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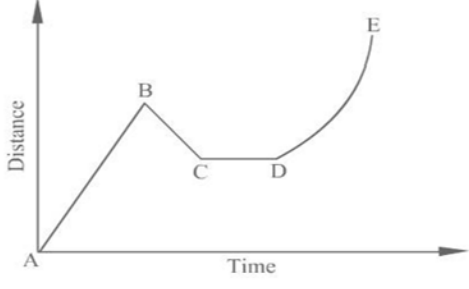
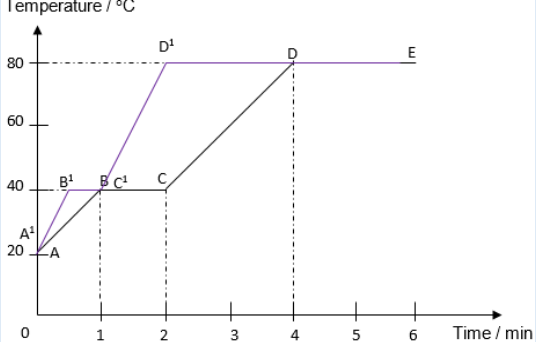
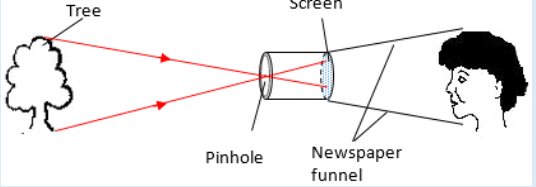
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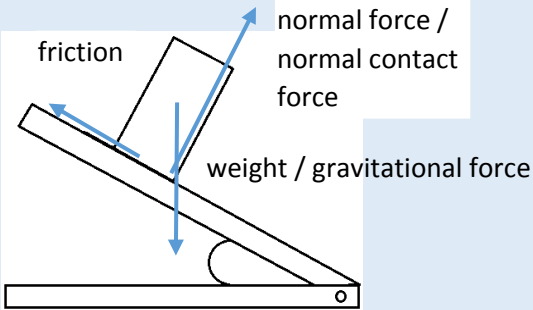
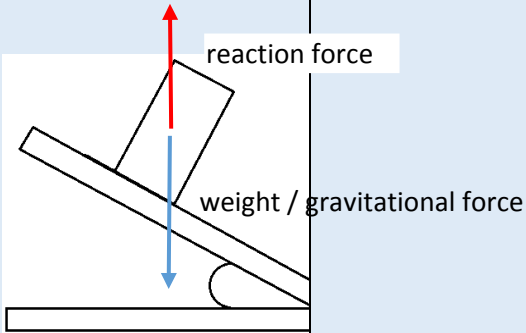
## 2017 IMSO SCIENCE THEORY TEST 2

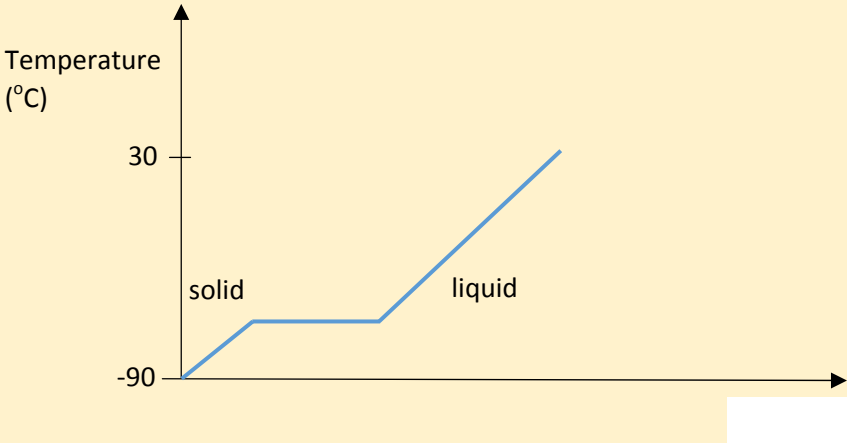
Answer Key

Q	Answer	Alternatives accepted	Not accepted / Partial credit
1	<p>Bat: finger bones spread out Bird: finger bones close together</p> <p>Bat: wing supported by 4 fingers Bird: wing supported by 3 fingers (or 1 main finger)</p> <p>Bat: wing made of stretched skin Bird: wing covered with feathers (as outlined in diagram) [1m for each matching comparison]</p>		
2a	Allows light to pass through (this part alone no marks) + plants need light to <u>photosynthesise / make food</u> [1m]	Allows light energy to enter [1m]	Allow light to pass through
2b	<p>Water vapour released from the plant (through transpiration) is <u>trapped in the container / condensed on the wall</u> to be recycled for the plant to use (or any reference to the water cycle) [1m for water part]</p> <p>The organic matter trapped in dead leaves can be <u>decomposed to release carbon dioxide</u> for photosynthesis (or any reference to carbon cycle) [1m for air part]</p> <p>OR</p> <p>During respiration, plants give off carbon dioxide which can be used for photosynthesis. During photosynthesis, plants give off oxygen which can be used for respiration. [1m for air part] [Total: 2 marks]</p>		
3a	The flow of blood will be slower / reduced / decreased [1]		Heartbeat slower [0] Pulse slower [0] Flow of blood will stop [0]
3b	The heart muscles would <u>not get enough oxygen / nutrient (any one)</u> [½m] and result in <u>death of heart muscle / cell death</u> [½m]	Heart muscle gets no oxygen / no blood [accept ½m]	Get heart attack [0]
3c	If blood vessels in the heart that are partially blocked become <u>narrower / smaller</u> [½m], they may become <u>more/totally blocked</u> [½m] (which will lead to a heart attack)		Get heart attack [partial ½m]
4a	When there is very little light, the amount of		More carbon dioxide is

Q	Answer	Alternatives accepted	Not accepted / Partial credit				
	<p>carbon dioxide taken in by photosynthesis is less than the amount of carbon dioxide being produced by respiration [1m]</p> <p>OR</p> <p>rate of respiration is faster than rate of photosynthesis [1m]</p> <p>OR</p> <p>The rate of photosynthesis is lower than the rate of respiration. [1m]</p>		<p>given out than taken in by the plant [0] (No mention of either process)</p> <p>The plant gives out more carbon dioxide than it uses in photosynthesis. /The plant respire more carbon dioxide than it uses up. [½] (Only mention of one process)</p>				
4b	<p>Line 1. [½]</p> <p>When the amount of light is more than 100 units, the amount of carbon dioxide used continues to increase in Line 1 but not line 2. [½]</p> <p>OR</p> <p>At <u>high amounts of light</u>, the amount of carbon dioxide used in Line 1 is higher than in Line 2 [½]</p>						
4c	<p>Single layer of leaves</p> <p>High density of chloroplasts</p> <p>[1m for <u>both</u> correct, 0 for both or one wrong]</p>						
5a	<p><u>large surface area increases uptake/absorption</u> of water/nutrients/mineral salts</p> <p>[1m for <u>both</u> points]</p>						
5b	Villi / microvilli [1m]		Epithelial cells [0]				
5c	<table border="1"> <tr> <td>Ability to digest food</td> <td><u>Decrease</u> [1m]</td> </tr> <tr> <td>Ability to absorb food and water</td> <td><u>Decrease</u> [1m]</td> </tr> </table>	Ability to digest food	<u>Decrease</u> [1m]	Ability to absorb food and water	<u>Decrease</u> [1m]		<u>Cannot</u> instead of decreased [0]
Ability to digest food	<u>Decrease</u> [1m]						
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6a	<p>(i) CD [½ mark]</p> <p>(ii) BC [½ mark]</p>						

Q	Answer	Alternatives accepted	Not accepted / Partial credit
6b	 <p>[1] or [0] no [½]</p>		
7a	Boiling [1m]		
7b	<p>The specific latent heat of vaporisation for wax is higher than the specific latent heat of fusion [1m] OR The energy required to change a fixed mass of wax from solid to liquid is less than the energy required to change the same mass of wax from liquid to gas. [1m]</p>		
7c	 <p>Shape of graph correct (temperature should not change AND B1 must be earlier than B) – [1] All timings are halved – [1] [Total: 2 marks]</p> <p>Any temperature changed – [0]</p>		
8a	 <p>[1] for both rays correct with arrows Partial [½] for correct lines but without arrows</p> <p><u>No penalty</u> for drawing image of tree upright instead of upside down on the screen.</p>		

8b	<p>Any <b>two</b> of the following:</p> <ul style="list-style-type: none"> <li>• Real</li> <li>• Inverted</li> <li>• Diminished / smaller / reduced in size</li> </ul> <p>[1m each, total = 2 marks]</p>		
9a	 <p>Label weight – [1m]</p> <p>Label friction + normal OR reaction force – [1] (also accept if students can replace normal force and frictional force with a reaction force directly opposite the weight)</p> <p>Correct position of weight - [½] for starting from CG, [½] for arrow passing through bottom right corner of block.</p> <p>Extra bonus: [1] for normal force at the bottom edge of block (see diagram)</p>		
9b	<p>When the angle of inclination <math>\theta</math> increases further, the <u>line of action of the weight lies outside the base area of the box</u>. [1m]</p> <p>This gives rise to a resultant <u>clockwise moment</u> about the right bottom edge of the box that is still in contact with the surface of the ramp, causing the box to topple over. [1m]</p>	Position of CG changes [1] (for first part)	
9c	<p>The oil <u>reduces the friction</u> between the base of the box and the surface of the ramp. As a result, there is a resultant force acting on the box down the ramp. [1m]</p>		
10a	Sublimation (accept sublime, subliming) [1m]		
10b	<p>The particles become free to move about / move far/further apart [½ marks] and move faster / have more KE [½ marks]</p>		
10c	C [1m]		

10d	 <p>[1m each: correct shape of graph, correct labelling of states, total = 2m]</p>								
11a	<table border="1"> <thead> <tr> <th>Process</th> <th>Letter From Diagram</th> </tr> </thead> <tbody> <tr> <td>i) Condensation</td> <td><b>B</b> [½m]</td> </tr> <tr> <td>ii) Precipitation</td> <td><b>C</b> [½m]</td> </tr> </tbody> </table>	Process	Letter From Diagram	i) Condensation	<b>B</b> [½m]	ii) Precipitation	<b>C</b> [½m]		
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i) Condensation	<b>B</b> [½m]								
ii) Precipitation	<b>C</b> [½m]								
11b	<p>Heat from the sun is needed to <u>evaporate water</u> [1] and for <u>transpiration</u> – bonus [1] for transpiration</p>	<p>Alternative to “evaporate”: change water from liquid to gaseous state / to water vapour</p>	<p>Vaporise [0 if don’t specify from the sea]</p>						
11c	<table border="1"> <thead> <tr> <th>Process</th> <th>Explanation [½m each]</th> </tr> </thead> <tbody> <tr> <td>E [½m]</td> <td>More surface run-off / rain water flowing into the sea (because trees are not there to hold onto the water)</td> </tr> <tr> <td>D [½m]</td> <td>Less evaporation of water from the land (from transpiration in leaves)</td> </tr> </tbody> </table>	Process	Explanation [½m each]	E [½m]	More surface run-off / rain water flowing into the sea (because trees are not there to hold onto the water)	D [½m]	Less evaporation of water from the land (from transpiration in leaves)		
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11d	<p><u>Increased evaporation</u> [½] and increased cloud cover / heavy rains or typhoons [½] (total [1m])</p>								

END