

IGCSE Double Award Science (Biology) 4437/4H

Mark Scheme (Results)

November 2008

IGCSE

IGCSE Double Award Science - Biology (4437/4H)

The following acronyms are used

owtte	or words to that effect
ecf	error carried forward
dop	dependent on previous
nwn	no working necessary

Question Number	Correct Answer	Notes	Mark
1 (a)	amylase / carbohydrase; amino acids / polypeptides / peptides; lipase;		(3)

Question Number	Correct Answer	Notes	Mark
1 (b)	digestion / breakdown / decay / eq; nitrate / phosphate / other named mineral ion; carbon dioxide; respiration; photosynthesis;		(5)

(Total 8 marks)

Question Number	Correct Answer	Notes	Mark
2 (a) (i)	plasma;		(1)

Question Number	Correct Answer	Notes	Mark
2 (a) (ii)	transport cells / salts / vitamins / hormones / carbon dioxide / urea / digested food / maintain blood volume / pressure / eq;		Max (1)

Question Number	Correct Answer	Notes	Mark
2 (b) (i)	white blood cells / leucocytes / phagocytes / lymphocytes;		(1)

Question Number	Correct Answer	Notes	Mark
2 (b) (ii)	engulf / eq; produce antibodies; destroy/kill/digest pathogens/bacteria / eq;		Max (2)

Question Number	Correct Answer	Notes	Mark
2 (c)	red cells / erythrocytes;		(1)

Question Number	Correct Answer	Notes	Mark
2 (d)	lack of oxygen; lack of glucose; respiration; to brain / heart / other named organ / cells; low blood pressure; <i>Ignore lungs/body</i>		Max (2)

(Total 8 marks)

Question Number	Correct Answer	Notes	Mark
3 (a) (i)	aphids in middle; arrows correct;		(2)

Question Number	Correct Answer	Notes	Mark
3 (a) (ii)	reduce (yield) /less tomatoes; eat/feed on leaves/plants / sugars; less photosynthesis;		Max (2)

Question Number	Correct Answer	Notes	Mark
3 (a) (iii)	biological control;		(1)

Question Number	Correct Answer	Notes	Mark
3 (b)	affects <u>other</u> species / not specific; affects humans/ poisonous to humans / affects taste; bioaccumulation; food chain disruption; pollution; needs reapplication; resistance; Ignore immune		Max (3)

(Total 8 marks)

Question Number	Correct Answer	Notes	Mark
4	enucleated egg cell / egg nucleus removed / empty egg cell; nucleus; from skin / from father's cell; electric treatment / stimulation of cell division; in vitro/eq; mitosis; <u>embryo</u> ; uterus / womb; surrogate (mother);		(5)

(Total 5 marks)

Question Number	Correct Answer	Notes	Mark
5 (a)	two / both / same; h / hh / not dominant / not showing;		(2)

Question Number	Correct Answer	Notes	Mark
5 (b)	hh and Hh; h and H and h; Hh and hh; Huntington and normal;		(4)

Question Number	Correct Answer	Notes	Mark
5 (c)	neurones / nerve <u>cells</u> / sensory; electrical / impulses; synapses;		Max (2)

(Total 8 marks)

Question Number	Correct Answer	Notes	Mark
6 (a) (i)	small molecules / named small molecule; pressure / eq; leave blood / glomerulus / enter Bowman's capsule / filtrate / fluid;		Max (2)

Question Number	Correct Answer	Notes	Mark
6 (a) (ii)	certain / required / named substances; return to blood / leave filtrate / eq;		(2)

Question Number	Correct Answer	Notes	Mark
6 (b) (i)	99%;; working 180-1.8 or divide by 180 = 1		(2)

Question Number	Correct Answer	Notes	Mark
6 (b) (ii)	PCT / eq;		(1)

Question Number	Correct Answer	Notes	Mark
6 (c)	less urine / less volume of urine; more concentrated urine / less water in urine; sweating; conc. of blood increases / eq.; (stimulates) pituitary / osmoreceptors / hypothalamus; ADH released; (carried to) kidney / nephron / collecting duct; increases permeability (of collecting duct); water reabsorbed / eq;		Max (5)

(Total 12 marks)

Question Number	Correct Answer	Notes	Mark
7 (a) (i)	<p>group A mass constant / fall /eq; then rises;</p> <p>group B mass rises /eq; fall / eq;</p>		Max (4)

Question Number	Correct Answer	Notes	Mark
7 (a) (ii)	<p>milk needed for growth; milk contains accessory food factors / calcium / vitamins; needed every day / delay before effect;</p>		Max (2)

Question Number	Correct Answer	Notes	Mark
7 (b)	(change due to milk) not differences between groups / rats / eq;		(1)

Question Number	Correct Answer	Notes	Mark
7 (c)	<p>temperature / light / activity / cage size / eq; how controlled;</p> <p>genetic differences; same species/strain/gender of rats;</p> <p>age / original mass / litter size / number of rats in each group; how achieved;</p> <p>mass of food / rate of feeding; how achieved;</p>		Max (2)

Question Number	Correct Answer	Notes	Mark
7 (d)	<p>vitamin A; (citrus) fruit / eq;</p>		Max (2)

(Total 11 marks)

Question Number	Correct Answer	Notes	Mark
8 (a) (i)	C;		(1)

Question Number	Correct Answer	Notes	Mark
8 (a) (ii)	two of A, C or F; <i>Ignore B and G</i> <i>Reject if D, E or H in list</i>		(1)

Question Number	Correct Answer	Notes	Mark
8 (a) (iii)	F / G / C / A;		(1)

Question Number	Correct Answer	Notes	Mark
8 (a) (iv)	H;		(1)

Question Number	Correct Answer	Notes	Mark
8 (b)	emulsification / eq; optimum pH / neutralise acid / eq;		(2)

(Total 6 marks)

Question Number	Correct Answer	Notes	Mark
9	eutrophication; nitrate / phosphate; growth of water plants / algae / bloom; less light / less photosynthesis; bacteria / microorganisms / eq; respiration; less oxygen / oxygen used; fish / animals die;		(5)

(Total 5 marks)

Question Number	Correct Answer	Notes	Mark
10 (a) (i)	moth / beetle / vole / wood mouse;		(1)

Question Number	Correct Answer	Notes	Mark
10 (a) (ii)	stoat + sparrow hawk + weasel + owl;		(1)

Question Number	Correct Answer	Notes	Mark
10 (b)	survive if one organism dies out / eq; feed in different seasons; easier to find prey / more available / less competition; better chance of balanced diet;		Max (2)

Question Number	Correct Answer	Notes	Mark
10 (c)	eats producer/named producer and consumer/named consumer / eats plants and animals; feeds at (two) different trophic levels / is primary and secondary consumer / is herbivore and carnivore / omnivorous;		(2)

Question Number	Correct Answer	Notes	Mark
10 (d)	energy lost; movement / respiration / excretion / egestion / eq; little energy reaches the top;		Max (3)

(Total 9 marks)

Question Number	Correct Answer	Notes	Mark
11 (a)	protein / omega 3 / fats / fatty acids / vitamin (D) / eq;		(1)

Question Number	Correct Answer	Notes	Mark
11 (b)	oxygen; stirring / paddles / bubbling / eq; clean / remove waste/algae; filter / replace / eq; prevent build up of food; feed in small/regular amounts; control disease / bacteria / fungi; remove dead / diseased fish / use antibiotic / use fungicide;		Max (4)

Question Number	Correct Answer	Notes	Mark
11 (c)	release mineral ions / faeces / waste; release of chemicals / eq; release of bacteria (oxygen depletion); disease can infect wild fish; attract predators; habitat destruction by flooding / building / eq;		(3)

Question Number	Correct Answer	Notes	Mark
11 (d)	more likely to catch / guaranteed harvest; no need to buy boat / fuel / employ / nets / not dangerous; all same species / size / health / condition / age / eq; not depleting wild fish stocks / no overfishing / conserving endangered species / eq; farm GM / selectively breed;		Max (2)

(Total 10 marks)