

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	0.48 (dm ³)		1	AO2 4.2.2.2 MS 4a
01.2	5.52 (dm ³)	accept 6.00 – 0.48 for 1 mark accept ecf from 01.1 for 2 marks	2	AO2 4.2.2.2 MS 4a
01.3	1 respiratory cycle = 2.8 seconds $\frac{60}{2.8} = 21.429$ = 21	accept 2.7–2.8	1 1 1	AO2 4.2.2.2 MS 4a, 2a
01.4	intercostal muscles contract moving ribs up and out diaphragm contracts and moves down (lung volume increases so) pressure inside chest decreases		1 1 1 1	AO1 4.2.2.2
01.5	reduced lung volume / asthma / emphysema / fitness so more breaths needed to take in the same amount of oxygen	accept heart pumps less blood / less effectively / named heart condition so more breaths needed to provide same volume of oxygen to cells	1 1	AO3 4.2.2.2
02.1	avoid getting on skin / wear gloves / wear safety goggles because Biuret solution / reagent is corrosive		1 1	AO3 4.2.2.1

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02.2	the food sample contains fat and protein		1	AO3 4.2.2.1
02.3	a meat burger		1	AO3 4.2.2.1
02.4	Benedict's solution is a qualitative test which only tells you if glucose is present, but not how much		1 1	AO2 4.2.2.1
03.1	long chain of amino acids		1	AO1 4.2.2.1
03.2	$\frac{50\,000}{7200}$ = 7 (villi/ μm^2)	accept 6.9	1 1	AO2 4.2.2.1 MS 1c
03.3	any four from: <ul style="list-style-type: none"> flattened villi / lack of villi reduce the surface area for absorption fewer amino acids/glucose/fatty acids absorbed less glucose means less energy released / respiration reduced fewer amino acids available to build new proteins proteins are needed for growth 		4	AO3 4.2.2.1
04.1	A – liver C – small intestine		1 1	AO2 4.2.2.1

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04.2	D		1	AO2 4.2.2.1
04.3	muscular tissue – churns the food and digestive juices of the stomach together glandular tissue – produces the digestive juices epithelial tissue – covers the inside and outside of the stomach		1 1 1	AO1 4.2.2.1 4.2.1
04.4	any six from: <ul style="list-style-type: none"> lipids are broken down by lipase lipase is produced in the pancreas bile is produced in the liver and stored in the gall bladder bile and lipase are both secreted / released into the small intestine bile neutralises the acidic food / hydrochloric acid from the stomach lipase works optimally in alkaline conditions / in a high pH bile emulsifies the fat into tiny droplets this increases the surface area for lipase to work on (speeding up the rate of digestion) 	allow a maximum of 5 marks if students refer to bile as an enzyme	6	AO1 4.2.2.1
05.1	B		1	AO2 4.2.2.2

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05.2	any one from: <ul style="list-style-type: none"> thick walls containing muscles – to withstand high (blood) pressure elastic fibres – to allow wall to stretch as (high pressure) blood passes through / to recoil / return to shape after blood (pulse / flow) passes 	to award 2 marks, answer should contain one feature of an artery structure, and a linked explanation	2	AO1 4.2.2.2
05.3	pulmonary artery		1	AO1 4.2.2.2
05.4	takes blood from the heart to the lungs / transports deoxygenated blood towards lungs / transports blood that has provided oxygen to body cells		1	AO1 4.2.2.2
05.5	any two from: <ul style="list-style-type: none"> to provide cell with oxygen / glucose to remove waste products / carbon dioxide / other named waste product to enable respiration to take place 		2	AO1 4.2.2.2
06	Level 3: All key steps are identified and logically sequenced. All food tests are described with correct results.		5–6	AO1 4.2.2.1
	Level 2: Most steps are identified, but the method is not fully logically sequenced. Not all food tests are described.		3–4	
	Level 1: Some relevant steps are identified, but food tests are poorly described and with some wrong results.		1–2	
	No relevant content		0	

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	<p>Indicative content</p> <ul style="list-style-type: none"> • place the food sample into each of the four test tubes • add a few drops of distilled water • add a few drops of iodine to one sample • if colour changes from yellow-orange to blue-black, starch is present • add a few drops of Benedict's solution • heat tube in water bath (at > 60 °C) • if colour changes from blue to brick-red, sugar is present • add a few drops of Biuret reagent • if colour changes from blue to purple, protein is present • add a few drops of ethanol (and shake) • if cloudy layer forms, fats are present 			
07.1	C		1	AO1 4.2.2.2
07.2	A – vena cava B – aorta		1 1	AO1 4.2.2.2
07.3	valve prevents blood flowing backwards into the (right) atrium		1 1	AO1 4.2.2.2

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07.4	one transport system carries blood from the heart to the lungs (and back) to allow gas exchange		1	AO1
	the second system transports blood around the body to enable cells to respire / to transport oxygen / glucose / other materials		1	4.2.2.2
08.1	biconcave disc		1	AO1
	maximise surface area for diffusion		1	4.2.2.3
	no nucleus		1	
	maximise space for haemoglobin		1	
	contains haemoglobin		1	
	to bind to oxygen		1	
08.2	$\frac{7.2}{6.2} = 1.161$	accept decrease of 13.9%	1	AO2
	increase of 16.1%	accept correct answer with no working shown for 2 marks	1	4.2.2.3 MS 1c
08.3	the higher the altitude, the more red blood cells (per mm ³) of blood		1	AO2
	each blood cell delivers less oxygen to cells (as less in the atmosphere)		1	4.2.2.3
	so more red blood cells required to maintain delivery of adequate oxygen		1	
09.1	capillary		1	AO2 4.2.2.2

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09.2	any two from: <ul style="list-style-type: none"> • large surface area • thin walls • good blood supply 		2	AO2 4.2.2.1
09.3	A		1	AO2 4.2.2.2
10.1	any three from: <ul style="list-style-type: none"> • place slide on stage • select lowest magnification • use focusing knob / move stage to bring cells on slide into focus • increase magnification to view structures in more detail 		3	AO1 4.1.1.5
10.2	roughly circular / elliptical labelled cell membrane labelled nucleus labelled cytoplasm	ribosomes labelled negates this mark	1 1 1 1	AO2 4.1.1.2 4.1.1.5
10.3	ribosomes protein synthesis	accept other correct named structure and function	1 1	AO1 4.1.1.1 4.1.1.5

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10.4	risk of disease transmission	accept other sensible answer	1	A02 4.1.1.5 4.2.2.3