

**MENDAKI TUITION SCHEME  
PSLE 2013  
SCIENCE  
PRIMARY SIX**

**Section A (30 X 2 marks = 60 marks)**

<b>No.</b>	<b>Answer</b>	<b>No.</b>	<b>Answer</b>	<b>No.</b>	<b>Answer</b>
1)	2	11)	2	21)	1
2)	1	12)	4	22)	2
3)	3	13)	3	23)	2
4)	3	14)	3	24)	4
5)	2	15)	1	25)	4
6)	3	16)	3	26)	4
7)	2	17)	4	27)	4
8)	3	18)	3	28)	2
9)	1	19)	2	29)	2
10)	2	20)	1	30)	2

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**Section B (14 Qn, 40 marks)**

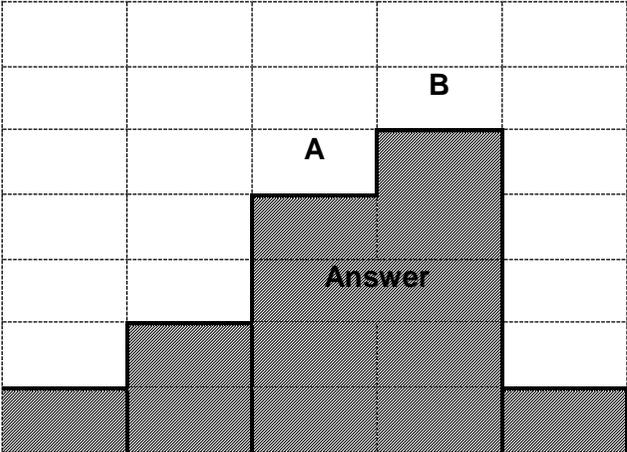
Key concepts are underlined.

Marks are NOT deducted for spelling errors (Condition: Must be recognizable as the intended word).

\* Questions requiring pupils to explain or give a reason

Qn	Acceptable answer	MARK	Remarks
31a	<b>Key idea: To recognise and identify characteristics of birds.</b> Sarah. All birds have wings but not all can fly. Sarah. Not all birds can fly.	1	Do not accept: Not all birds have wings. (0m) Some birds do not have wings. (0m) (Reason: All birds have wings.)
31b	<b>Key idea: To analyze a flow chart and identify the characteristics of swordtail and whale</b> Swordtail – B ( ½ m ) Whale – A ( ½ m )	1	
32a	<b>Key idea: Ovules develop into seeds.</b> The watermelon flower has <u>many ovules</u> in the ovary as <u>ovules develop into seeds after fertilization</u> .	1	Do not accept: The seeds are not ovules. (0m) (merely stating, no explanation)
32b	<b>Key idea: Small and hard seeds will not be digested by the animals and will either be spit out or pass out together with the animals' waste.</b> The animals will eat the fruits and spit out the seeds. OR: The animals will eat the fruits with the seeds and since the seeds are small and hard, they will pass the seeds out of the digestive system with the feces / wastes.	1	
32c	<b>Key idea: Seeds are dispersed to prevent overcrowding and reduce competition with parent plant.</b> To <u>prevent overcrowding</u> so as to <u>reduce competition</u> for water, nutrients, light and space with the parent plant.	1	Answer must be complete.

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Qn	Acceptable answer	MARK	Remarks
33a	<p><b>Key idea: Identify the rate of water loss from plant at various times of the day.</b></p>  <p>The bar graph shows water loss at five different times. The bars are shaded and labeled A and B. The word 'Answer' is written in the middle of the grid.</p>	1	<p>Both bar graphs must be higher than the other graphs.</p> <p style="text-align: center;"><b>B &gt; A</b></p>
33b	<p><b>Key idea: Role of leaves</b> Water is lost as water vapour through the stomata which are found in the leaves. When there are fewer leaves, less water will be lost to the surrounding.</p>	1	Leave alone [0m]
34a	<p><b>Key idea: Respiratory systems in fish and humans</b> J – Lungs (½m) K – Gills (½m)</p>	1	
Qn	Acceptable answer	MARK	Remarks

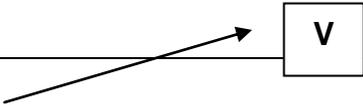
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34b	Both organs have a <u>rich supply/ a lot of blood vessels</u> that allow them to receive a large supply of blood.	1	Big amount of blood vessels → 1m										
34c	Key idea: Link respiratory and circulatory systems  She breathes faster so that she could take in <u>more oxygen</u> carried by the blood to the muscles. The heart needs to supply <u>more digested food and oxygen</u> carried in the blood to the various <u>parts of the body</u> to <u>produce more energy</u> . <b>OR</b> To take in <u>more oxygen</u> so that the heart can pump <u>more oxygenated blood</u> and <u>digested food</u> to all parts of the body to <u>produce more energy (for the activity)</u> .	1											
35a	<p><u>Key idea: Investigate the requirements of photosynthesis and communicate findings.</u></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Region of leaf</th> <th>Colour of Iodine solution test (circle)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Dark blue</td> </tr> <tr> <td>B</td> <td>Dark blue</td> </tr> <tr> <td>C</td> <td>Brown</td> </tr> <tr> <td>D</td> <td>Brown</td> </tr> </tbody> </table>	Region of leaf	Colour of Iodine solution test (circle)	A	Dark blue	B	Dark blue	C	Brown	D	Brown	1	<p>Explanation: A &amp; B are exposed to sunlight so photosynthesis could take place (hence a positive test result) C &amp; D are covered with black paper so no light could get to the parts C &amp; D.</p>
Region of leaf	Colour of Iodine solution test (circle)												
A	Dark blue												
B	Dark blue												
C	Brown												
D	Brown												
<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>										
35b	Key idea: Oil blocks gaseous exchange between the leaves and the surrounding hence no photosynthesis could take place. None of the regions will turn dark blue.	1	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Obs</th> <th>Exp</th> <th>Mark</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	Obs	Exp	Mark	✓	✓	1				
Obs	Exp	Mark											
✓	✓	1											

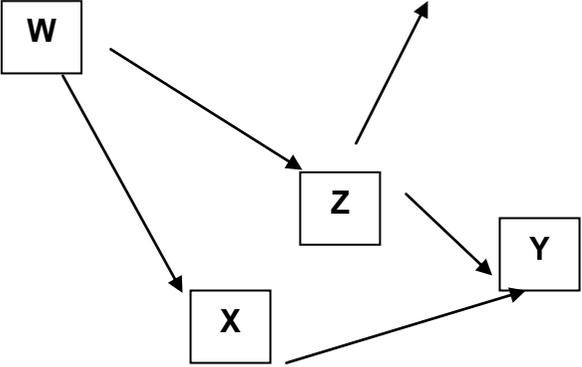
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	The layer of oil prevents exchange of gases in the stomata so no photosynthesis can take place.			<table border="1"> <tr><td>✓</td><td>x</td><td>0</td></tr> <tr><td>x</td><td>✓</td><td>0</td></tr> <tr><td>x</td><td>x</td><td>0</td></tr> </table>	✓	x	0	x	✓	0	x	x	0					
✓	x	0																
x	✓	0																
x	x	0																
35c	<p>Key idea: Chloroplasts contain chlorophyll</p> <p>Cell Y Root cell do not need to make food so it does not contain chloroplasts.</p>	1	<p>If pupil merely stated <u>chlorophyll</u> without mentioning chloroplast (ie, not making reference to the cell part), award 0m. "Cell Y" alone carries no mark.</p> <table border="1"> <tr><th>Obs</th><th>Exp</th><th>Mark</th></tr> <tr><td>✓</td><td>✓</td><td>1</td></tr> <tr><td>✓</td><td>x</td><td>0</td></tr> <tr><td>x</td><td>✓</td><td>0</td></tr> <tr><td>x</td><td>x</td><td>0</td></tr> </table>	Obs	Exp	Mark	✓	✓	1	✓	x	0	x	✓	0	x	x	0
Obs	Exp	Mark																
✓	✓	1																
✓	x	0																
x	✓	0																
x	x	0																
36a	<p><b><u>Key idea: Identification of constant variables</u></b></p> <p>i. Length of the strings/threads or ii. the mass/size/ material of the weights iii. Distance of pan from ground iv. Thickness of the strings/threads (Any two, ½ m each)</p>	1																
36b	<p><b>Key idea: Linking observation to conclusion</b></p> <p>The pan held by the nylon thread can hold more weights before it breaks compared to the pan held by the cotton thread.</p>	1																
<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>															
37a	X W Z Y	1	Time is stated instead of letters (0m)															

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37b	<p>He should count his pulse rate before he began exercise so that he could see / calculate / compare the <u>difference / increase in pulse rate</u> after exercise.</p> <p>or He could <u>compare his pulse rate</u>.</p> <p>or</p> <p>It helps him to <u>conclude that pulse rate increase after exercise</u>.</p>	1	<p>Must mention “compare with ....”</p> <p>“compare” alone (0m)</p>															
37c	<p>He had cooled down. The heart <u>would not need to pump faster to supply more oxygen</u> to the rest of the body to provide <u>more energy</u> for running. He was <b><u>not doing any activity</u></b> which required <b><u>more oxygenated blood / oxygen</u></b> to produce <b><u>more energy</u></b>.</p>	1																
38a	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">No.</th> <th style="width: 75%;">Likely events</th> <th style="width: 20%;">Tick (✓)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>A significant decrease in the water level of the pond.</td> <td></td> </tr> <tr> <td>2.</td> <td>A significant decrease in the number of guppies in the pond.</td> <td></td> </tr> <tr> <td>3.</td> <td>A significant decrease in the number of dragonfly nymphs in the pond.</td> <td>✓ (1/2m)</td> </tr> <tr> <td>4.</td> <td>A significant decrease in the number of disease-causing organisms that kill the prey of the frogs.</td> <td>✓ (1/2m)</td> </tr> </tbody> </table>	No.	Likely events	Tick (✓)	1.	A significant decrease in the water level of the pond.		2.	A significant decrease in the number of guppies in the pond.		3.	A significant decrease in the number of dragonfly nymphs in the pond.	✓ (1/2m)	4.	A significant decrease in the number of disease-causing organisms that kill the prey of the frogs.	✓ (1/2m)	1	<p>Any extra ticks (0m for the whole question)</p>
No.	Likely events	Tick (✓)																
1.	A significant decrease in the water level of the pond.																	
2.	A significant decrease in the number of guppies in the pond.																	
3.	A significant decrease in the number of dragonfly nymphs in the pond.	✓ (1/2m)																
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<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>															
38b	<p>Both have <u>streamlined bodies / shape</u> so that they can <u>overcome water resistance / cut through water / swim faster / swim easier / swim easily</u>.</p>	1																
38c		1																

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39a	<p><b>Key idea: Identification of the type of force acting on a moving object</b> Gravity or Gravitational force OR Friction or Frictional force or Air resistance</p>	1	<p>Only 1 force is needed. Deduct ½ m if pp state another force after identifying the correct force.</p> <p>Gravitational potential force = a big zero</p>
39b	<p><b>Key idea: Relationship between independent and dependent variable in an experiment</b> The mass of the bob has no effect on the time taken to complete 10 swings. The time recorded was the same for the 3 masses of the bob.</p>	1	<p>This is a slightly different situation where the dependent variable is not affected by the independent variable. Pp must demonstrate a clear understanding of it. No partial mark – Both parts must be correct to get a full mark.</p>
<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>
39c	<p><b>Key idea: Force can cause an object in motion to stop moving.</b> Hold / Grab the pendulum bob.</p>	1	<p>Apply a force on the bob. (0m) – need to state what type of force in order to be specific</p>

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39d	<p><b>Key idea: Identify the potential energy stored when an object is hanging from a higher position</b> Gravitational potential energy</p>	1	Potential / stored energy – 0m				
40a	<p><b>Key idea: Factors affecting evaporation of water</b> Any two of the following:</p> <p>Reason 1: (1m) (Temperature – as a factor of RoE) The presence of hot air increases the rate of evaporation of water. Hence the hands dry up more quickly / in a shorter time.</p> <p>Reason 2: (1m) ( Presence of wind / wind speed – as a factor of RoE) The wind helps to increases the rate of evaporation and helps to dry up the hands more quickly.</p> <p>Reason 3: (1m) The hot air comes out of the dryer at a high speed and pushes excess water droplets away from her hands.</p>	2	Read in totality.				
40b	<p><b>Key idea: Friction between the hands rubbing together produces heat which increases the rate of evaporation of water.</b> Rub her hands together.</p>	1					
<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>				
41a	<p><b><u>Key idea: To understand concept of matter taking up space.</u></b> (i)The water level rose. The metal ball <u>took up</u> /<u>occupied</u> space. [1]</p> <p><b><u>Key Idea: To state concept of heat loss</u></b></p>	2		<b>Obs</b>	<b>Exp</b>	<b>Mark</b>	
				✓	✓	1	
				✓	x	0	
				x	✓	0	
				x	x	0	

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	(ii) The temperature of the water decreased. The water lost heat to the metal ball. [1]		
41b	<b><u>Key idea: Heat gain/heat loss concept (equilibrium )</u></b> 29° C (units are optional) OR Room temperature	1	
42a	<b><u>Key idea: To identify aim of experiment</u></b> To find out if [To test whether / To show that] the amount of talcum powder spread on the ramp surface affects the time taken by the cube to reach the bottom of the ramp.	1	
42b	<b><u>Key idea: Identify the relationship between the independent and dependent variables</u></b> As the amount of talcum powder spread on the ramp surface increases, the time taken by the cube to reach the bottom of the ramp decreases. OR As the amount of talcum powder spread on the ramp surface decreases, the time taken by the cube to reach the bottom of the ramp increases.	1	
<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>
42c	The talcum powder reduces friction between the cube and the surface of the ramp.	1	Talcum powder reduces friction (0m)
43a	F, It <u>expands more</u> than E when <u>heated</u> .	1	“F” carries no mark. Matter expands when heated, not bend when heated.

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			Expands faster (0m) <u>bend</u> more / furthest (0m)
43b	<p>Bimetallic strip will <u>gain heat from fire</u>. It will <u>expand inwards (towards)/ expand and bend to the contact</u>. (1m) Once it touches the contact, the <u>circuit is closed</u> and the bell will ring. (1m)</p> <p>OR</p> <p>Both F and E <u>gain heat</u>, <u>expand and bend to touch the contact</u> (1m) to <u>make a close circuit</u>. (1m)</p>	2	<p>Focus on keywords. “Bend” is accepted here as it is to show the movement of the bimetallic strip towards the contact. Read in totality – read for the idea that the bimetallic strip was heated up and that caused it to expand and hence bend towards the contact. When this happens, a closed circuit is formed and a sound is heard.</p>
44a	<p>Kinetic energy of wind → Kinetic energy of wind blade → Electrical energy of generator</p>	1	<p>“Energy” must be written. No “energy” ( 0m)  without mentioning “of wind/wind blade/ generator” (1/2m)</p>
<b>Qn</b>	<b>Acceptable answer</b>	<b>MARK</b>	<b>Remarks</b>
44b	<p>The <u>greater / longer the length of blades</u> of the wind turbine, the <u>greater the amount of electrical energy generated</u>. or As the <u>length of blades increases</u>, the amount of <u>electricity generated also increases</u>.</p>	1	<p>As the amount of electricity generated increases, the length of blades increases = 0 m (wrong independent variable)  <u>Bigger</u> length of blade (0m)</p>

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44c	Less electricity (electrical energy) will be produced/generated. The additional blades will <u>add mass</u> , making it <u>heavier</u> . Hence it <u>needs more energy to turn</u> . <u>Smaller amount of kinetic energy is used to produce electrical energy</u> .	1	
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