

APOLLO

Homeostasis

SL

Biology

First assessment 2025

8 questions | mark schemes

Mark-scheme answers

Biology SL | Paper 1A | May 2025 TZ1 | Q21 | 1 marks

21. B

Biology SL | Paper 1A | May 2025 TZ2 | Q21 | 1 marks

21. A

Biology SL | Paper 1A | May 2025 TZ3 | Q22 | 1 marks

22. D

Biology SL | Paper 1A | Nov 2025 TZ1 | Q21 | 1 marks

21. C

Biology SL | Paper 1A | Nov 2025 TZ3 | Q20 | 1 marks

20. D

6.	a	<i>Negative feedback</i> max 3 a. negative feedback used in homeostasis OR negative feedback to maintain equilibrium; b. negative feedback returns level of variable to the set point/norm; c. negative feedback used to keep level of variable constant/within (narrow) limits; d. negative feedback causes increase following a decrease / decrease following an increase; <i>Positive feedback</i> e. positive feedback amplifies changes; f. positive feedback disrupts equilibrium; g. positive feedback is generally for a short time;	<i>Use of an example to illustrate a marking point may be given credit.</i> <i>d. Allow a labelled graph.</i>	4 max

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Question		Answers	Notes	Total
6.	b	a. pancreas cells monitor blood glucose concentrations; b. glucagon secreted by alpha cells and insulin secreted by beta cells; c. glucagon/insulin/hormones secreted into/transported by bloodstream; d. insulin secreted when glucose concentration rises/is high; e. insulin stimulates uptake of glucose by liver/muscle/body cells; f. insulin stimulates conversion of glucose to glycogen (in liver/muscle cells); g. insulin stimulates body cells to use glucose instead of fat in cell respiration; h. glucagon secreted when glucose concentration falls/is low; i. glucagon stimulates breakdown of glycogen to glucose (by liver/muscle cells); j. negative feedback (is used to regulate blood glucose concentration);		7 max
	c	a. pH decreases when there is too much carbon dioxide in the blood OR removal of carbon dioxide from blood increases the pH; b. lower pH detected by chemoreceptors (in the brainstem/carotid artery/aorta); c. brainstem/medulla controls ventilation/breathing rate; d. diaphragm/intercostal muscles contract more often/more powerfully; e. (these muscle contractions) increase ventilation rate; f. carbon dioxide concentration of blood is reduced in the alveoli; g. heart muscles contract more often/more powerfully/heart rate increased; h. blood pressure increased / rate of blood flow increases;		4 max

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8825 – 6012M

Question	Answers	Notes	Total
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Mark-scheme answers

Biology SL | Paper 1A | Specimen 2025 | Q21 | 1 marks

21. C

8.	a		a. normal body temperature is 37°C; b. peripheral thermoreceptors detect environmental temperature; c. supporting conscious behaviour to avoid temperature extremes, e.g. wearing more clothing; d. sends messages to hypothalamus/temperature control centre of the brain; e. the hypothalamus sends messages to pituitary gland; f. (pituitary) releases TSH; g. stimulating thyroxine release from thyroid; h. thyroxine controls metabolic rate / production of heat; i. muscle random contraction/shivering to generate heat; j. (brown) adipose tissue burns fat to generate waste heat; k. vasoconstriction to conserve heat / vasodilation to exchange heat with the environment;		7
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(continued...)

(Question 8 continued)

Question			Answers	Notes	Total
8.	b		a. as temperature increases, the rate of molecular motion increases; b. increasing the frequency of collision between enzyme and substrate; c. increasing the rate of reaction; d. until an optimum temperature is reached; e. with further increase in temperature, enzymes denature;		4
8.	c		a. water has a (much) higher specific heat capacity (than air); b. water requires more energy gain/loss to change temperature; c. (water) provides more stable thermal habitats than air / temperature of water bodies remains more constant than air temperature; d. water has a higher thermal conductivity than air; e. more heat is transferred from organisms to water than to air; f. water is a good evaporative coolant and air is not; g. aquatic mammals have (proportionally) more body fat as insulation;		4