011-11-03

		Rejected: 16,17			
	Fight (Round no.): S Roon	n: Stage: Problem no.:			
Scoring Guideling	1es Juror: France Eure				
	Juliot.	Signature.			
application of appropriate mathematics • re	ts, theories and principles of the problem • an e easonable experimental technique to gather and a xperimental 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 oponent 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	tive summary of the performances the reporter sial ones) • the reviewer's personal opinion was in n-trivial and demonstrated, where possible, the red by the reporter and the opponent	n evidence (not just superficial observations) •			
<ul> <li>The reporter, opponent and reviewer</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each see</li> </ul>	consists of a partial grade for <i>physics</i> , <i>present</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.  o questions were posed or not finding shorter				
Rep.: <u>Belanue</u> 5	Opp.: Indoneis 5	Rev.: Sweden 5			
Physics ±3	Physics ±3	Physics ±3			
Correct and relevant physics	☐ Correct and relevant physics	☐ Correct and relevant physics			
<ul><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li></ul>	☐ Scientific approach ☐ Validity of conclusions	☐ Scientific approach ☐ Validity of conclusions			
☐ Accurate answers	☐ Accurate answers	Accurate answers			
Presentation ±1	Presentation ±1	Presentation ±1			
☐ Clear and understandable	☐ Clear and understandable	☐ Clear and understandable			
<ul><li>☐ Appropriate manner</li><li>☐ Overall impression</li></ul>	☐ Appropriate manner ☐ Overall impression	Appropriate manner			
		Overall impression			
Reporter ±1	Opponent ±1	Reviewer ±1 +			
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	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		archive your partial grades			
☐ Contribution to the discussion		do not bend			
Final Grade: Reporter	Final Grade: Opponent	Final Grade: Reviewer after IOC feedback and approved by EC on 2011-11-03			