



Mark Scheme (Results)

November 2025

Pearson Edexcel International GCSE in Human Biology
4HB1/01

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question number	Answer	Notes	Marks
1 (a)	<ul style="list-style-type: none"> • intercostal; • up/out; • out/up; • increasing; • decreasing; • trachea; 	points two and three can be either way round, but only one 'up' and only one 'out'	6
(b) (i)	<ul style="list-style-type: none"> • passage/movement/diffusion of oxygen from, air/alveoli into blood/capillary; • passage/movement/diffusion of carbon dioxide from blood/capillary, into air/alveoli; 		2
(ii)	Any two from: <ul style="list-style-type: none"> • blood capillaries/good blood supply; • moist (surface)/surfactant; • large surface area; • thin/ one cell thick, wall/membrane; 		2
(c)	<ul style="list-style-type: none"> • walls broken down/damaged; • surface area reduced; • less (area for) gaseous exchange (to occur); 		3
			Total 13

Question number	Answer	Notes	Marks
2 (a)	(i) liver/muscles;		1
	(ii) <ul style="list-style-type: none"> • (absorbed) from blood/blood glucose levels high; • converted by insulin; • (insulin) released/produced by pancreas; 		3
(b)	5 weeks;		1
(c)	(i) <ul style="list-style-type: none"> • $10 - 8 = 2$; • $2 \div 0.4 = 0.5$ kg per week; 	ecf marking point one	2
	(ii) any four from <ul style="list-style-type: none"> • glycogen is store of glucose/energy; • (easily) converted (back)/broken down to glucose; • by <u>glucagon</u>; • for use in respiration; • protein makes up body tissues/organs/muscles/structures/growth ; 	accept any correct use of protein	4
			Total 11

Question number	Answer	Notes	Marks
3 (a)	A = cartilage; B = compact/hard bone; C = marrow;		3
(b) (i)	<ul style="list-style-type: none"> calcium; phosphate; 	accept magnesium reject phosphorus	2
(ii)	protein/Vitamin D;		1
(c)	<ul style="list-style-type: none"> upper arm/leg has ball and socket joint; lower limb has hinge joint at either end; ball shown on bone end; 		3
			Total 9

Question number	Answer	Notes	Marks
4 (a) (i)	pepsin/protease;		1
	(ii) <ul style="list-style-type: none">breaks down/digests protein;into polypeptides/peptides/amino acids;		2
(b) (i)	2.0 - 1.3 = 0.7; $\frac{0.7}{2.0} \times 100$; = 35%	ecf accept 1.3/2.0 x 100; = 65%; for two marks	3
	(ii) aspirin;		1
(c) (i)	<ul style="list-style-type: none">same contents/5 cm³ of enzyme + 2.0 g of egg white + 2 drops of HCl;no painkiller;15cm³ of water (to keep the volume constant); <ul style="list-style-type: none">repeat;calculate mean/average; any two from <ul style="list-style-type: none">pH;temperature;same egg type;surface area of cube;		3
			2
			2
			Total 14

Question number	Answer	Notes	Marks
5 (a)	(i) A = right ventricle; B = left atrium;		2
	(ii) <ul style="list-style-type: none"> valves; prevents blood flowing backwards/in wrong direction; from (left) ventricle to (left) atrium; when (left) ventricle contracts/ventricular systole; 	ignore any incorrect names for valve	4
(b)	(i) distance travelled = $40 + 105 + 115 = 260$ mm; time taken = 0.25 sec; $260 \div 0.25 = 1040$; $= 1.04 \times 10^3$;	ECF for incorrect addition ALLOW 1.0×10^3	4
	(ii) any two from <ul style="list-style-type: none"> allows ventricles to fill/atria to empty before contracting; to allow ventricles to contract from the bottom; so blood is pushed up, from ventricles/into arteries/named arteries; 		2
(c)	<ul style="list-style-type: none"> ventricles/named ventricle thicker than, atria/named atrium; left ventricle thickest/thicker than right ventricle; 	ORA	2
			Total 14

Question number	Answer	Notes	Marks
6 (a)	(i) A = axon; B = nucleus; C = myelin sheath;		3
	(ii) X = relay/intermediate/connector/association; Y = motor;		2
	(iii) <ul style="list-style-type: none"> neurotransmitter/acetylcholine released; from pre-synaptic membrane/vesicle fuses with pre-synaptic membrane; diffuses across gap/cleft; binds to receptors; on post synaptic membrane; impulse/action potential/depolarisation triggered (in Y); 		6
(b)	(i) correct position on diagram;;	accept if they label correctly with names rather than X/Y	2
	(ii) <ul style="list-style-type: none"> knee jerk; pupil; blinking; shivering; 	accept any other correct examples	2
			Total 15

Question number	Answer	Notes	Marks
7 (a)	<ul style="list-style-type: none"> • A = collects/receives/directs/gathers sound (waves); • transfers to ear drum/tympanum/tympanic membrane/auditory/ear canal; • B = transfers vibrations across middle ear/from ear drum to oval window; • amplifies vibrations; • C = equalises pressure; • between the atmosphere/outside and middle ear/either side of ear drum; 	reject to inner ear ignore cochlea	6
(b) (i)	any five of <ul style="list-style-type: none"> • earphone attached to ear/one ear blocked with plug; • sound of 250 Hz applied; • start (at 1 dB) sound/low volume and increase/start high and decrease; • to point where sound can be heard/detected; • repeat with other frequencies; • repeat with other ear; 		5
(ii)	any three from <ul style="list-style-type: none"> • right ear can hear well/normally/good hearing/healthy; • at all frequencies; • left ear the higher the frequency the poorer the hearing; • hearing in the left ear is below normal (at all frequencies); 		3
			Total 14