	Fight (Round no.): Room:	Stage:' 📗 🖡
Scoring Guidelines	Juror: Kim Freimann Signatur	
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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.

<ul> <li>Consider the following suggestions to add to or deduct from the initial 5 points.</li> <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.: Nigena 5	Opp.: Nother auds 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	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	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		right assistant, so we can archive your partial grades – please					
☐ Contribution to the discussion		do not bend					
	2	Control of the Contro					

Final Grade: Opponent

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Scoring Guidelin	1es  Juror: Davov Stoccic	n: Stage: Problem no.:
application of appropriate mathematics • re	ts, theories and principles of the problem • an e easonable experimental technique to gather and r 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 street.	oderstanding of the presented concepts, theories a Deponent critiqued the experimental technique use Trengths 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
A review should show that:		
important aspects (especially the controvers	tive summary of the performances the reporter a ial 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 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> .  Ition and <i>write it</i> in the corresponding box.  o questions were posed or not finding shortco	
Rep.: Nigeria 5	Opp.: Medhelomb 5	Rev.: Kerya 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
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  Explanation of formulae and	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

Final Grade: Reporter

Final Grade: Opponent

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<b>6</b>	Page 1		50	#	1	9	P	Á	-	ø	Ø	廖		1	F	B	2	4	100	
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-	-	-days	200	~	_			•	SOMEON .	4500	-10	228	All Sand	40000	88	200	#	8	(Care)	

Fight (Round r	10.):	Room: _	St	tage: <u>1</u>	Problem	n no.: <u>6</u>
Juror: Necet	as Che	velile s	Signature:	nil	(1 A A	and a second

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

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- The 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.: Nigeria 5	Opp.: Netherlands 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	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	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 – piease					
Contribution to the discussion		do not bend					

Final Grade: Opponent

Scoring Guidelin	Fight (Round no.):	Room: H Stage: Problem no.: Signature: Y VUUUU					
application of appropriate mathematics • re	asonable <b>experimental technique</b> to <b>xperimental findings</b> to draw <b>suita</b>	roblem • an explanation of the observed phenomena • o gather and record data (or demonstrate the phenomenable conclusions • an attempt to communicate difficult	a 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	<i>ial</i> ones) • the reviewer's <i>personal c</i> n-trivial and demonstrated, where p	the <b>reporter and opponent</b> • the reviewer appreciated to <b>opinion</b> was in evidence ( <b>not</b> just superficial observations cossible, the reviewer's understanding of concepts, theories	cle				
<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>	each s <b>tart with 5 points</b> . O <b>dd</b> to or <b>deduct</b> from the initial 5 tion and write it in the correspon						
<b>Rep.:</b> 5	Opp.:	- 5 <b>Rev.:</b> 5					
Physics ±3  Correct and relevant physics	Physics ±3  Correct and relevant physics	Physics ±3  Correct and relevant physics	> /				

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) extstyle extProvides a thorough review of report and discussion solution i☑ Structure Shows the strong and weak points Expresses own opinion about of the report topics presented or discussed ∕☑∕ Explanation of formulae and symbols Finds shortcomings or errors in Relevance of questions to both the reporter and the opponent the report Appropriate models, conformity of dimensions  $\mathbb{Q}$  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 fight assistant, so we can scan it and ideas and input of others archive your partial grades - please ☐ Novelty of the report do not bend ☐ Contribution to the discussion

Final Grade: Opponent

△ Scientific approach

☐ Accurate answers

(C) Validity of conclusions

Scientific approach

Accurate answers

Final Grade: Reviewer

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

∇ Validity of conclusions

Scientific approach

Accurate answers

Final Grade: Reporter

Validity of conclusions

		: <u>221</u> Stage: <u>1</u> Problem no.: <u>6</u>
Scoring Guidelir	1es Juror: Tan Jay	Signature:
A report chould include:		1
A report should include:  • a presentation of the appropriate concept	is, theories and principles of the problem • an e	volunation of the observed phanomena and
application of appropriate mathematics • re	asonable <b>experimental technique</b> to <i>gather</i> and <i>r</i> «perimental findings to draw suitable conclusion	ecord data (or demonstrate the phenomena if
An opposition should show that:		
<ul> <li>the opponent challenged the reporter's un appropriate mathematics presented • the op opponent appreciated and highlighted the str</li> </ul>	derstanding of the presented concepts, theories a ponent critiqued the experimental technique used rengths 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
A review should show that:		
important aspects (especially the controvers	tive summary of the performances the reporter a ial ones) • the reviewer's personal opinion was in n-trivial and demonstrated, where possible, the re I by the reporter and the opponent	evidence (not just superficial observations) •
<ul> <li>The reporter, opponent and reviewer expensions</li> <li>Consider the following suggestions to a 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> .  tion and <i>write it</i> in the corresponding box.  to questions were posed or not finding shortco	
<b>Rep.:</b> 5	<b>Opp.:</b> 5	<b>Rev.:</b> 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
<ul><li>Quality of experimental technique(s)</li></ul>	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	reporter and the opponent
Slides, on-site experiments, audio	☐ Relevance of the questions	Draws attention to points missed by the reporter or the opponent

Final Grade: Opponent

☐ Contribution to the discussion

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

References, proper citations of ideas and input of others

 $\square$  Contribution to the discussion

☐ Novelty of the report

Final Grade: Reporter

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This sheet will be collected by the

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

	Fight (Round no.):	n: H Stage: 1 Problem no.:			
Scoring Guideling	1es Juror: DEINLEIN				
application of appropriate mathematics • re	ts, theories and principles of the problem • an especial and a seasonable experimental technique to gather and a suitable conclusion and a suitable	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 state.	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 data of the data of the			
important aspects (especially the controvers	tive summary of the performances the reporter ial 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 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, 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. o questions were posed or not finding shortc				
Rep.: <u>Vigerior</u> 5	Opp.: Natherlands	Rev.: Kenya 5			
Physics ±3	Physics ±3	Physics ±3 $-2$			
Correct and relevant physics Scientific approach Validity of conclusions Accurate answers	<ul> <li>□ Correct and relevant physics</li> <li>□ Scientific approach</li> <li>□ Validity of conclusions</li> <li>□ Accurate answers</li> </ul>	☐ 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			
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

☐ Contribution to the discussion

☐ Novelty of the report

Final Grade: Opponent

2

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 Guidelii	Fight (Round no.): 4 Room  Nor: Kim Freimann	n: H Stage: Problem no.:
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 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 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 reviewer's personal opinion was in the reviewer and the opponent	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> t each <i>start with 5 points</i> . <i>add</i> to or <i>deduct</i> from the initial <i>5 points</i> . ction and <i>write it</i> in the corresponding box. so questions were posed or not finding shortco	
Rep.: Metherlands 5	Opp.: Kenya 5	Rev.: Nigeria 5
Physics ±3 $-2$	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	L Accurate answers
Presentation ±1	Presentation ±1	Presentation ±1
Clear and understandable	Elear 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
El 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
1 Novelty of the remark		fight assistant, so we contain 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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archive your partial grades - please

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		H	9	Ø	8	9	G	Ø	M	Service Services	8	B			

Fight (Rou	ınd no.):	4	_ Room:	H	Stage:	2 Pr	oblem	no.:	10
Juror:	levor_	Sloc	9we	Signature	:	A)	10	læ	6

11.

# A report should include:

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

# An opposition should show that:

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

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- The 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 write it in the corresponding box.  o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Wetherlands 5	Opp.: Kenya 5	Rev.: Meia 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	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

Final Grade: Opponent

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

Scoring Guidelines	Sco	rina	Gui	ide	lin	es
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Fight (Round no.): _	Room:	Stage:	<u>2</u> Problem no.: <u> </u>
	· ·		The state of the s
Juror: Nicolan	Chevelin	Signature:	alain?

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

А	rep	ort	sho	uld	incl	lud	e:
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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

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- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.

	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.: Netherlands 5	Opp.: Kenya 5	Rev.: Nigeria 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	Presentation ±1 ☐ Clear and understandable	Presentation ±1  ☐ Clear and understandable
☐ Appropriate manner ☐ Overall impression	☐ Appropriate manner ☐ Overall impression	☐ Appropriate manner ☐ Overall impression
Reporter ±1	Opponent ±1 + \	Reviewer ±1  Provides a thorough review of
technique(s)  Structure  Explanation of formulae and	solution  Shows the strong and weak points of the report	report and discussion  Expresses own opinion about topics presented or discussed
symbols  Appropriate models, conformity of dimensions	☐ Finds shortcomings or errors in the report ☐ Relevance of the questions	Relevance of questions to both the 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  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	Final Grade: Reviewer

Scoring Guidelin		n: H Stage: 2 Problem no.: 1
application of appropriate mathematics • re	ts, theories and principles of the problem • an a easonable experimental technique to gather and easonable experimental findings to draw suitable conclusionable manner	record data (or demonstrate the phenomena if
<ul> <li>the opponent challenged the reporter's unappropriate mathematics presented • the opponent appreciated and highlighted the state</li> </ul>	nderstanding of the presented concepts, theories opponent 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	tive summary of the performances the reporter ial ones) • the reviewer's personal opinion was in n-trivial and demonstrated, where possible, the red d by the reporter and the opponent	n evidence (not just superficial observations) •
<ul> <li>The reporter, opponent and reviewer of the Consider the following suggestions to a Select each partial grade from each second</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.  o questions were posed or not finding shortc	
Rep.:5	Opp.:5	Rev.:5
Physics ±3  Correct and relevant physics	Physics ±3  Correct and relevant physics	Physics ±3  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 ☑ 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	Contribution to the discussion	by the reporter or the opponent

Contribution to the discussion

fight assistant, so we can scan it and archive your partial grades - please do not bend

Final Grade: Reporter Final Grade: Opponent

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: Reviewer

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

This sheet will be collected by the

Scoring Guidelines	S	CO				a	G	u	OF CHANGE OF THE PERSON OF THE	d	e	Contraction of the last of the				e	5	
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Fight (Ro	und no.):	4_	Room:	221	Stage:	2	Problem no.:	10
Juror:	Tan	Ju		Signatur	e: <u> </u>	37		

• 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.

	ction and write it in the corresponding box. To questions were posed or not finding shortco	omings if there were none to find.
Rep.: Netherlands 5	Opp.: Kenya 5	Rev.: 1499 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 -0.5	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
☐ Quality of experimental technique(s) ☐ Structure	Response to the reporter's solution  Shows the strong and weak points	Provides a thorough review of report and discussion
technique(s)  ☐ Structure  ☐ Explanation of formulae and	Response to the reporter's	Provides a thorough review of report and discussion
technique(s)  ☐ Structure  ☐ Explanation of formulae and symbols	Response to the reporter's solution  Shows the strong and weak points	Provides a thorough review of report and discussion  Expresses own opinion about
technique(s)  ☐ 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	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
Structure      Explanation of formulae and symbols  Appropriate models, conformity	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
<ul> <li>technique(s)</li> <li>Structure</li> <li>Explanation of formulae and symbols</li> <li>Appropriate models, conformity of dimensions</li> <li>Slides, on-site experiments, audio.</li> </ul>	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
<ul> <li>technique(s)</li> <li>Structure</li> <li>Explanation of formulae and symbols</li> <li>Appropriate models, conformity of dimensions</li> <li>Slides, on-site experiments, audio, video, as appropriate</li> </ul>	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
<ul> <li>Structure</li> <li>Explanation of formulae and symbols</li> <li>Appropriate models, conformity of dimensions</li> <li>Slides, on-site experiments, audio, video, as appropriate</li> <li>References, proper citations of ideas and input of others</li> </ul>	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

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

Scoring Guideline	25
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Fight (Round no.):	Room:		Stage:	2	Problem no.: 10
luror DEINIEL	()	Signature	٠.	Do	fi.

• 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

<ul><li>Select each partial grade from each sec</li><li>Don't punish missing 'answers' when n</li></ul>	ction and write it in the corresponding box. To questions were posed or not finding shorter	omings if there were none to find.
Rep.: Nelle land 5	Opp.: Kenga 5	Rev.: Digeno 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	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
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Final Grade: Opponent

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

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Fight (Round no.):	H Room:		tage:	Problem no	3
Juror: Kim	Reimann	Signature:	4		

• 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>The reporter, opponent and reviewer expenses</li> </ul>	each start with 5 points.	
	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.	
<ul> <li>Don't punish missing 'answers' when no</li> </ul>	o questions were posed or not finding shortco	omings if there were none to find.
Rep.: Kenya 5	Opp.: Nigeria 5	Rev.: Netherlands 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
	E 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
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 com- archive your partial grades – piease
Contribution to the discussion		do not bend

Final Grade: Opponent

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Scoring Guidelin	Fight (Round no.): 4 Roor  Note: 100 Stoles  Property Sto	n: 1 Stage: 3 Problem no.: 3  Signature: 1 Holes
application of appropriate mathematics • re-	perimental findings to draw suitable conclusion	record 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 ponent critiqued the experimental technique use engths 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 controversi	ive summary of the performances the reporter ial ones) • the reviewer's personal opinion was in trivial and demonstrated, where possible, the relative to the reporter and the opponent	n evidence (not just superficial observations) •
The <i>reporter</i> , <i>opponent</i> and <i>reviewer</i> e Consider the following <i>suggestions</i> to a Select each partial grade from each sect	consists of a partial grade for <i>physics, presen</i> ach <i>start with 5 points</i> .  add to or <i>deduct</i> from the initial <i>5 points</i> .  tion and <i>write it</i> in the corresponding box.  o questions were posed or not finding shortc	
Rep.: Kenya 5	Opp.: Vigeria 5	Rev.: Neffelend 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
Ualidity of conclusions	☐ Validity of conclusions	☐ Validity of conclusions
Accurate answers	☐ Accurate answers	☐ Accurate answers
resentation ±1	Presentation ±1	Presentation ±1
1 1 10 3 5 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0		III mar a second

# ☐ Accurate answers

☐ Scientific approach

☐ Validity of conclusions

Physics ±3

# Presentation ±1 ☐ Clear and understandable

☐ Appropriate manner

Overall impression

# Reporter ±1

Quality of experimental technique(s)

☐ Structure

Explanation of formulae and symbols

☐ Appropriate models, conformity of dimensions

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

References, proper citations of ideas and input of others

☐ Novelty of the report

Final Grade: Reporter

☐ Contribution to the discussion

# Pre

Clear and understandable

☐ Appropriate manner

☐ Overall impression

# Opponent ±1

☐ Response to the reporter's solution

☐ Shows the strong and weak points of the report

Finds shortcomings or errors in the report

☐ Relevance of the questions

☐ Contribution to the discussion

	Looner Land
	Clear and understandable
П	Annranriate manner

Appropriate manner

☐ Overall impression

# Reviewer ±1



Expresses own opinion about topics presented or discussed

Relevance of questions to both the reporter and the opponent

Draws attention to points missed by the reporter or the opponent

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do not bend



Final Grade: Opponent





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Fight (Round	no.):	_ Room:	1 Stage:		m no.: 3
Juror: _ N	eas Chev	<u>llin</u> Sigr	ature:	all	

• 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.

<ul> <li>Select each partial grade from each sec</li> <li>Don't punish missing 'answers' when no</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.: Venya 5	Opp.: Nigeria 5	Rev.: Netherlands 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	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

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Fight (Round no.): Roo	m: <u> </u>	Stage: 3	Problem no.:	3
Juror: X. Vaterlaus	Signatur	e: <u>V· V</u> (	Mulaus	<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*.
- 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.
<b>Rep.:</b> 5	<b>Opp.:</b> 5	<b>Rev.:</b> 5
Physics ±3  Correct and relevant physics  Scientific approach  Validity of conclusions	Physics ±3  Correct and relevant physics  Scientific approach	Physics ±3  Correct and relevant physics  Scientific approach
Accurate answers	Validity of conclusions  Accurate answers	✓ 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	Opponent ±1	Reviewer ±1
Quality of experimental technique(s)  Structure	Response to the reporter's solution	Provides a thorough review of report and discussion
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
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		do not bend

Final Grade: Opponent

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Fight (Round no.):	_ Room: St	age: <u>3</u>	_ Problem no.:	3
Juror: Tan Jun	Signature:	53		

• 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.

	ction and write it in the corresponding box. To questions were posed or not finding shortco	omings if there were none to find.
Rep.: Kenya 5	Opp.: Nigera 5	Rev.: Netherlands 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 -0.5
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	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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Final Grade: Reporter

A report should include:  • a presentation of the appropriate concepts, theories and principles of the problem • an explanation of the observed phenomena application of appropriate mathematics • reasonable experimental technique to gather and record data (or demonstrate the phenomena appropriate) • linking of theoretical and experimental findings to draw suitable conclusions • an attempt to communicate difficulty 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 understand appropriate mathematics presented • the opponent critiqued the experimental technique used and questioned the validity of the data opponent appreciated and highlighted the strengths and weaknesses of the report	nena if
• the opponent <i>challenged</i> the <i>reporter's understanding</i> of the presented <i>concepts, theories</i> and <i>principles</i> • the opponent understood <i>appropriate mathematics</i> presented • the opponent <i>critiqued</i> the <i>experimental technique</i> used and questioned the <i>validity</i> of the <i>data</i> opponent appreciated and highlighted the <i>strengths and weaknesses</i> of the report	
A voyious should about the A	od the
A review should show that:	
• the reviewer succeeded in giving an <i>objective summary</i> of the performances the <i>reporter</i> and <i>opponent</i> • the reviewer appreciate <i>important aspects</i> (especially the <i>controversial</i> ones) • the reviewer's <i>personal opinion</i> was in evidence ( <i>not</i> just <i>superficial observation</i> such personal opinions were <i>informative</i> , <i>non-trivial</i> and demonstrated, where possible, the reviewer's <i>understanding</i> of <i>concepts</i> , the <i>principles and appropriate mathematics</i> used by the reporter and the opponent	ions) e

- The grade for each
- The reporter, op
- Consider the follo

	ction and <i>write it</i> in the corresponding box. To questions were posed or not finding shortc	omings if there were none to find.
Rep.: Konya 5	Opp.: Nigeria 5	Rev.: poleen lands 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  ☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression	Presentation ±1  ☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression
Reporter ±1 -0(5	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	Shows the strong and weak points of the report	Expresses own opinion about topics presented or discussed
symbols  Appropriate models, conformity of dimensions	Finds shortcomings or errors in the report  Relevance of the questions	Relevance of questions to both the 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		archive your partial Brades
Contribution to the discussion		do not bend

Final Grade: Opponent