



Rewarding Learning

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

Science: Double Award (Modular)

Living Organisms and the Processes of Life
End of Module Test

Higher Tier

[GDA02]

THURSDAY 19 MAY 2011, MORNING

**MARK
SCHEME**

		AVAILABLE MARKS												
1	(a) Cornea	[1]												
	(b) Light is bent/refracted; by the cornea/lens; Information passes along <i>optic</i> nerve (to brain) not focused onto retina—because told in question	[3]												
2	(a) Biceps contracts/shortens; Triceps relaxes/extends	[2]												
	(b) Muscles work against each other/when one contracts, the other relaxes	[1]												
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	(a) E1 – Amylase E2 – Lipase	[2]												
	(b) Amino acids	[1]												
	(c) Large surface area/villi/microvilli/thin	[1]												
5	<table border="1" style="width: 100%; height: 100%;"> <tbody> <tr> <td style="width: 10%; text-align: center;">A</td> <td style="width: 40%;"></td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">Purple</td> <td></td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">Yellow</td> <td style="text-align: center;">Leaf respire only</td> </tr> <tr> <td style="text-align: center;">D</td> <td></td> <td style="text-align: center;">Spiders respire</td> </tr> </tbody> </table>	A			B	Purple		C	Yellow	Leaf respire only	D		Spiders respire	[4]
A														
B	Purple													
C	Yellow	Leaf respire only												
D		Spiders respire												
		4												

		AVAILABLE MARKS
6	<p>Visking tubing bigger/bag bigger/swells/swollen/turgid/expands</p> <p>Any two 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 two 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

AVAILABLE MARKS

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]

Total

**AVAILABLE
MARKS**

4

50