



Rewarding Learning

General Certificate of Secondary Education
2010–2011

Science: Double Award (Modular)

Living Organisms and the Processes of Life

End of Module Test

A

Higher Tier

[GDA02]

THURSDAY 24 FEBRUARY 2011, MORNING

**MARK
SCHEME**

		AVAILABLE MARKS
1	(a) Blood passes through the heart twice in one circuit of the body / blood flows from heart to lungs then back to the heart to be passed around the body	[1]
	(b) A Pulmonary vein B Hepatic portal vein	[2]
	(c) Some oxygen is used in respiration ; by the liver .	[2]
2	(a) Immunisation/vaccination/active immunity	[1]
	(b) Any two from: For the second injection the response is quicker; a higher level of antibody production; the level of antibodies remains higher	[2]
	(c) Phagocytosis	[1]
3	(a) Blood is under too high pressure in artery	[1]
	(b) Any four from: There is a higher water concentration outside the cell/lower water inside the cell; more H ₂ O outside/more dilute solution outside. so water moves into the blood cells ; across a partially permeable membrane; the cells would burst; as they do not have a cell wall	[4]
4	Any two from each	
	Air movements/air is not trapped/allow air to move; Remove warm air/heat is not trapped/air is not an insulator; Heat lost by radiation/or convection.	
	Evaporation of water; Cooling effect on the skin; Heat lost by radiation.	[4]
		4

		AVAILABLE MARKS
5	(a) Auxin is present in the left hand side/shaded side; the impermeable sheet prevents its downward movement [2]	
	(b) (i) Phototropism [1]	
	(ii) Plant gets more light; so more photosynthesis/more growth or better photosynthesis [2]	5
6	(a) <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">Starch</div> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-left: 100px;">Fatty acids + glycerol</div> (both needed) [2]	
	(b) Any two from: lipases only work on fats/protease will only work on protein; only fat fits into active site of lipase/protein will not fit/locking/fit/ specificity/shape/active site each enzyme is specific for a particular substrate/principle of substrate specificity applies [2]	4
7	(a) <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">Water</div> <div style="border: 1px solid black; padding: 5px; display: inline-block;">Ethanol or Alcohol/ Lactic acid</div> [2]	
	(b) Glucose is more fully broken down/metabolised/energy still locked up in the ethanol/alcohol [1]	3
8	(a) Carbon dioxide [1]	
	(b) Any two from: Photosynthesis is controlled by enzymes ; enzymes and substrates have more kinetic energy at 20°C;/or molecules movement; so more collisions between enzymes and substrates [2]	3
9	Any four from: Less oxygen in soil of B; so less respiration/energy; so less active transport/uptake; of minerals; specifically magnesium; so chlorophyll not made [4]	4

		AVAILABLE MARKS
10 (a)	Any two from: Immerse the potometer (without the plant) completely in water; stem of shoot is cut under water; to stop air entering xylem; while still under water, attach shoot through rubber stopper; smear shoot/rubber stopper connection with Vaseline [2]	
(b)	Reduced rate of transpiration/slower uptake of water/decreased water uptake/slower movement of air bubble; due to higher humidity (lower conc. gradient for water loss/or described – more H ₂ O outside leaf) [2]	4
11 (a)	Beaker of water acts as a heat shield/to prevent boiling tube warming up/so that temperature remains constant/maintain temperature/stop plant heating. [1]	
(b)	Any three from: Allow apparatus to equilibrate/acclimatise at a set light intensity; leave for a period of time; to draw the O ₂ collected into the calibrated capillary tube (use syringe); measure length of air bubble/count the O ₂ bubbles/pushes up syringe; rate is volume of oxygen produced/minute/time [3]	
(c)	Some oxygen is used in respiration/some of the oxygen dissolves in the water/some O ₂ could escape from apparatus. [1]	5
12 (a)	Sensory nerve starts at sense organ – inside dorsal root to grey matter of spinal cord [1]	
(b)	Muscle [1]	
(c)	Speed/protection/does not involve brain/stops damage [1]	
(d)	Travel to brain/make brain aware/inform the brain [1]	4
Total		50