



*Rewarding Learning*

**General Certificate of Secondary Education  
2010–2011**

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**Science: Double Award (Modular)**

Living Organisms and the Processes of Life  
End of Module Test

Higher Tier

**[GDA02]**

**THURSDAY 19 MAY 2011, MORNING**

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**MARK  
SCHEME**

- 1 (a) Cornea [1]
- (b) Light is bent/refracted; by the cornea/lens;  
Information passes along *optic* nerve (to brain)  
not focused onto retina—because told in question [3] 4
- 2 (a) Biceps contracts/shortens;  
Triceps relaxes/extends [2]
- (b) Muscles work against each other/when one contracts,  
the other relaxes [1] 3
- 3 (a) Antigens/proteins [1]
- (b) Clump is ingested/digested;  
by phagocytes/white blood cells [2]
- (c) Antibodies remain in the blood/memory cells made  
WBC's retain memory/more antibodies produced quickly [1] 4
- 4 (a) E1 – Amylase  
E2 – Lipase [2]
- (b) Amino acids [1]
- (c) Large surface area/villi/microvilli/thin [1] 4

5

A		
B	Purple	
C	Yellow	Leaf respire only
D		Spiders respire

[4] 4

		AVAILABLE MARKS
6	<p>Visking tubing bigger/bag bigger/swells/swollen/turgid/expands</p> <p>Any <b>two</b> from four: [1] for description, [1] for rest  water molecules pass through but not sugar molecules;/sugar molecules too big to pass through  water moves into the tubing;  by osmosis;  down the concentration gradient/higher water concentration outside the Visking tubing  max. [2] if have incorrect statement</p>	<p>[1]</p> <p>[2]</p> <p>3</p>
7	<p>(a) Layer of <i>oil</i>/paraffin oil</p> <p>(b) In anaerobic –  assume applies to anaerobic or converse if clear  Ethanol produced;/alcohol produced  No water made;/produced  Less energy released/produced</p>	<p>[1]</p> <p>[2]</p> <p>3</p>
8	<p>(a) Association/relay/intermediate/connector</p> <p>(b) Muscle/effector</p> <p>(c) Quicker response/do not waste time thinking/more likely to avoid injury, e.g. a burn/protection against danger/happens automatically.</p>	<p>[1]</p> <p>[1]</p> <p>[1]</p> <p>3</p>
9	<p>(a) (i) Gall bladder</p> <p>(ii) Any <b>two</b> from: Bile <i>emulsifies</i> fats/breaks large fat globules into smaller fat droplets; so increases the surface area; for lipase to act or enzymes  alkaline; neutralise stomach acid</p> <p>(b) Water absorption/less water absorbed/may suffer dehydration not excretion</p>	<p>[1]</p> <p>[2]</p> <p>[1]</p> <p>4</p>

10

	At start	At end
Water	✓	✓
Urea	X	✓
Glucose	✓	✓
Salt	✓	✓
Red blood cells	X	X

must have x's or present and absent

[1] for each substance

[5]

5

11 (a) Lift the capillary tubing out of the beaker;  
(as water is transpired from the leaves)/air enters end of  
capillary tube

[2]

(b) There are (more) *stomata* on the lower leaf surface;/less stomata on  
upper surface  
stomata/these are not blocked allowing transpiration/and water is lost  
through stomata  
allow pores for stomata

[2]

4

12 (a) Any **two** from:  
There is an *increase in* the respiration rate;/more respiration  
which produces heat;/heat energy  
to compensate for heat loss to the outside/to make up for heat loss  
from body

[2]

(b) Any **three** from:  
Hair lowered; so no insulating layer; hairs lie flat  
Sweat produced; which cools the skin as water evaporates;  
Shunt vessel constricts; so more blood passes through the surface  
capillaries/vasodilation; so heat is lost by radiation

[3]

5

**13** Any **four** from:

less growth/stunted at the 6 °C temperature;/better growth at 20 °C

there is reduced enzyme activity;

so less respiration/less energy produced;

so less active uptake;

mineral salts;

from a low to a high concentration/against the concentration gradient

OR

less growth/stunted at the 6 °C temperature;

there is reduced enzyme activity;

so less photosynthesis;

less starch/so less glucose made;

so less energy (for growth)

[1] description – less growth at 6 °C or converse

6 °C – less photosynthesis and respiration = [1]

[4]

AVAILABLE  
MARKS

4

**Total**

**50**