

Mark scheme – Magnets and Magnetic Fields (H)

| Question | | | Answer/Indicative content | Marks | Guidance |
|----------|---|----|---|------------------|--|
| 1 | | | A | 1 (AO1.1) | |
| | | | Total | 1 | |
| 2 | | | D ✓ | 1 (AO1.1) | <p><u>Examiner's Comments</u></p> <p>The majority of the candidates scored this mark. Some candidates chose response B.</p> <p>It is important that candidates read all the responses in these types of multiple-choice questions. A good technique is to eliminate responses first perhaps by placing a small cross next to (in this case A). Since both the size of the current and the distance from the wire are correct, then response D is selected.</p> |
| | | | Total | 1 | |
| 3 | a | i | <p>Any three from:</p> <p>place the compass onto the card or near to the wire (and turn on the current) ✓</p> <p>plot / observe the direction of the compass / needle ✓</p> <p>repeat idea of tip-to-tail / plotting onto the card ✓</p> <p>repeat at different distances from the centre ✓</p> | 3 (AO3 × 1.2) | <p><u>Examiner's Comments</u></p> <p>Some candidate did not attempt to describe the experiment here. Most got the idea of placing the compass on the card or near the wire. Rather fewer described the plotting or observing using the compass. Fewer still suggested the idea of repeating at different distances or places. About a quarter of candidates gained all 3 marks here and about a quarter did not gain credit.</p> |
| | | ii | <p>one or more circles around wire ✓</p> <p>clockwise arrow(s) ✓</p> | 2 (AO2 × 2.2) | <p>DO NOT ALLOW a spiral</p> <p>BUT ALLOW if clockwise direction shown by an arrow on the spiral</p> <p><u>Examiner's Comments</u></p> <p>This was well answered with about half of the candidates drawing a circular field [1] with arrows showing a clockwise direction [1]. Some candidates drew a circular field [1] but either got the direction wrong or did not indicate a direction at all. Some labelled it with both clockwise and anticlockwise arrows so the direction mark could not be given.</p> |

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|---|---|---|--------------------|--|
| | b | <p>always points to North / South ✓✓</p> <p>OR</p> <p>Points to (magnetic) North / South ✓</p> <p>line up with the magnetic field lines of the Earth ✓</p> <p>OR</p> <p>Compass needle shows (an angle of) dip ✓</p> <p>Dip (angle) changes (from equator) ✓</p> | 2 (AO2 ×1.1) | <p>ALLOW Points North / South wherever you are ✓✓</p> <p><u>Examiner's Comments</u></p> <p>Most candidates gained 1 mark for the idea of pointing north. Better answers (about a third) stated that the compass always pointed north and gained both marks. There were very few answers referring to the angle of dip.</p> |
| | | Total | 7 | |
| 4 | | A ✓ | 1 (AO1.2) | <p><u>Examiner's Comments</u></p> <p>About two thirds of candidates gave the correct answer A.</p> |
| | | Total | 1 | |
| 5 | | D | 1 | |
| | | Total | 1 | |
| 6 | | D | 1 | |
| | | Total | 1 | |