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]	5
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]	4
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_2O 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]	5
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)** Starch Fatty acids + glycerol (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)** Water Ethanol or Alcohol/ Lactic acid [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_2O 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**