

IGCSE Biology 4437 / 4H

Mark Scheme (Final)

November 2007

IGCSE

IGCSE Biology (4437 / 4H)

Question Number	Question		
1	(a)		
	Acceptable Answers	Reject	Mark
	C; B; A;		(3)

Question Number	Question		
1	(b)		
	Acceptable Answers	Reject	Mark
	(i) alveoli; capillaries / blood;		2
	(ii) water; capillaries / blood;		2
			(4)

Total 7 marks

Question Number	Question		
2	(a)		
	Acceptable Answers	Reject	Mark
	(i) periwinkle / (bank) vole;		1
	(ii) sun / light;		1
			(2)

Question Number	Question		
2	(b)		
	Acceptable Answers	Reject	Mark
	4 links / eq, e.g. longer / more organisms / more consumers / ref tertiary consumer; they do not start with a producer / start with dead organisms;		(2)

Question Number	Question		
2	(c)		
	Acceptable Answers	Reject	Mark
	bacteria; fungi;		2
			(2)

Total 6 marks

Question Number	Question		
3	(a)		
	Acceptable Answers	Reject	Mark
	lens;		(1)
Question Number	Question		
3	(b)		
	Acceptable Answers	Reject	Mark
	(i) light doesn't pass through easily / is scattered / eq; not focussed / not on retina / eq.;		2
	(ii) Nn and nn; N n and n n; Nn Nn nn nn; cloudy clear;		4
			(6)

Total 7 marks

Question Number	Question		
4	(a)		
	Acceptable Answers		Mark
	A nucleus; genetic material/control cell activities; B cytoplasm; chemical reactions/metabolism/respiration/eq;		(4)

Question Number	Question		
4	(b)		
	Acceptable Answers	Reject	Mark
	digested / killed / destroyed / eq; enzymes / named enzyme;		(2)

Question Number	Question		
4	(c)		
	Acceptable Answers	Reject	Mark
	50%; (one mark for 3500 in working)		(2)

Total 8 marks

Question Number	Question															
5																
	Acceptable Answers	Mark														
	<table border="1"> <thead> <tr> <th>Step</th> <th>Order of step</th> </tr> </thead> <tbody> <tr> <td>select early flowering offspring plants</td> <td>4;</td> </tr> <tr> <td>allow seeds from early flowering plants</td> <td>3;</td> </tr> <tr> <td>select early flowering plants</td> <td>(1)</td> </tr> <tr> <td>grow early flowering offspring plants</td> <td>(5)</td> </tr> <tr> <td>repeat the process for several generations</td> <td>6;</td> </tr> <tr> <td>collect seeds from early-flowering plants</td> <td>2;</td> </tr> </tbody> </table>	Step	Order of step	select early flowering offspring plants	4;	allow seeds from early flowering plants	3;	select early flowering plants	(1)	grow early flowering offspring plants	(5)	repeat the process for several generations	6;	collect seeds from early-flowering plants	2;	(4)
Step	Order of step															
select early flowering offspring plants	4;															
allow seeds from early flowering plants	3;															
select early flowering plants	(1)															
grow early flowering offspring plants	(5)															
repeat the process for several generations	6;															
collect seeds from early-flowering plants	2;															

Total 4 marks

Question Number	Question	
6		
	Acceptable Answers	Reject Mark
	Five from: increase yield; (control / increased) temperature / use of heating (during cold months); (control / increased) light / extra light (in dark months); (control / increased) carbon dioxide; fewer pests / easier control of pests; less wind; less pollution; long wavelength reflected; enzymes; (more) photosynthesis;	(5)

Total 5 marks

Question Number	Question	
7	(a)	
	Acceptable Answers	Reject Mark
	simple sugars / glucose; amino acids / peptides; lipids / fats;	(3)

Question Number	Question	
7	(b)	
	Acceptable Answers	Reject Mark
	Peak / up and down; 40°C;	(2)

Total 5 marks

Question Number	Question		
8	(a)		
	Acceptable Answers	Reject	Mark
	(i) A Bowman's capsule / renal capsule; B (proximal) convoluted tubule; C collecting duct;		3
	(ii) movement of small molecules (from the blood into the kidney); (under) pressure;		2
			(5)

Question Number	Question		
8	(b)		
	Acceptable Answers	Reject	Mark
	(i) 66 / 66.6 / 66.7;		1
	(ii) less water / water reabsorbed;		1
			(2)

Question Number	Question		
8	(c)		
	Acceptable Answers	Reject	Mark
	Three from: pituitary; less ADH / eq; collecting ducts less permeable; less water reabsorbed (into blood);		(3)

Total 10 marks

Question Number	Question		
9	(a)		
	Acceptable Answers	Reject	Mark
	dotted line remains high after the peak;		(1)

Question Number	Question		
9	(b)		
	Acceptable Answers	Reject	Mark
	zygote; embryo; amniotic;		(3)

Question Number	Question		
9	(c)		
	Acceptable Answers	Reject	Mark
	sexual;		(1)

Total 5 marks

Question Number	Question		
10	(a)		
	Acceptable Answers	Reject	Mark
	respiration;		(1)

Question Number	Question		
10	(b)		
	Acceptable Answers	Reject	Mark
	O ₂ and H ₂ O on left and right respectively; 6 on both sides; Allow one mark for oxygen and water if no other marks gained		(2)

Question Number	Question		
10	(c)		
	Acceptable Answers	Reject	Mark
	Two from: lose heat; maintain body temp; need to generate/replace heat / eq;		(2)

Question Number	Question		
10	(d)		
	Acceptable Answers	Reject	Mark
	Two from narrowing of blood vessels (at skin surface); vasoconstriction; takes blood away from the skin; to conserve heat;		(2)

Total 7 marks

Question Number	Question		
11	(a)		
	Acceptable Answers	Reject	Mark
	B or C; D; E;		(3)

Question Number	Question		
11	(b)		
	Acceptable Answers	Reject	Mark
	Leaching / run off; Increase (algal growth); Amino acids / proteins; Eutrophication; Notes		(4)

Total 7 marks

Question Number	Question		
12	(a)		
	Acceptable Answers	Reject	Mark
	genetically; identical;		(2)

Question Number	Question		
12	(b)		
	Acceptable Answers	Reject	Mark
	Adv: all have / lots have good characteristics/features; Disadv: more susceptible to disease;		(2)

Total 4 marks

Question Number	Question		
13	(a)		
	Acceptable Answers	Reject	Mark
	(i) label A to left atrium;		1
	(ii) two from: wall is being squeezed/space inside ventricle is small; atrioventricular closed; semilunar valve is open; blood is leaving the ventricle / heart;		2
	(iii) pulmonary vein;		1
			(4)

Question Number	Question		
13	(b)		
	Acceptable Answers	Reject	Mark
	(i) 0.2 seconds;		1
	(ii) between 0.2 and 0.4 seconds;		1
	(iii) 0.3 seconds; highest pressure (in the left ventricle) / 17.3 higher than 16.0; forcing blood through semi-lunar valves and into the aorta;		3
			(5)

Total 9 marks

Question Number	Question		
14			
	Acceptable Answers	Reject	Mark
	Gene / DNA cut; Restriction endonuclease; Plasmid / phage / virus; Vector; Inhaled / aerosol; Sticky ends; Ligase; Host DNA;		
	Notes Max 6		
			(6)

Total 9 marks

Total for the paper 90 marks