| Scoring Guidelines                                    | Fight (Round no.): 5 Room: G Stage: Problem no.:   |
|---|--|
| A report should include:                              |  |
| application of appropriate mathematics • reasonable e | 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 let |

# 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.<br>add to or deduct from the initial 5 points.<br>ction and write it in the corresponding box.<br>o questions were posed or not finding shortco | omings if there were none to find.   |
|---|---|--|
| Rep.: Russia 5  | Opp.: Thai land 5   | Rev.: Poland 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   |
| Appropriate models, conformity of dimensions                | ☐ Relevance of the questions  | reporter and the opponent  Draws attention to points missed                |
| Slides, on-site experiments, audio, video, as appropriate   | ☐ Contribution to the discussion  | by the reporter or the opponent  |
| References, proper citations of ideas and input of others   |   | This sheet will be collected by the fight assistant, so we can scan it and |
| Novelty of the report                                       |   | fight assistant, so we or<br>archive your partial grades — please          |
| Contribution to the discussion                              |   | do not bend  |
| 0   |   |  |

Final Grade: Opponent Final Grade: Reporter

| Convince Constali  | Fight (R  | lound no.):                                 | 5 Roor                          | m: G Stage: Pro   | blem no.:   |
|--|---|---|---------------------------------|---|---|
| Scoring Guidelin   | nes Juror:  | Halman n                                    | Mein                            | Signature:  | <b>M</b>  |
| A report should include:  • a presentation of the appropriate concepapplication of appropriate mathematics • rappropriate) • linking of theoretical and ecomplex ideas in an effective and understant  | reasonable <mark>experiment</mark><br>experimental findings           | tal technique to                            | gather and                      | 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 statement of the sta | <i>nderstanding</i> of the pr<br>pponent <i>critiqued</i> the         | experimental t                              | t <b>echnique</b> use           | and <i>principles</i> • the opponent used and questioned the <i>validity</i> of   | nderstood the<br>the <i>data</i> • the  |
| A review should show that: • the reviewer succeeded in giving an object important aspects (especially the controver, such personal opinions were informative, no principles and appropriate mathematics use  | <i>sial</i> ones) • the review<br>• <i>n-trivial</i> and demonst      | ver's <i>personal c</i><br>trated, where p  | opinion was i                   | n evidence (not just superficial of   | hservations) a  |
| <ul> <li>The grade for each of the three teams</li> <li>The reporter, opponent and reviewer</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each se</li> <li>Don't punish missing 'answers' when re</li> </ul>  | each start with 5 po<br>add to or deduct fro<br>ction and write it in | oints.<br>Om the initial 5<br>the correspor | 5 <i>points</i> .<br>nding box. |   |   |
| Rep.: Russia 5   | Opp.: Tha   | . /   | 5                               | Rev.: Poland  | _ 5   |
| Physics ±3   | Physics ±3  |   |                                 | Physics ±3  |   |
| Correct and relevant physics   | ☐ Correct and   | relevant ph                                 | ysics                           | ☐ Correct and relevant  | physics   |
| Scientific approach  | ☐ Scientific ap   |   |                                 | ☐ Scientific approach   |   |
| <ul><li>☐ Validity of conclusions</li><li>☐ Accurate answers</li></ul>   | ☐ Validity of colling Accurate an                                     |   |                                 | ☐ Validity of conclusion☐ Accurate answers  | S   |
| Presentation $\pm 1$ $-0.5$  | Presentation  | 1 ±1  |                                 | Presentation ±1   | provide the first propagation of the last state |
| Clear and understandable   | ☐ Clear and ur  | nderstandab                                 | le                              | ☐ Clear and understand  | able  |
| Appropriate manner   | ☐ Appropriate   |   |                                 | ☐ Appropriate manner  |   |
| Overall impression   | Overall impr  | ession                                      |                                 | ☐ Overall impression  |   |
| Reporter ±1  | Opponent ±1   | ***************************************     |                                 | Reviewer ±1   | 41  |
| <ul><li>Quality of experimental technique(s)</li></ul>   | Response to solution  | the reporte                                 | r's                             | Provides a thorough r report and discussion   | eview of  |
| Structure  | Shows the st  | trong and we                                | eak points                      | Expresses own opinion topics presented or di  | n about   |
| Li Explanation of formulae and symbols   | Finds shortco   | omings or er                                | rors in                         | Relevance of question reporter and the opport   | ıs to both tl   |
| <ul><li>Appropriate models, conformity of dimensions</li></ul>   | ☐ Relevance of  | f the questio                               | ns                              | ☐ Draws attention to po   |   |
| Slides, on-site experiments, audio, video, as appropriate  | ☐ Contribution  |   |                                 | by the reporter or the  | opponent  |
| References, proper citations of ideas and input of others  |   |   |                                 | This sheet will be collection of the collection | 1 355.  |
| Novelty of the report  |   |   |                                 | fight assistant, so we can<br>archive your partial grad   | jes – please  |
| Contribution to the discussion   | nonclass & Aug  |   |                                 | do not bend   |   |

Final Grade: Opponent

Final Grade: Reporter

|   |  |  |  | A                                      |
|---|--|--|--|--|
| Capring Ciridali  | Fight (Round no  | .): <u>5</u> Roor  | m: G Stage: Pro  | oblem no.:                             |
| Scoring Guideling   | 1es Juror: Franci  | Simon  | _ Signature:   | 1 -                                    |
|   | J  |  |  |  |
| A report should include:  |  |  | 1  |  |
| • a presentation of the appropriate concep<br>application of appropriate mathematics • re<br>appropriate) • linking of theoretical and e<br>complex ideas in an effective and understan   | easonable <b>experimental techni</b><br>e <b>xperimental findings</b> to draw  | que to <i>gather</i> and   | record data (or demonstrate the  | phenomena if                           |
| An opposition should show that:   |  |  | The property of the state of th |  |
| <ul> <li>the opponent challenged the reporter's unappropriate mathematics presented • the opponent appreciated and highlighted the st</li> </ul>  | pponent <i>critiqued</i> the <i>experime</i>   | e <b>ntal technique</b> use                                      | and <i>principles</i> • the opponent u<br>ed and questioned the <i>validity</i> of   | nderstood the<br>the <i>data</i> • the |
| A review should show that:  |  |  |  |  |
| <ul> <li>the reviewer succeeded in giving an object<br/>important aspects (especially the controvers<br/>such personal opinions were informative, no<br/>principles and appropriate mathematics used</li> </ul>                                       | sial ones) • the reviewer's <i>pers</i><br>In-trivial and demonstrated, wh   | <i>onal opinion</i> was i<br>nere possible, the r                | n evidence ( <b>not</b> just superficial o   | hservations) .                         |
| <ul> <li>The grade for each of the three teams</li> <li>The reporter, opponent and reviewer</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each sec</li> <li>Don't punish missing 'answers' when n</li> </ul> | each start with 5 points.<br>add to or deduct from the in<br>ction and write it in the corre<br>to questions were posed or r | nitial <b>5 points</b> .<br>esponding box.<br>not finding shortc |  |  |
| Rep.: Russia<br>Vya ches lav - 5  | Opp.: Thailance  | 5  | Rev.: Poland   | 5                                      |
| Physics ±3  | Physics ±3   | 41   | Physics ±3   |  |
| ☐ Correct and relevant physics  | ☐ Correct and relevar  | nt physics   | ☐ Correct and relevant   | physics                                |
| ☐ Scientific approach   | ☐ Scientific approach  |  | ☐ Scientific approach  | •                                      |
| ☐ Validity of conclusions ☐ Accurate answers  | ☐ Validity of conclusion   | ons  | ☐ Validity of conclusion   | ıs                                     |
| Accurate answers  | ☐ Accurate answers   |  | Accurate answers   |  |
| Presentation ±1   | Presentation ±1  |  | Presentation ±1  | 7                                      |
| Clear and understandable  | ☐ Clear and understar  | ndable   | ☐ Clear and understand   | lable                                  |
| ☐ Appropriate manner  | Appropriate manne  | r  | Appropriate manner   |  |
| U Overall impression  | Overall impression   | gradiointiinimimiminintynynynynynynynynynynyn                    | Overall impression   |  |
| Reporter ±1   | Opponent ±1  | 75   | Reviewer ±1  | $\partial$                             |
| Quality of experimental technique(s)  | Response to the rep  | oorter's   | Provides a thorough report and discussion  | review of                              |
| <ul><li>☐ Structure</li><li>☐ Explanation of formulae and</li></ul>   | Shows the strong ar of the report  | nd weak points   | Expresses own opinio topics presented or d   | n about<br>iscussed                    |
| symbols   | Finds shortcomings the report  | or errors in   | Relevance of question reporter and the opport  | ns to both the                         |
| Appropriate models, conformity of dimensions  | Relevance of the que   | estions  | ☐ Draws attention to po  | ints 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 collecting fight assistant, so we can   | 1 200.                                 |
| Novelty of the report   |  |  | archive your partial gird  | des – please                           |
| Contribution to the discussion  |  |  | do not bend  |  |
| Final Grade: Reporter 4   | Final Grade: Opponent  | Revised  | Final Grade: Reviewer<br>after IOC feedback and approved by E  | C on 2011-11-03                        |

| •       |            | Fight (Round no.): _ | Roo     | m: <u> </u> | Stage:ˈ | Prob |
|---------|------------|----------------------|---------|-------------|---------|------|
| Scoring | Guidelines | Juror: Matties       | > Aulex | Signature   | :       | MA.  |

| Δ | report | should | include: |
|---|--------|--------|----------|

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

# An opposition should show that:

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

# A review should show that:

- the reviewer succeeded in giving an *objective summary* of the performances the *reporter* and *opponent* the reviewer appreciated the *important aspects* (especially the *controversial* ones) the reviewer's *personal opinion* was in evidence (*not* just *superficial observations*) such personal opinions were *informative*, *non-trivial* and demonstrated, where possible, the reviewer's *understanding* of *concepts*, *theories*, *principles* and *appropriate mathematics* used by the reporter and the opponent
- The grade for each of the three teams consists of a partial grade for physics, presentation and for their specific role.
- The reporter, opponent and reviewer each start with 5 points.
- Consider the following suggestions to add to or deduct from the initial 5 points.

| <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.: Russia 5  | Opp.: Thai land 5   | Rev.: Poland 5  |  |  |  |  |  |  |
| Physics ±3  ☐ ← I, ☐ ☐ ☐ ← I, ☐ ☐ ☐ ← I, ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐  | Physics ±3  ☐ Correct and relevant physics  | Physics ±3 +0,5   ☐ Correct and relevant physics                                      |  |  |  |  |  |  |
| <ul><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li><li>☐ Accurate answers</li></ul>  | ☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers                    | ☐ 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 -\delta,\S  | 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 ☐ 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 grades   |  |  |  |  |  |  |
| Contribution to the discussion  |   | do not bend   |  |  |  |  |  |  |

Final Grade: Reporter Final Grade: Opponent

Final Grade: Reviewer

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

| Cooring Cariolalia   | Fight (Round no.): 5 Room  | m: <u>G</u> Stage: Problem no.:  |
|--|--|--|
| Scoring Guidelin   | 1es Juror: Tan Juy   | _ Signature:   |
| application of appropriate mathematics • re  | ts, theories and principles of the problem • an easonable experimental technique to gather and experimental findings to draw suitable conclusionable manner                          | record data (or demonstrate the phenomena if   |
| An opposition should show that: • the opponent challenged the reporter's unappropriate mathematics presented • the opponent appreciated and highlighted the st   | nderstanding of the presented concepts, theories<br>pponent critiqued the experimental technique use<br>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 sial ones) • the reviewer's personal opinion was in-trivial and demonstrated, where possible, the red by the reporter and the opponent | n evidence ( <i>not</i> just <i>superficial observations</i> ) a   |
| <ul> <li>The reporter, opponent and reviewer</li> <li>Consider the following suggestions to</li> <li>Select each partial grade from each sec</li> <li>Don't punish missing 'answers' when n</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 shorto  | omings if there were none to find.   |
| Rep.: Russia 5   | Opp.: That land 5  | Rev.: Poland 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  | 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 the report  | 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>  | 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: Opponent

Final Grade: Reporter

| Convince Cividalina      | Fight (Round no.): Room | : Stage:/    | _ Problem no.: |
|--------------------------|-------------------------|--------------|----------------|
| Scoring Guidelines       | Juror: Xuewei Cao       | Signature: X | Cos            |
| A report should include: |                         |              |                |

Final Grade: Reporter

• 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 apposition should show that:

| • the opponent <i>challenged</i> the <i>reporter's un</i> appropriate mathematics presented • the opponent appreciated and highlighted the st           | 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 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-trivial and demonstrated, where possible, the red by the reporter 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 see</li> </ul> | add to or deduct from the initial 5 points.  Stion and write it in the corresponding box.  To questions were posed or not finding shorter  |   |
| Rep.: Russia 5  | Opp.: Thai land 5  | Rev.: Poland. 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  | Bertinanda .   |   |
| Appropriate manner  | ☐ Clear and understandable ☐ Appropriate manner  | Clear and understandable  |
| ☐ Overall impression  | ☐ Appropriate manner ☐ Overall impression  | Appropriate manner  |
|   | Overall impression   | Overall impression  |
| Reporter ±1 o   | 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   | 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  |
| $\square$ Novelty of the report   |  | fight assistant, so we are fight assistant, so we are archive your partial grades – please                        |
| Contribution to the discussion  |  | do not bend   |
| A.C.  |  |   |

Final Grade: Opponent

|  | Fight (Payed no.)  | n: Stage: Problem no.:  |
|--|--|---|
| Scoring Guideling  | 1es  Juror: LADIO  | Signature:  |
| application of appropriate mathematics • re  | ts, theories and principles of the problem • an a<br>easonable experimental technique to gather and<br>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 street | nderstanding of the presented concepts, theories<br>oponent critiqued the experimental technique use<br>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 relaberators 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> .  Ition and <i>write it</i> in the corresponding box.  To questions were posed or not finding shorts |   |
| Rep.: Ther land 5  | Opp.: Poland 5   | Rev.: Russia 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   | Presentation ±1  ☐ Clear and understandable ☐ Appropriate manner   | Presentation ±1  Clear and understandable  Appropriate manner   |
| Overall impression  Reporter ±1  | Opponent ±1  | Overall impression  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 symbols</li> <li>Appropriate models, conformity</li> </ul>   | ☐ 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         |

 $\Box$  Contribution to the discussion

Final Grade: Reporter

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

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|----------|--------------|------|-----|-----|-----|--------|--------|-----|----------|---------|----|---|------|----------|----------|
| <b>E</b> | A CONTRACTOR | 80   | 磨   | 2   | 7   | M man  | 2 5    | 8   | 1        | 1       | #  | 启 | R-PA | A TOP    | 1        |
|          | CO           | #    | 羅   | Ø   | 8   |        |        |     |          | -       | M  | 8 |      | No.      | -        |
|          | 4000         | BF . | SQ. | 100 | er. | 100000 | Sep. B | 200 | ARTON CO | ASSESS. | 88 | 腳 | B B  | ACCOUNT. | 100 mg/s |

| Fight (Round no.): | Room: | <u> </u>  | Stage: 2 | Problem no.: | 人 |
|--------------------|-------|-----------|----------|--------------|---|
| Juror: Adward      | Mein  | Signature | e:Musik  |              |   |

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

| Α | report | should | in | clu | de: |
|---|--------|--------|----|-----|-----|
|---|--------|--------|----|-----|-----|

• 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.<br>add to or deduct from the initial 5 points.<br>tion and write it in the corresponding box.<br>o questions were posed or not finding shortco | omings if there were none to find.  |
|---|--|---|
| Rep.: Thorland 5  | Opp.: Poland 5   | <b>Rev.:</b> Russa 5  |
| Physics ±3  | Physics $\pm 3$ $+0,5$   | 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 + (15  | 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 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   |   |
| 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 consider a specific archive your partial grades - please |
| Contribution to the discussion                              |  | do not bend   |
| Final Grade: Reporter                                       | Final Grade: Opponent  | Final Grade: Reviewer   |

|  |  | <b>6</b>  |
|--|--|---|
| Canting Carialalia   | Fight (Round no.):   | n: Problem no.:   |
| Scoring Guidelii   | 1es Juror: Feng Sony   | Signature:  |
|  | . 1 . 7  |   |
| A report should include:  • a presentation of the appropriate concep   | ts, theories and principles of the problem • an e  | xplanation of the observed phenomena • an   |
| appropriate) • linking of theoretical and e complex ideas in an effective and understan  | easonable <b>experimental technique</b> to <b>gather</b> and i<br><b>xperimental findings</b> to draw s <b>uitable conclusio</b><br><b>dable</b> manner  | record data (or demonstrate the phenomena if ns • an attempt to communicate difficult or                          |
| 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<br>pponent critiqued the experimental technique use<br>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 |
| A review should show that:   |  |   |
| important aspects (especially the controvers   | tive summary of the performances the reporter sial ones) • the reviewer's personal opinion was in the reviewer's personal opinion was instructed, where possible, the red by the reporter 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 see</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> .  ction and <i>write it</i> in the corresponding box.  to questions were posed or not finding shortcom. |   |
| Rep.: Theiland 5 Agregnallee 5   | Opp.: Poland 5   | Rev.: Ruassia 5   |
| Physics ±3   | Physics ±3   | Physics ±3  |
| ☐ Correct and relevant physics   | ☐ Correct and relevant physics   | ☐ Correct and relevant physics  |
| ☐ Scientific approach  | ☐ Scientific approach  | ☐ Scientific approach   |
| ☐ Validity of conclusions ☐ Accurate answers   | ☐ Validity of conclusions ☐ Accurate answers   | ☐ Validity of conclusions ☐ Accurate answers  |
| 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   |
| <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  Appropriate models, conformity  | Finds shortcomings or errors in the report   | Relevance of questions to both the reporter and the opponent  |
| of dimensions  | Relevance of the questions   | Draws attention to points missed by the reporter or the opponent  |
| ☐ Slides, on-site experiments, audio, video, as appropriate  | ☐ Contribution to the discussion   |   |
| References, proper citations of ideas and input of others  |  | This sheet will be collected by the fight assistant, so we can scan it and  |
| ☐ Novelty of the report  |  | archive your partial glades   |
| Contribution to the discussion   | promote Management   | do not bend   |
| Final Grade: Reporter  | Final Grade: Opponent Revised  | Final Grade: Reviewer fitter IOC feedback and approved by EC on 2011-11-03  |

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|---|-------|-----|-----|---|---|-------|-------|-----|-----|------------|-----------|------|-----|---|-----|------|-------------|
| 4 | Par P | a W | e g | 8 | 7 | 89    |       | # 1 | 7 8 |            | 1         |      | 8   | 2 | 4   |      | Of the last |
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|   |       | _   | -   | - |   | Steed |       | -   | _   |            | - Carrier | 5500 | SOF | - | 662 | 4000 | A0000       |

Rep.: Thatlond

☐ Scientific approach ☐ Validity of conclusions ☐ Accurate answers

Presentation ±1

Reporter ±1

☐ Structure

☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression

☐ Quality of experimental technique(s)

☐ Explanation of formulae and

☐ Slides, on-site experiments, audio,

☐ Contribution to the discussion

Physics ±3

|   | ). See-   | ^ **   |
|---|---|--|
| Cooring Ciridali  | Fight (Round no.): Roon   | n: Stage: Problem no.:   |
| Scoring Guidelin  | 165 Juror: Matter Anderson  | Signature: MA  |
| application of appropriate mathematics • re   | ts, theories and principles of the problem • an e<br>easonable experimental technique to gather and i<br>xperimental findings to draw suitable conclusion<br>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    | 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 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  | evidence (not just superficial observations) •   |
| The <i>reporter</i> , <i>opponent</i> and <i>reviewer</i> endoctors to a Consider the following <i>suggestions</i> to a Select each partial grade from each sections. | 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.  o questions were posed or not finding shortco |  |
| Rep.: Thatland 5  | Opp.: Poland 5  | Rev.: Russia 5   |
| hysics $\pm 3$ $-2$   | Physics ±3 + 1.5  | Physics ±3 +0.5  |
| 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  |
| 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  |  |
| 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  |
| Novelty of the report   |   | This sheet will be con-<br>fight assistant, so we can scan it and<br>archive your partial grades – please  |
| Contribution to the discussion  |   | do not bend  |
| 9   |   | The second secon |
| 1 7 1 1   |   | j.m.   |

Final Grade: Reporter

☐ Novelty of the report

Final Grade: Opponent

Final Grade: Reviewer

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

|                    | Fight (Round no.): Room | n: Stage: Problem no.: |
|--------------------|-------------------------|------------------------|
| Scoring Guidelines | Juror: Tan Jan          | Signature: TCd         |
| A                  |                         |                        |

• 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 sect</li> </ul> | edd to or deduct from the initial 5 points. tion and write it in the corresponding box. o questions were posed or not finding shortco | emings if there were none to find.   |
|--|---|--|
| Rep.: Theiland 5   | Opp.: Polend 5  | Rev.: Rusga 5  |
| Physics ±3   | Physics ±3  | Physics ±3   |
| ☐ Correct and relevant physics                               | ☐ Correct and relevant physics  | ☐ Correct and relevant physics   |
| Scientific approach  | ☐ Scientific approach   | Scientific approach  |
| ☐ Validity of conclusions                                    | ☐ Validity of conclusions   | ☐ Validity of conclusions  |
| ☐ Accurate answers   | ☐ Accurate answers  | ☐ Accurate answers   |
| Presentation ±1  | Presentation ±1   | Presentation ±1  |
| ☐ Clear and understandable                                   | Clear and understandable  | ☐ Clear and understandable   |
| ☐ Appropriate manner   | ☐ Appropriate manner  | ☐ Appropriate manner   |
| Overall impression   | Overall impression  | ☐ Overall impression   |
| Reporter ±1  -0.5  | Opponent ±1   | Reviewer ±1  |
| Quality of experimental technique(s)                         | Response to the reporter's solution   | Provides a thorough review of report and discussion                        |
| ☐ Structure  | ☐ Shows the strong and weak points  | ☐ Expresses own opinion about  |
| ☐ Explanation of formulae and                                | of the report   | topics presented or discussed  |
| symbols  Appropriate models, conformity                      | ☐ Finds shortcomings or errors in the report  | Relevance of questions to both the reporter and the opponent               |
| of dimensions  | ☐ Relevance of the questions  | Draws attention to points missed by the reporter or the opponent           |
| Slides, on-site experiments, audio, video, as appropriate    | ☐ Contribution to the discussion  |  |
| References, proper citations of ideas and input of others    |   | This sheet will be collected by the fight assistant, so we can scan it and |
| ☐ Novelty of the report                                      |   | archive your partial grades  |
| ☐ Contribution to the discussion                             |   | do not bend  |
|  | 407   | Manual PP  |

Final Grade: Opponent

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

| Scoring Guidelines |
|--------------------|
|--------------------|

| Fight (Round no.): Stage: Problem no.:  |  |
|---|--|
| Juror: Xuewei Cao Signature: X Cao  |  |
| s and principles of the problem • an explanation of the observed phenomena • an experimental technique to gather and record data (or demonstrate the phenomena if al findings to draw suitable conclusions • an attempt to communicate difficult or ner |  |

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

### A report should include:

• a presentation of the appropriate concepts, theories application of appropriate mathematics • reasonable e appropriate) • linking of theoretical and experimental complex ideas in an effective and understandable mann

# 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 e</li> <li>Select each partial grade from each sec</li> </ul> | consists of a partial grade for <i>physics, presen</i> teach start with 5 points.  add to or deduct from the initial 5 points.  Stion and write it in the corresponding box.  To questions were posed or not finding shorter |   |
|---|--|---|
| Rep.: Therland 5  | Opp.: Polond 5   | Rev.: Russia 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 6   |
| <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  Quality of experimental technique(s)   | Opponent ±1  Response to the reporter's solution   | Reviewer ±1   |
| 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   |
| Appropriate models, conformity of dimensions  | the report  Relevance of the questions   | Relevance of questions to both the 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 ☐ Contribution to the discussion  |  | fight assistant, so we are archive your partial grades – please do not bend   |
| Final Grade: Reporter   | Final Grade: Opponent  | Final Grade: Reviewer   |

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| Scoring  | Guidelines  |       |
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| Fight (Round no.): Ro | om: <u>(a</u> St | age: <u>3</u> | Problem no.: _ | 3 |
|-----------------------|------------------|---------------|----------------|---|
| Juror: 6.240 60       | Signature:       | Cres          |                | _ |

• 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.

| <ul> <li>Select each partial grade from each sec</li> </ul>   | each start with 5 points.<br>add to or deduct from the initial 5 points.<br>ction and write it in the corresponding box.<br>o questions were posed or not finding shortco   | omings if there were none to find.  |
|---|---|---|
| Rep.: Poland 5  | Opp.: Russia 5  | Rev.: Theiland 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   |
| ☐ 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 | ☐ 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 | ☐ Clear and understandable ☐ Appropriate manner ☐ Overall impression  Reviewer ±1 ☐ Provides a thorough review of report and discussion ☐ Expresses own opinion about topics presented or discussed ☐ Relevance of questions to both the reporter and the opponent ☐ Draws attention to points missed by the reporter or the opponent |
| References, proper citations of ideas and input of others  Novelty of the report  Contribution to the discussion  |   | This sheet will be collected by the fight assistant, so we can scan it and archive your partial grades – please do not bend   |

Final Grade: Opponent

| A STEEL |    | 6   |   |       | 45000 |     | 4 |   | 7 | Ø | 8 | ,  |   |   |   |  |
|---------|----|-----|---|-------|-------|-----|---|---|---|---|---|----|---|---|---|--|
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|         |    |     |   | and a |       |     | _ |   |   |   | _ | _  |   | - | - |  |

| Fight (Round no.): _ | S Room | : <u> </u> | Problem no.   | : 3 |
|----------------------|--------|------------|---|-----|
| Juror: Herman        | u Men  | Signature: | MM an   |     |
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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:

- 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. ction and write it in the corresponding box. so questions were posed or not finding shortc | omings if there were none to find.  |
|---|--|---|
| Rep.: Poland 5  | Opp.: Russia 5   | Rev.: Thorland 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   |
| 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 questions to both the reporter and the opponent  |
| Slides, on-site experiments, audio, video, as appropriate   | ☐ Relevance of the questions ☐ Contribution to the discussion  | Draws attention to points missed by the reporter or the opponent  |
| References, proper citations of ideas and input of others   |  | This sheet will be collected by the fight assistant, so we can scan it and  |
| Novelty of the report   |  | archive your partial grades   |
| Contribution to the discussion  |  | do not bend   |
| 5   | 5  | paccey.   |

Final Grade: Reporter

Final Grade: Opponent

|  | Fight (Dayndyng)   |  |
|--|--|--|
| Scoring Guidelin   | Fight (Round no.): 5 Roo  No. 125  Suror: FRAM Survey  |  |
|  | Julion. Jany   | Signature: fry try   |
| A report should include:   | 1  | 1  |
| application of appropriate mathematics • r   | easonable <b>experimental technique</b> to <b>gather</b> and<br>experimental findings to draw suitable conclusi  | explanation of the observed phenomena • an record data (or demonstrate the phenomena if ons • an attempt to communicate difficult or |
| 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<br>pponent critiqued the experimental technique us  | and <i>principles</i> • the opponent understood the ed and questioned the <i>validity</i> of the <i>data</i> • the                   |
| A review should show that:   |  |  |
| important aspects (especially the controvers   | ctive summary of the performances the reporter sial ones) • the reviewer's personal opinion was intervial and demonstrated, where possible, the industrial 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 set</li> </ul>        | consists of a partial grade for <i>physics, presen</i> each <i>start with 5 points</i> .  add to or deduct from the initial <i>5 points</i> .  ction and write it in the corresponding box.  to questions were posed or not finding shorts |  |
| Rep.: Poland 5  Kataryra - Physics ±3  | Opp.: Russia 5  Alexey Physics ±3 +1   | Rev.: Thailand 5  Phatthamon - +1  |
| Correct and relevant physics   | ☐ Correct and relevant physics   | Correct and relevant physics   |
| ☐ Scientific approach  | ☐ Scientific approach  | ☐ Scientific approach  |
| ☐ Validity of conclusions ☐ Accurate answers   | ☐ Validity of conclusions ☐ Accurate answers   | ☐ Validity of conclusions  |
|  |  | Accurate answers   |
| Presentation ±1  | Presentation ±1  | Presentation ±1  |
| ☐ Clear and understandable<br>☐ Appropriate manner   | ☐ Clear and understandable ☐ Appropriate manner  | ☐ Clear and understandable   |
| 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  |
| Structure  | ☐ Shows the strong and weak points   | report and discussion  Expresses own opinion about   |
| Explanation of formulae and symbols  | of the report  Finds shortcomings or errors in   | topics presented or discussed  Relevance of guestions 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   | 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 considered 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 | : <u> </u> | 2 Problem no. | : <u>3</u> |
|-------------------------|------------|---------------|------------|
| Juror: Matties Anderson | Signature: | MA            |            |

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*.
- 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.: Poland 5   | Opp.: Russia 5                      | Rev.: Theiland 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 but  | ☐ 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                    | <b>Reviewer ±1</b> + 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  | Finds shortcomings or errors in     | ☐ Relevance of questions to both the                                       |  |  |  |  |  |  |  |  |  |
| Appropriate models, conformity of dimensions   | the report                          | reporter and the opponent  |  |  |  |  |  |  |  |  |  |
| No.  | ☐ 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    | a, and reporter or the opportunit  |  |  |  |  |  |  |  |  |  |
| 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<br>archive your partial grades – please         |  |  |  |  |  |  |  |  |  |
| Contribution to the discussion   |                                     | do not bend  |  |  |  |  |  |  |  |  |  |
| Final Grade: Reporter  | Final Grade: Opponent               | Final Grade: Reviewer  |  |  |  |  |  |  |  |  |  |

|  | Fight (Round no.): Roor   | n: Stage: Problem no.:   |
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| Scoring Guideling  |   | Signature: + + + + + + + + + + + + + + + + + + +   |
| application of appropriate mathematics • re  | ts, theories and principles of the problem • an a<br>easonable experimental technique to gather and<br>xperimental findings to draw suitable conclusion<br>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 state. | nderstanding of the presented concepts, theories<br>oponent critiqued the experimental technique use<br>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 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 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 shorto |  |
| Rep.: Roland 5   | Opp.: Russia 5  | Rev.: Thailand 5   |
| Physics ±3   | Physics ±3  | Physics ±3 +0-5  |
| ☐ Correct and relevant physics ☐ Scientific approach ☐ Validity of conclusions   | <ul><li>☐ Correct and relevant physics</li><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li></ul>  | <ul><li>☐ Correct and relevant physics</li><li>☐ Scientific approach</li><li>☐ Validity of conclusions</li></ul>   |
| ☐ Accurate answers   | ☐ Accurate answers  | 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 +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 of the report  | Expresses own opinion about  |
| <ul><li>Explanation of formulae and symbols</li></ul>  | 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 archive your partial grades – please do not bend  |
| ☐ Contribution to the discussion   |   | do not peno  |

Final Grade: Reporter Final Grade: Opponent

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| Scoring Guidelin   | Fight (Round no.):  Juror: X( e We  |                         | stage: 3 F   |   |
|--|---|-------------------------|--|---|
| A report should include:  • a presentation of the appropriate concept application of appropriate mathematics • re appropriate) • linking of theoretical and excomplex ideas in an effective and understand     | asonable <b>experimental technique</b> to<br><i>sperimental findings</i> to draw <i>suitc</i>                                       | o <i>gather</i> and r   | ecord data (or demonstrate t   | the <i>phenomena</i> if                   |
| An opposition should show that: • the opponent challenged the reporter's unappropriate mathematics presented • the oppoponent appreciated and highlighted the str  | ponent critiqued the experimental:  | <b>technique</b> used   | and <i>principles</i> • the opponend dand questioned the <i>validity</i> | t understood the of the <i>data</i> • the |
| A review should show that:  • the reviewer succeeded in giving an object important aspects (especially the controvers such personal opinions were informative, not principles and appropriate mathematics used | ial ones) • the reviewer's personal and trivial and demonstrated, where p   | <i>pinion</i> was in    | evidence (not just superficial   | l observations) •                         |
| The grade for each of the three teams of the reporter, opponent and reviewer end consider the following suggestions to a Select each partial grade from each section't punish missing 'answers' when no        | ach <b>start with 5 points</b> .<br>I <b>dd</b> to or <b>deduct</b> from the initial .<br>tion and <b>write it</b> in the correspor | 5 points.<br>nding box. |  |   |
| Rep.: Poland 5   | Opp.: Russia  | 5                       | Rev.: Thoiland   | 5   |
| Physics ±3   | Physics ±3  | 1.5                     | Physics ±3   | 0   |
| Correct and relevant physics   | Correct and relevant ph   | ysics                   | Correct and releva   |   |
| <ul><li>J Scientific approach</li><li>J Validity of conclusions</li></ul>  | Scientific approach   |                         | Scientific approach  |   |
| andity of conclusions  | ☐ Validity of conclusions   |                         | ☐ Validity of conclusi   | ons                                       |

| <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.: Poland 5  | Opp.: Russia 5   | Rev.: Thoiland 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 o   |
| 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   |
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Final Grade: Reporter