



Rewarding Learning

**General Certificate of Secondary Education
2011–2012**

Science: Double Award (Modular)

Living Organisms and the Processes of Life

End of Module Test

Higher Tier

A

[GDA02]

TUESDAY 8 NOVEMBER 2011

1.30 pm–2.15 pm

**MARK
SCHEME**

		AVAILABLE MARKS				
1	(a) A – right atrium	[1]				
	(b) Aorta; pulmonary vein	[2]				
	(c) Prevents back flow of blood into the heart/stops blood going in the wrong direction/stop blood flowing back into ventricles	[1]				
		4				
2	(a) One cell thick/thin flattened cells/large surface/short diffusion distance close to blood – (<i>not moist not permeable</i>)	[1]				
	(b) Oxygen/O ₂	[1]				
	(c) Increases surface area/more diffusion occurs/speeds up diffusion	[1]				
		3				
3	(a) Protease/pepsin	[1]				
	(b) Villi/microvilli/good blood supply/permeable/thin walls (<i>not long not large surface area not folds on its own</i>)	[1]				
	(c) Liver	[1]				
		3				
4	(a) Athletes foot/ringworm/thrush	[1]				
	(b) <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 5px;">Active</td> <td style="padding: 5px;">Produced by body itself</td> </tr> <tr> <td style="padding: 5px;">Passive</td> <td style="padding: 5px;">From outside the body e.g. colostrum/pass across placenta</td> </tr> </table> vaccination/injection	Active	Produced by body itself	Passive	From outside the body e.g. colostrum/pass across placenta	[2]
Active	Produced by body itself					
Passive	From outside the body e.g. colostrum/pass across placenta					
	(c) Active-memory cells made/antibodies remain in the blood (<i>not memory on its own</i>)	[1]				
		4				
5	(a) Diaphragm	[1]				
	(b) Increased volume; decrease in pressure more space in jar	[2]				
	(c) Do not have alveoli/no associated blood capillaries/lots of air sacs No branching/no cells present	[1]				
		4				

			AVAILABLE MARKS
6	<p>Description: Cells are plasmolysed/flaccid/cell membrane has pulled away from the cell wall; not turgid not smaller vacuole</p> <p>Explanation: Lower water concentration outside the cells (i.e. in the sugar solution); (or more conc. outside) so water moves out of the cells; by osmosis; across a partially permeable membrane/semipermeable.</p> <p>Marking – 1 mark for Description – any three for Explanation</p> <p>down conc. gradient but only if } 2 marks water moving out not down conc. gradient on its own</p>		4
7	<p>(a) 1. Glucose/sugar solution/water 2. Layer of oil/paraffin oil [2]</p> <p>(b) Carbon dioxide/CO₂ [1]</p> <p>(c) Alcohol/ethanol/not energy [1]</p>		4
8	<p>(a) growth or p.s. – not as much as it could be Limiting factor is one that prevents photosynthesis occurring at its maximum rate; temperature/light if you increase the factor the photosynthesis/growth increases [2]</p> <p>(b) Carbon dioxide/CO₂ (<i>not water</i>) [1]</p>		3
9	<p>(a) Blood is under high pressure in artery/allow blood to be carried from heart [1]</p> <p>(b) Allows blood to flow through easily/freely/more space for blood/allow blood to go back to heart [1]</p> <p>(c) Starts and ends in capillaries carries high concentrations of digested food molecules/or named food does not go back to heart [1]</p>		3
10	<p>(a) Used for amino acid/protein synthesis [1]</p> <p>(b) Any three from: Active transport used; moves nitrates from a low concentration to a high concentration/ against a concentration gradient; needs energy/from respiration; which uses oxygen [3]</p> <p>(c) Higher rate of transpiration on a warm day/more water moves up xylem [1]</p>		5

		AVAILABLE MARKS
11 (a)	Liver	[1]
(b)	Any three from: Ultrafiltration in kidneys/blood is filtered/high pressure in kidneys; urea passes into ureter; then stored in bladder; expelled from body via urethra	[3]
		4
12 (a) (i)	pH = 7	[1]
(ii)	Catalase is partially/or changes shape catalase/enzyme denatured at pH4;/or changes shape of active site/not too acidic on its own So hydrogen peroxide does not fit readily into active sites accept substrate for hydrogen peroxide	[2]
(b)	Lipase is involved; Breaks down fats to fatty acids and glycerol (must be fats digestion) emulsification/or description/or larger surface area/large droplets to small droplets	[2]
		5
13 (a)	Any two from: There is less oxygen carried in the mother's blood;/CO binds to Hb so less oxygen passes to the foetus; foetus has a lower rate of respiration; and therefore less energy for growth – not less growth on its own	[2]
(b)	Any two from: Bacteria/dust are trapped in the mucus in the respiratory tract;/clogged respiratory tract normally wafted by cilia upwards to be swallowed; this allows bacteria to enter the lungs; lung cancer	[2]
Total		4
		50