



Rewarding Learning

**General Certificate of Secondary Education
2012**

Science: Double Award (Modular)

Paper 1
Foundation Tier

[G8201]

WEDNESDAY 30 MAY, AFTERNOON

**MARK
SCHEME**

- 1 (a) (i) to destarch it/so that any starch present at the end was made during the experiment [1]
- (ii) to kill the leaf/stop chemical reactions
boil in **alcohol/ethanol** [2]
- (iii) turn off Bunsen burner/use **electronic** water bath [1]
- (iv) blue/black [1]
- (b) (i) oesophagus;
stomach;
large intestine/colon;
anus; [4]
- (ii) buccal cavity/mouth;
rectum; [2]
- (c) Any **two** (adaptation with corresponding explanation) from:
Adaptation – microvilli/large surface area;
Explanation – increased absorption area/for quicker/more absorption;
Adaptation – lots of them;
Explanation – more absorption/quicker absorption/more absorption;
or
Adaptation – thin epithelium/one cell thick/thin walls;
Explanation – short diffusion distance
or
Adaptation – permeable or semi-permeable;
Explanation – to allow molecules to pass across;
or
Adaptation – good blood supply/blood supply close to the wall;
Explanation – main diffusion/concentration gradient/quick distribution
around body/maximum distribution around the body;
or
Adaptation – villi can move/muscle in villi;
Explanation – to allow more glucose/products of digestion to come in
contact;
or
Adaptation – lacteal;
Explanation – to allow absorption of fats/fatty acids and glycerol [4]

AVAILABLE
MARKS

15

2	<p>(a) (i) cuts out the light/less light; so that they can't photosynthesise/less p/s;</p> <p>(ii) bacteria/fungi;</p> <p>(iii) lack of oxygen/bacteria respire;</p> <p>(iv) Any two from: don't spread slurry when it is raining; don't spread slurry too close to the river; don't spread slurry Oct–Jan (winter) have larger storage tanks check weather forecast</p> <p>(v) artificial fertiliser/sewage/silage/chemical fertiliser/nitrates/phosphate/ detergent/septic tank overflow</p> <p>(b) A = stonefly nymphs; (or + bloodworms + snails) B = bloodworms only; C = pond snails (or + bloodworms);</p> <p>(c) (i) grow crops/development, e.g. roads, housing etc./use wood/ diseased trees;</p> <p>(ii) Any three from:</p> <ul style="list-style-type: none"> • soil erosion/mudslides/increase flooding • kill animals/loss of food/loss of habitats/nest sites for animals/ disrupt wildlife • climate change/more global warming/more CO₂ gases/less photosynthesis/loss of ice caps/less oxygen/less biodiversity/ reduction in types or species • noise/visual or aesthetic pollution/other gases, e.g. sulphur dioxide/pollution from housing or industry <p>(d) (i) quadrat</p> <p>(ii) Any four from:</p> <ul style="list-style-type: none"> • identify plant species; • estimate percentage cover; • calculate average/record; • repeat several times in one area for reliability; • repeat in the other area; <p><i>If use co-ordinates/line transect/belt transect/throw/random numbers</i></p> <p>Quality of written communication</p> <p>(iii) temperature; thermometer; light; light meter/sun/LDR pH; pH meter; rain/rainfall; rain gauge – measuring cylinder; wind; anemometer soil moisture; moisture meter – description of using oven; humidity; hygrometer; (Any pair)</p>	<p>[2]</p> <p>[1]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[3]</p> <p>[1]</p> <p>[3]</p> <p>[1]</p> <p>[4]</p> <p>[2]</p> <p>[2]</p>
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AVAILABLE MARKS

(e) (i)	sun/sunlight; <i>not light</i>	[1]
	(ii) vegetation → beetle → centipede → toad → fox; (arrows in the correct direction)	[2]
	(iii) more toads eaten by foxes; fewer rabbits available to foxes/kestrel/stoats eat more rabbits/more competition for rabbits/stoat has less voles to eat;	[2]
(f) (i)	pitfall (trap); <i>not trap on own</i>	[1]
	(ii) the centipedes may have eaten the beetles; or distribution may be different/not in the area/beetles only come out during the day/beetles fly <i>not beetles can't get in</i>	[1]
	(iii) cover to keep the rain out/stops predation/stops them flying out or escaping/keeps larger animals out	[1]
(g)	less light for photosynthesis; top surface of leaves covered in soot ; less gas exchange/less CO ₂ for photosynthesis; stomata/pores on lower surface blocked;	[4]
3 (a) (i)	labels correct, [1] each	[4]
	(ii) vagina/cervix;	[1]
	(iii) implantation;	[1]
	(iv) placenta/umbilical cord;	[1]
	(v) oxygen/glucose/vitamins/minerals/hormones/amino acids/drugs/ alcohol/antibodies/named vitamins or minerals/water/carbon monoxide/protein/microbes or named microbes;	[1]
	(vi) anywhere on the uterus wall or lining – area shaded; <i>not in gap</i>	[1]
	(vii) Any two from: <ul style="list-style-type: none"> • cervix dilates/opens/widens • rupture of amniotic membrane/waters break • mucus plug comes away • afterbirth comes away/placenta comes away • birth canal widens 	[2]
(b) (i)	condom; diaphragm;	[2]
	(ii) condom;	[1]
	(iii) gonorrhoea/syphilis/chlamydia	[1]

AVAILABLE
MARKS

35

15

			AVAILABLE MARKS	
4	(a) (i)	GG and Gg	[2]	
	(ii)	Gg and Gg; Punnett; 1 cross correct; 1 circle around gg;	[4]	
	(b) (i)	male – because have (X chromosome and) Y chromosome/ has Y chromosome	[1]	
	(ii)	Down’s syndrome; extra chromosome/three chromosome 21s/47 chromosomes;	[2]	
	(iii)	cystic fibrosis/colour blind/dwarfism/albino/haemophilia/muscular dystrophy/PKU/Huntington's	[1]	
	(c) (i)	Any two from: • cancer cells have larger nucleus • thicker membrane/bigger/darker membrane • less cytoplasm <i>accept reverse</i>	[2]	
	(ii)	UV light; <i>not light on its own</i>	[1]	
	(iii)	Any two from: • bigger • darker in colour/change in colour • irregular border/ragged edges/changed shape/different shape • spread	[2]	15
Total				80