

Question number	Answer	Notes	Marks
1 (a)	1. breakdown / broken down; 2. (large molecules) to small; 3. (insoluble) to soluble;	Complex to simple substances = 0 Ignore examples	Max 2
(b)	1. (no) insulin; 2. high <u>blood</u> glucose level / excess <u>blood</u> glucose / glucose <u>not</u> converted to glycogen / less glucose absorbed by cells; 3. not (re)absorbed (in kidney) / eq;	2. ignore blood sugar 2. No control of blood glucose = 0	3
(c)	1. amylase / carbohydrase; 2. lipase; 3. protease / trypsin / peptidase;	Ignore maltase Reject list on same line containing incorrect enzyme	Max 2
(d)	insulin/hormone travels in <u>blood</u> / insulin/hormone travels in <u>blood</u> vessels / (pancreas is an) endocrine gland;		1

(e)	1. no injection / inject with water; 2. to show changes are due to insulin / (valid) comparison;	Ignore injecting into dogs with intact pancreas Eg. Compare with dogs that had insulin extract injected	2
(f)	<u>hepatic artery</u> ;		1
(g)	insoluble / does not dissolve / no osmotic effect / eq;	Allow converse for glucose	Max 1
(h) (i)	<u>change</u> in glucose (level) / <u>high</u> glucose / <u>low</u> glucose;	Ignore amount of glucose Ignore amount of glucose eaten	1
(h) (ii)	<u>pancreas</u> / <u>Islets of Langerhans</u> ;		1

<p>(iii)</p> <p>(iv)</p>	<p><u>pancreas</u> / <u>Islets of Langerhans</u> / <u>liver</u> / <u>muscle</u>;</p> <p>insulin release / glucagon release / change in glucose (level) / increase/decrease in glucose (level) / glucose to glycogen / glycogen to glucose / uptake of glucose / glucose levels return to normal / glucose absorbed / eq;</p>	<p>Ignore negative feedback alone</p>	<p>1</p> <p>1</p>
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Question number	Answer	Notes	Marks
2 (a)	fair test / allows (valid) comparison / control gender / control age / control fitness / control body mass / control different sweating rates / people have different sweating rates / eq;	Ignore control health / genes Ignore control alone Ignore reliable	1
(b)	1. <u>both</u> increase in sweat production; 2. smaller increase when resting / greater increase when running / increases at a lower temperature when running / increases at a higher temperature when resting / eq; 3. (correct reference to data) increases 4 times when resting / increases 11 times when running / stays at 2 when resting between 31.5 and 33.0 / eq;	Mp 2 ignore faster increase	3
(c)	1. muscles; 2. respiration; 3. <u>heat / thermal energy</u> produced / eq; 4. <u>evaporation</u> ; 5. cooling / body temperature falls / maintain body temperature / prevent over heating / removes heat from body / eq;	Mp 3 ignore body warms / body temperature increases / body gets hot	4 max

(d)	<ol style="list-style-type: none">1. measure mass / weight / area / volume / moisture / colour change (of cobalt chloride);2. apparatus used to measure: clothing / shirt / paper towel / cotton wool / measuring cylinder / moisture sensor / cobalt chloride / eq;3. reference to time;4. repeat / average (mean);	Mp 2 ignore if person	3 max
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Total 11 marks

Question number	Answer	Notes	Marks
3 (a) (i)	heart beat(s) / heart rate;		1
(ii)	1. temperature / light / oxygen / eq; 2. age / size / sex / species / type of <i>Daphnia</i> ; 3. <u>volume</u> of water / <u>volume</u> of caffeine / <u>volume</u> of solution / <u>concentration</u> of caffeine;	1. ignore water / time 3. ignore amount	1
(iii)	1. accurate / less error / fewer mistakes / less chance of losing count / initial rate consistent / eq; 2. more readings (for replication) / quicker to collect results / less time to collect results / eq; 3. less harm/stress to <i>Daphnia</i> / caffeine effect may wear off / eq;	ignore precision allow converse	1
(b)	increases / eq;		1
(c)	(yes) repeated / done 10 times <u>AND</u> similar results (in water/caffeine) / no anomalies;	allow same	1
(d)	adrenalin(e);	allow epinephrine	1

(Total for Question = 6 marks)

Question number	Answer	Notes	Marks												
4 (a)	(i) (student) 8 / eight;	any other student = 0 eg student 5 and student 8 = 0	1												
	(ii) (rate) faster <u>when frightened</u> ; adrenalin(e);	allow epinephrine / noradrenaline	2												
	(iii) yes: repeated/10/lots of people / similar pattern / eq; OR no: not enough people / one student not frightened / eq;	ignore answers that link to validity such as expecting to be frightened / age of students reject not repeated	1												
(b)	<table border="1"> <thead> <tr> <th>Sentence</th> <th>letter</th> </tr> </thead> <tbody> <tr> <td>the right atrium is</td> <td>(B)</td> </tr> <tr> <td>the chamber that pumps blood into the lungs is</td> <td>A;</td> </tr> <tr> <td>the chamber with the thickest muscle wall is</td> <td>H;</td> </tr> <tr> <td>the blood vessel containing blood at the highest pressure is</td> <td>E;</td> </tr> <tr> <td>the blood vessel carrying blood with the least oxygen into the heart</td> <td>C;</td> </tr> </tbody> </table>	Sentence	letter	the right atrium is	(B)	the chamber that pumps blood into the lungs is	A;	the chamber with the thickest muscle wall is	H;	the blood vessel containing blood at the highest pressure is	E;	the blood vessel carrying blood with the least oxygen into the heart	C;		4
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Total 8 marks