

| Question number | Answer | Notes | Marks | | | | | | | | | | | | |
|--|--|--|-------|-----------|----------|------------------------------|--|--|---|-------------------------------|---|--|---|--------------------------------------|--|
| 3 (a) | minimum of three straight arrows for different particles (with different lengths); arrows in different directions; | judge by eye arrows need not be attached to particles but it should be clear which particle they refer to | 2 | | | | | | | | | | | | |
| (b) | any three from: MP1. particles collide/impact/eq; MP2. with sides/walls of container; MP3. idea that force is produced; MP4. idea of pressure as force on an area; | allow hit for collide allow particle changes momentum $p = F/A$ | 3 | | | | | | | | | | | | |
| (c) | idea that pressure increases/eq; | | 1 | | | | | | | | | | | | |
| (d) | | | 3 | | | | | | | | | | | | |
| | <table><tr><th>Statement</th><th>Tick ()</th></tr><tr><td>the gas particles get bigger</td><td></td></tr><tr><td>the mass of gas particles stays the same</td><td>✓</td></tr><tr><td>the gas particles move faster</td><td>✓</td></tr><tr><td>the average distance between gas particles increases</td><td>✓</td></tr><tr><td>the temperature of the gas decreases</td><td></td></tr></table> | | | Statement | Tick () | the gas particles get bigger | | the mass of gas particles stays the same | ✓ | the gas particles move faster | ✓ | the average distance between gas particles increases | ✓ | the temperature of the gas decreases | |
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| the gas particles move faster | ✓ | | | | | | | | | | | | | | |
| the average distance between gas particles increases | ✓ | | | | | | | | | | | | | | |
| the temperature of the gas decreases | | | | | | | | | | | | | | | |
| | one mark for each correct;;; if 4 ticks then max mark is 2 if 5 ticks then zero marks | | | | | | | | | | | | | | |
| | | total marks = 9 | | | | | | | | | | | | | |

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|-----------------|--|---|-------|
| 13 (a) | <p>any four from:</p> <p>MP1. there is a current in the rod;</p> <p>MP2. (therefore) magnetic field around rod;</p> <p>MP3. magnetic fields interact / overlap;</p> <p>MP4. producing a force (on the rod);</p> <p>MP5. catapult effect / motor effect / LH rule;</p> <p>MP6. rod moves to the right / towards the power supply;</p> | <p>allow 'AB' for rod throughout</p> <p>allow current in the rail</p> <p>ignore references to cutting field lines</p> <p>accept the rod moves sideways / left</p> | 4 |
| (b) | <p>any four from:</p> <p>MP1. alternating current changes direction (continuously);</p> <p>MP2. current in coil produces alternating magnetic field/eq;</p> <p>MP3. (producing) force on the coil/cone;</p> <p>MP4. reversing direction of current reverses direction of the force;</p> <p>MP5. hence coil/cone vibrates;</p> <p>MP6. cone vibrates air particles;</p> | <p>allow any marking point if clear from diagram</p> <p>allow changing magnetic field</p> <p>allow coil / cone moves in and out / backwards and forwards</p> <p>total marks = 8</p> | 4 |