



**General Certificate of Secondary Education  
2011**

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**Science: Double Award (Non-Modular)**

Paper 1  
Foundation Tier

**[G8401]**

**THURSDAY 19 MAY, AFTERNOON**

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**MARK  
SCHEME**

		AVAILABLE MARKS
1	(a) trachea/windpipe	[1]
	(b) alveoli/air sac not lung	[1]
	(c) down	[1]
	(d) tar	[1]
		4
2	(a) Increase	[1]
	(b) Insulin	[1]
	(c) Hormone/protein (not amino acid)	[1]
	(d) Diabetes	[1]
		4
3	(a) 1st mark some or all separated molecules; 2nd mark 5 as in diagram – correct shapes	[2]
	(b) diffusion	[1]
	(c) large surface area; villi; one cell thick; capillary network/ good blood supply	[2]
		5
4	(a) compost them/feed them to animals/green or brown bin/compost bin [1]	
	(b) not less pollution/cleaner environment unless qualified less fuel used transporting rubbish to landfill; less fuel used in manufacturing new materials; less artificial fertiliser manufactured; less raw materials being quarried less polluting gases/less CO <sub>2</sub> /less global warming landfill sites not being filled so quickly less incineration; saves forests/resources/fossil fuels saves energy; ( <i>any two</i> )	[2]
		3

- 5 (i) decrease  
– more prey eaten/killed [2]
- (ii)
- | Factor        | Effect on population size |
|---------------|---------------------------|
| Immigration : | increase                  |
| Birth rate :  | increase                  |
| Disease :     | decrease                  |
- [3] 5
- 6 (a) uterus [1]
- (b) 9 months [1]
- (c) glucose/amino acids/vitamins/named vitamins/minerals  
minerals [1]
- (d) Process of Birth (*any three*):  
(Uterus muscles) contract;  
Mucus plug comes away;  
Cervix dilates; head first  
Amnion ruptures/waters break [3]  
QWC 2 biological statements [2] 8
- 7 (a) Plants in Pot A grow to one side [1]
- (b) Plants were grown where light is only available to the plant from one  
side for A [1]
- (c) Phototropism/tropism [1] 3
- 8 Benedict's – brick red/orange/red  
Biuret – lilac/purple/mauve [2] 2
- 9 More fibre – prevent bowel cancer/peristalsis;  
Less saturated fat – reduce risk of CHD/heart attack/lower cholesterol  
reduce stroke/less/reduce obesity less clogged arteries [2] 2
- 10 Photosynthesis; *transport* minerals; support; cooling;  
Solvent for chemical reactions/transpiration; [3] 3

AVAILABLE  
MARKS

		AVAILABLE MARKS
<b>11 (a)</b> radius and scapula	[2]	4
<b>(b)</b> biceps	[1]	
<b>(c)</b> nerve/motor neuron/neuron	[1]	
<b>12 (a)</b> ureter	[1]	4
<b>(b)</b> water/urea/salts ( <i>any two</i> )	[2]	
<b>(c)</b> kidney <i>transplant</i>	[1]	
<b>13 (a) (i)</b> sugar/glucose; energy;	[2]	23
<b>(ii)</b> red blood cell/haemoglobin	[1]	
<b>(iii)</b> diffuses into blood/plasma/tissue fluid	[1]	
<b>(b) (i)</b> 1 mark each correct link body organs to right atrium vessel from right <i>ventricle</i> to lungs lungs to left atrium left <i>ventricle</i> to body organs	[4]	
<b>(ii)</b> Aorta	[1]	
<b>(iii)</b> needs to pump blood all around the body	[1]	
<b>(c)</b> rises; drops; doesn't drop as low as starting point; quickly rises just after Booster (day 16)/steeper gradient rises to higher level;	[5]	
<b>(d) (i)</b> all the same length <i>at start</i>	[1]	
<b>(ii)</b> temp/amount of drying/volume of solution/same diameter cylinders/same type/age of potato	[1]	
<b>(iii)</b> water moved out/left the cell; more water inside than outside the potato	[2]	
<b>(iv)</b> plasmolysed cell 1 each correct label	[4]	

- 14 (a) (i)** edges – not shaded  
centre – shaded [1]
- (ii)** centre has chlorophyll/chloroplasts;  
(to trap light) for photosynthesis; [2]
- (b) (i)** sunlight/sun/light [1]
- (ii)** 2 and 3 2nd and 3rd [1]
- (iii)** marsh vegetation → grasshopper → herring → bald eagle  
(1 correct food chain; 1 arrows) → but must have marsh veg.  
at start [2]
- (iv)** mosquito as top bar; salmon and seal [2]
- (v)** mosquito at top; mosquito smallest; symmetry + pyramid + steps;  
all labels correct rest (ignore top bar) in correct order and relative  
lengths correctly labelled = 1 [4]
- (c) (i)** Process A – photosynthesis  
Process B – respiration  
Process C – combustion (burning) [3]
- (ii)** wind; solar; hydro-electric; wave; tidal power; geothermal;  
(*any two*) [2]
- 15 (a) (i)** Cell A – sperm  
Cell B – egg/ovum [2]
- (ii)** Cell A – testes  
Cell B – ovary [2]
- (iii)** tail; for swimming/haploid chromosomes; to restore diploid no; [2]
- (iv)** fertilisation [1]
- (b) (i)** DNA/inheritance genetic; environment [2]
- (ii)** animals in population would be taller/average height taller [1]
- (c)** A – gene/allele;  
B – chromosome;  
C – nucleus/nuclear membrane; [3]

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<b>(d) (i)</b> skin	[1]	AVAILABLE MARKS
<b>(ii)</b> <i>Any two</i> cover up (e.g. wear hat); stay in the shade or out of the strongest sun (e.g. 11 am–3 pm); use a sunscreen liberally (high SPF); don't use sunbed or u.v. light;	[2]	
<b>(e) (i)</b> Bb; × bb in this order	[2]	
<b>(ii)</b> Punnett square; Correct cross;      CM	[2]	
<b>(iii)</b> Phenotypes: black (spots)      brown (spots); Ratios:                    1                    :                    1                    ;	[2]	22
<b>Total</b>		<b>110</b>