



Rewarding Learning

General Certificate of Secondary Education
2011–2012

Science: Double Award (Modular)

Living Organisms and the Processes of Life

End of Module Test

Foundation Tier

A

[GDA01]

MONDAY 27 FEBRUARY 2012

9.30 am–10.15 am

**MARK
SCHEME**

			AVAILABLE MARKS
1	(a) vitamin D		
	calcium	[2]	
	(b) iron used to make haemoglobin/used in red blood cells	[1]	3
2	(a) cell membrane/plasma membrane	[1]	
	(b) respiratory passages/oviduct/nose/throat (not lungs)	[1]	
	(c) ciliated cell has no cell wall/no chloroplasts/no large vacuole/plant cell has vacuole	[1]	3
3	(a) A – pancreas B – large intestine/colon	[2]	
	(b) it is long/has folds; thin walls/one cell thick for absorption gives large surface area for absorption/time for all food to be digested has villi/microvilli → large surface area good blood supply → for diffusion or absorption	[2]	4
4	(a) osmosis	[1]	
	(b) xylem	[1]	
	(c) travelled in/xylem in leaves/pulled up by transpiration into veins	[1]	3
5	(a) renal artery	[1]	
	(b) urine (not urea)	[1]	
	(c) osmoregulation/control of water level	[1]	3
6	(a) optic nerve/nerve leading to brain (not nerve on its own)	[1]	
	(b) controls amount of light that enters eye	[1]	
	(c) both rays to meet on the retina	[1]	3

		AVAILABLE MARKS
7	<p>(a) any three from: antigen (on surface of micro-organism); antibodies made to match antigen/antibodies lock onto the micro-organism/bacteria lock onto antigen; (not disease) produce clump; stops micro-organism spreading or makes easier to engulf</p>	[3]
	(b) Active	[1]
8	<p>(a) (i) <input type="text" value="G"/></p> <p>(ii) <input type="text" value="E"/></p>	[1] [1]
	(b) appropriate direction of arrows through each side of the heart: from D through to E; from G through to F in heart	[2]
9	<p>(a) Any two from: (assume inhaled)</p> <ul style="list-style-type: none"> • inhaled air has more oxygen or converse: exhaled has less O₂ • inhaled air has less carbon dioxide or converse • inhaled air has less water vapour or converse • inhaled air is colder or converse 	[2]
	<p>(b) Any two from:</p> <ul style="list-style-type: none"> • large surface area/lots of them • good blood supply/capillaries close by • moist • short diffusion distance/thin walls of alveoli or capillaries/very thin • permeable 	[2]
10	(a) starch is too large to pass through the Visking tubing/membrane	[1]
	(b) starch (in the tubing) broken down to sugar; by amylase; sugar small enough to escape from the tubing (not conc. gradient)	[3]
11	<p>tube A; snail respire/produces carbon dioxide; in tubes B/C plant takes in carbon dioxide; by photosynthesis in tube A no pondweed to absorb CO₂</p>	[4]

12 description: Cells are plasmolysed/cell membrane has pulled away from cell wall/cells are flaccid/cells shrivel/vacuole shrunk;

explanation (any **three** from):

- lower water concentration outside cells/more water inside cell
- water moves out/of cells
- by osmosis
- across a partially/selectively/semi-permeable membrane (not solution passes out)

[4]

4

13 (a) all points correctly plotted;
points joined with straight lines;

- vertical lines = 1 mark for points
- not line of best fit
- -1 if line drawn from origin

[2]

(b) 38–40 bubbles (consequential marking according to graph)

[1]

(c) as the light intensity decreases, there are less oxygen bubbles produced/less photosynthesis **or** closer lamp is to beaker → more O₂ bubbles/more photosynthesis **or** converse

[1]

(d) (i) Control variables

Any **two** from:

- control temperature (using a heat shield/water bath) (not same size beaker)
- same concentration of carbon dioxide in water/same hydrogen carbonate concentration in water
- same pH in water
- allow 5 minutes equilibration at each distance/settle
- same piece/amount of pondweed
- same volume of water
- same bulb/strength bulb

[2]

(ii) reliability – do repeats at each distance/repeat experiment (not repeat at different distance, not repeat with different pondweed)

[1]

7

Total

50