



**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 (a) (i) cuts out the light/less light;
so that they can't photosynthesise/less p/s; [2]
- (ii) bacteria/fungi; [1]
- (iii) lack of oxygen/bacteria respire; [1]
- (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 [2]
- (v) artificial **fertiliser**/sewage/silage/chemical fertiliser/nitrates/phosphate/
detergent/septic tank overflow [1]
- (b) A = **stonefly nymphs**; (**or** + bloodworms + snails)
B = bloodworms only;
C = pond snails (**or** + bloodworms); [3]
- (c) (i) grow crops/development, e.g. roads, housing etc./use wood/
diseased trees; [1]
- (ii) Any **three** from:
- 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 [3]
- (d) (i) quadrat [1]
- (ii) Any **four** from:
- identify plant species;
 - estimate percentage cover;
 - calculate average/record;
 - repeat several times in one area for reliability;
 - repeat in the other area; [4]
- If use co-ordinates/line transect/belt transect/throw/random numbers*
- Quality of written communication [2]
- (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**) [2]

AVAILABLE
MARKS

			AVAILABLE MARKS	
(e)	(i)	sun/sunlight; <i>not light</i>	[1]	35
	(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]	15

4 (a) (i) GG and Gg	[2]	AVAILABLE MARKS
(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