



General Certificate of Secondary Education
2011

Science: Biology

Paper 2
Foundation Tier

[G0902]

THURSDAY 2 JUNE, MORNING

**MARK
SCHEME**

- 1 (a) (i) 14, 20, 66; [2]
- (ii) Recycling; [1]
- (iii) Any **TWO** from:
 Leaching/release of toxic chemicals;
 Sight/smell/described;
 Increased methane/CO₂/greenhouse gas;
 Using up more land; [2]
- (b) (i) 30; [1]
- (ii) Reduced/smaller/lower/shorter/decreases; [1]
- (iii) Any **TWO** from:
 Burn less fossil fuels;
 Use alternative energy sources/described;
 Greater use of public transport/described;
 Catalytic convertors/chimney scrubbers;
 Lead free petrol;
 Reduce use of aerosols; [2]
- (iv) **Burning** Fossil fuels/named example; [1]
- (c) (i) Cutting down (mature) trees; [1]
- (ii) Any **TWO** from:
 Increased oxygen;
 Decreased carbon dioxide;
 Less soil erosion/reduces flooding;
 Fewer habitats lost; [2]
- (d) (i) Height: 25–30, 19–23; [1]
 Weight: 600; 300; [2]
 Tail: Short **and** rounded, Long **and** bushy; [1]
- (ii) Any **ONE** from:
 Grey can eat/digest wider range of foods;
 Grey breed more often/have larger litters;
 Grey immune to/carries viral disease which kills red; [1]

AVAILABLE
MARKS

18

2	(a)	(i)	A – Red blood cell;	[1]	
			B – White blood cell;	[1]	
			C – Platelet;	[1]	
		(ii)	19:1;	[1]	
		(iii)	Transports oxygen;	[1]	
		(iv)	<i>Any TWO from:</i>		
			A no nucleus and nucleus in B;		
			A biconcave shape and B round shape;		
			A smaller/B larger;	[2]	
		(v)	Plasma;	[1]	
			transport;	[1]	
		(vi)	C/platelets;	[1]	
		(vii)	Stops blood loss;	[1]	
			<i>Prevents</i> infection/microorganism entering blood;	[1]	
	(b)	(i)	A – Heart;	[1]	
			B – Lung(s);	[1]	
			C – Aorta;	[1]	
			D – Hepatic vein;	[1]	
		(ii)	Arrow draw pointing towards the liver;	[1]	
	(c)		Thick; Fast/spurts;	[2]	
			Yes; Slow;	[2]	
			No;	[1]	[5]

AVAILABLE MARKS
22

- 3 (a) (i) A – petal; [1]
 B – stigma; [1]
 C – sepal; [1]
 D – ovule; [1]
- (ii) Filament longer than top of stigma **and** starts in correct area; [1]
 anther on top of filament. [1]
- (iii) Transfer of pollen from anther; to stigma; [2]
- (iv) Any **TWO** from:
Nectar;
 brightly coloured petals;
 scent;
 anther above stigma; [2]
- (b) (i) Seed labelled with line; [1]
- (ii) Bright colour; [1]
 Sweet smell/taste; [1]
- (iii) Prevent it being **digested**; [1]
- (iv) Wind; self/explosive; animal; [3]
- (c) (i) Iodine; [1]
- (ii) Boil; in Benedict's solution; [2]
- (iii) Does not contain starch; but does contain sugar; [2]

AVAILABLE
MARKS

22

4	(a) (i) Less light;	[1]	
	(ii) <i>Absorbed</i> by plant/as energy source/chlorophyll; (During) photosynthesis/produce glucose/starch;	[1] [1]	[2]
	(iii) Any <u>TWO</u> from: Temperature; Water/drainage/rainfall/humidity; pH; Minerals/nitrates/fertilizer; CO ₂ ; Wind exposure;	[2]	
	(iv) x-axis label – Sample Areas Accurate plots (×2);	[1] [2]	
(b)	(i) A, C, D;	[1]	
	(ii) Any <u>TWO</u> from: Wings; Body temperature not constant; Lay eggs; No backbone;	[2]	
	(iii) Arthropods;	[1]	
	(iv) Legs;	[1]	
(c)	(i) Death rate higher/faster ; than birth rate;	[1] [1]	
	(ii) People leaving Ireland/moving away from/moving out of (Ireland);	[1]	
	(iii) Any <u>TWO</u> from: Improved food supply; Improved medical care/less disease; Improved sanitation/housing/standard of living; Increased immigration/birth rate/decreased death rate;	[2]	

AVAILABLE
MARKS

18

5	(a) (i)	Support/protection/movement; Digestive system; Transport/explained; Nervous;	[1] [1] [1] [1]
	(ii)	Group of organs working together;	[1]
	(iii)	Air is warmed/moistened; Mucus traps dust/bacteria/air filtered (by hairs);	[2]
	(b) (i)	A – Trachea; B – Bronchiole;	[1] [1]
	(ii)	<i>Any THREE from:</i> Large surface area; good blood supply; Thin; moist; good diffusion/concentration gradient; Permeable;	[3]
		Quality of written communication	[2]
	(c) (i)	120,000	[1]
	(ii)	83; Heart disease; Lung cancer; 82;	[1] [1] [1]
	(iii)	10 cigarettes per day 8 times risk of dying compared to non smokers; 30 per day have 25 times the risk;	[2]
	(iv)	Tar;	[1]
	(v)	Addiction to nicotine;	[1]

AVAILABLE MARKS
22

6 (a)	Cell wall	✓	✗	[1]	AVAILABLE MARKS	
	Cytoplasm	✓	✓	[1]		
	Chloroplast	✓	✗	[1]		
	Vacuole	✓	✗	[1]		
(b) (i)	A – Epidermis;			[1]		
	B – Cortex;			[1]		
	C – Vascular bundle;			[1]		
	(ii) Transport; sucrose/sugar/products of photosynthesis/food;			[2]		
	(iii) Arrow pointing up in xylem;			[1]		
	(iv) Transpiration;			[1]		
	(v) Osmosis;			[1]		
(vi) Size of cell; shape /size of vacuole; position of nucleus ;			[3]			
(vii) Root hair (cell); large surface area; to absorb water/minerals;			[3]			
				Total	18	
					120	