

CAMBRIDGE
INTERNATIONAL EXAMINATIONS

NOVEMBER 2003

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 70

SYLLABUS/COMPONENT: 0610/02

BIOLOGY
Paper 2 (Core)



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- 1
- A** – *Anax*;
- B** – *Aranea*;
- C** – *Pandalina*;
- D** – *Cancer*;
- E** – *Buthus*
- F** – *Musca*;
- Ignore use of common names – e.g. crab, spider, fly etc
Any four correct – 1 mark each [4]
- Total [4]
- 2 (a) (i) **Y** – exponential (phase) / log (phase); [1]
- (ii) animals take time to adjust / get used to the new habitat / A/W;
few (reproducing) individuals present;
individuals may be widely dispersed / A/W;
Any two – 1 mark each [2]
- (b) food / water supply;
disease;
predators / parasites;
availability of space / named example;
climate qualified / habitat qualified; Ignore ref. to pollution
Any three – 1 mark each [3]
- Total [6]
- 3 (a) (i) label to upper region of vagina / near to cervix; [1]
- (ii) label to upper third of oviduct; [1]
- (iii) label to uterine lining; [1]
- (iv) label to ovary; [1]
- (b) development of breasts / mammary glands;
widening of hips;
thicker layer of fat (under skin);
growth of axillary / pubic hair;
inhibition of FSH production;
Any three – 1 mark each [3]

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	(c)	✓ / yes ✗ / or left blank / no ✓ / yes; (Note – only 1 red tick to show correct response)	[1]
			Total [8]
4	(a) (i)	formation of amino acids / proteins / polypeptides;	[1]
	(ii)	nitrates lost with crop plants / by leaching; must be replaced / to increase yield / increase growth;	[2]
	(b)	plants / algae grow rapidly / algal bloom; cover surface; cut out light so submerge plants die; Ignore ref. to water turbidity. dead plants decomposed; bacteria multiply; (bacteria) use up oxygen; pond / water becomes anaerobic; animals die; Ignore ref. to suffocation eutrophication; Any five – 1 mark each	[5]
			Total [8]
6	(a) (i)	lipase;	[1]
	(ii)	fatty acids and glycerol;	[1]
	(iii)	(fatty acids) increase acidity of mixture / make it acidic; to below pH5 / lowers pH;	[2]
	(b)	enzyme activity faster at 35 °C / collisions occur more frequently / A/W / ORA; (fatty) acids released more rapidly / sooner / ORA;	[2]
	(c) (i)	5 °C – yellow; 55 °C – blue;	[2]
	(ii)	5 °C – enzyme inactive / working very slowly in cold; works faster / digests / breaks down (oil when warmed); 55 °C – enzyme destroyed / denatured / damaged / ref. to active site changes; R - killed permanent change / not reversed when cooled (and no digestion of oil);	[4]
			Total [12]

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- 5 (a) (i) (parent genotypes -) Gg, Gg; [4]
(gamete genotypes -) G, g, G, g;
(offspring genotypes -) GG, Gg, Gg, gg;
(offspring phenotypes -) green, green, green, white;
Accept - normal chlorophyll / normal for green, lacks chlorophyll for white
- (ii) green – 375 white – 125; [1]
(Note – only 1 red tick to show correct response)
- (b) 20 seeds not viable etc./ do not germinate;
75% / 360 of seedlings to be green;
25% / 120 white seedlings die;
because they lack chlorophyll;
* thus no photosynthesis;
* seedlings use up reserves / run out of food / cannot make own food;
the two points with * can be awarded as converse statements in
relation to green seedlings if not already awarded
Any five – 1 mark each [5]
- Total [10]
- 7 (a) (i) X – aorta; [2]
Y – pulmonary vein;
- (ii) prevent backflow / give one-way flow / control direction of flow of blood; [1]
(iii) has to generate greater pressure; [2]
to push / pump blood all round body / further;
- (b) (i) open closed; [2]
closed open;
Note – mark across each row)
- (ii) (tricuspid valve -)
pressure in (right) atrium / 2 units, greater than in (right) ventricle / 0 units;
(semilunar valve -)
pressure in pulmonary artery / 3 units, greater than in (right) ventricle / 0 units; [2]
- Total [9]

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- 8 (a) (i) **X** – sensory neurone;
Y – relay / intermediate / connector / internuncial / multipolar neurone;
Z – motor neurone; [3]
- (ii) muscle / named muscle / gland / named gland; [1]
- (b) slower;
blood;
electrical;
sense organ/ receptor; [4]
- Total [8]
- 9 (a) user becomes dependent upon drug / description of dependency;
(this can be physiological, physical or psychological dependency)
user suffers withdrawal symptoms if denied drug / craving for drug;
Note - Ignore vague statements
Any one – 1 mark [1]
- (b) periods of drowsiness / stupor / “ not with it” / slow responses to surroundings;
damage to blood vessels in nose / blue veining;
damage to blood vessels in limbs / bruising / injection marks;
abscesses on limbs where injecting;
constricted pupils / black “panda” eyes;
very happy / relaxed but with mood swings;
no desire for food / drink / lack of sexual appetite;
constipation;
Any two – 1 mark each [2]
- (c) inhaling – damage to membranes / cilia of nose / throat;
injecting –risk of infection by hepatitis / HIV / septicemia; [2]
- Total [5]