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

(e)	1. n 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)	hepatic artery;		1
(g)	insoluble / does not dissolve / no osmotic effect / eq;	Allow converse for glucose	Max 1
(h) (i)	change in glucose (level) / high glucose / low glucose;	Ignore amount of glucose Ignore amount of glucose eaten	1
(ii)	pancreas / Islets of Langerhans;		1

(iii)	pancreas / Islets of Langerhans / liver / muscle ;		1
(iv)	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;	Ignore negative feedback alone	1

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. both 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. heat / thermal energy produced / eq; 4. evaporation; 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)	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

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 *Daphnia*; 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 *Daphnia* / 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)

<table>
<tr><th>Question number</th><th>Answer</th><th>Notes</th><th>Marks</th></tr>
<tr><td>4 (a) (i)</td><td>(student) 8 / eight;</td><td>any other student = 0
eg student 5 and student 8 = 0</td><td>1</td></tr>
<tr><td>(ii)</td><td>(rate) faster <u>when frightened</u>;
adrenalin(e);</td><td>allow epinephrine / noradrenaline</td><td>2</td></tr>
<tr><td>(iii)</td><td>yes: repeated/10/lots of people / similar pattern / eq;

OR

no: not enough people / one student not frightened / eq;</td><td>ignore answers that link to validity such as expecting to be frightened / age of students

reject not repeated</td><td>1</td></tr>
<tr><td>(b)</td><td><table><tr><th>Sentence</th><th>letter</th></tr><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></table></td><td></td><td>4</td></tr>
</table>

Total 8 marks