

**Cambridge Technicals  
Health and Social Care**

**Unit 4: Anatomy and physiology for health and social care**

Level 3 Cambridge Technical in Health and Social Care  
**05830 – 05833**

**Mark Scheme for January 2022**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Annotations – These are the annotations to be used when marking Unit 4:

Annotation	Meaning
	Tick – correct answer
	Cross – incorrect answer
	Plus – use for positives
	Minus – use for negatives
	Level 1
	Level 2
	Level 3
	Benefit of doubt (This <b>does</b> count as a mark – so do not ‘tick’ as well)
	Omission mark
	Too vague
	Repeat
 or 	Noted but no credit given

Question			Answer	Marks	Guidance	
1	(a)	(i)		4 (4x1)	If more than one option entered in one space mark as incorrect	
			<b>Structure</b>			<b>Letter</b>
			Alveolus			<b>E</b>
			Bronchus			<b>B</b>
			Diaphragm			<b>D</b>
			Intercostal muscle			<b>C</b>
			Pleural cavity			<b>A</b>

Question			Answer	Marks	Guidance
1	(a)	(ii)	<p><b>ANY TWO FROM:</b></p> <p><b>Alveolus</b></p> <ul style="list-style-type: none"> <li>• gaseous exchange</li> <li>• O<sup>2</sup> diffuses into the blood/body</li> <li>• CO<sup>2</sup> diffuses into the lungs/out of the blood/body</li> </ul> <p><b>Bronchus</b></p> <ul style="list-style-type: none"> <li>• connects trachea with bronchioles</li> <li>• cleans and moistens air</li> <li>• carries air into lungs</li> </ul> <p><b>Diaphragm</b></p> <ul style="list-style-type: none"> <li>• describes role in inspiration / inhalation</li> <li>• describes role expiration / exhalation</li> <li>• separates chest from abdomen</li> </ul> <p><b>Intercostal muscle</b></p> <ul style="list-style-type: none"> <li>• moves the ribs</li> <li>• describes role in inspiration / inhalation</li> <li>• describes role in expiration / exhalation</li> </ul>	2 (2x1)	<p><b>Marks are for functions, but structure must be named from the table in (a)(i) for marks to be awarded.</b></p> <p><b>A function of TWO structures is required</b></p> <p><b>Don't credit incorrect descriptions of processes, even if correct terms used</b></p>

Question	Answer	Marks	Guidance
1	<p data-bbox="197 228 264 260"><b>(b)*</b></p> <p data-bbox="302 228 1227 292">Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p data-bbox="302 331 577 363"><b>Level 3 (5–6 marks)</b></p> <p data-bbox="302 363 1057 395">Detailed comparison of aerobic and anaerobic respiration.</p> <p data-bbox="302 395 376 427"><b>AND</b></p> <p data-bbox="302 427 698 459">Uses appropriate terminology.</p> <p data-bbox="302 499 1220 563"><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p data-bbox="302 603 577 635"><b>Level 2 (3–4 marks)</b></p> <p data-bbox="302 635 1034 667">Sound comparison of aerobic and anaerobic respiration.</p> <p data-bbox="302 667 376 699"><b>AND</b></p> <p data-bbox="302 699 1064 730">Answer includes mostly relevant and accurate information.</p> <p data-bbox="302 770 1182 834"><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p data-bbox="302 874 577 906"><b>Level 1 (1–2 marks)</b></p> <p data-bbox="302 906 1153 938">Limited or basic comparison of aerobic and anaerobic respiration.</p> <p data-bbox="302 938 430 970"><b>AND/OR</b></p> <p data-bbox="302 970 757 1002">May be identification only – list like</p> <p data-bbox="302 1042 1205 1106"><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p data-bbox="302 1145 421 1177"><b>0 marks</b></p> <p data-bbox="302 1177 891 1209"><i>No response or no response worthy of credit.</i></p>	6	<p data-bbox="1411 228 1982 260"><i>Compare aerobic and anaerobic respiration</i></p> <p data-bbox="1411 300 1691 331"><b>Points may include:</b></p> <p data-bbox="1411 371 1534 403"><b>Aerobic:</b></p> <ul data-bbox="1411 403 2004 611" style="list-style-type: none"> <li>• requires oxygen</li> <li>• provides <b>more</b> ATP (32 molecules)</li> <li>• carbon dioxide is produced/waste product</li> <li>• water is produced/waste product</li> <li>• pyruvate enters Krebs cycle</li> <li>• takes place in mitochondria</li> </ul> <p data-bbox="1411 651 1568 683"><b>Anaerobic:</b></p> <ul data-bbox="1411 683 1892 890" style="list-style-type: none"> <li>• does not require oxygen</li> <li>• provides <b>less</b> ATP (2 molecules)</li> <li>• lactate is produced</li> <li>• lactic acid is a waste product</li> <li>• pyruvate is converted to lactate</li> <li>• takes place in cytoplasm</li> </ul> <p data-bbox="1411 930 1489 962"><b>both:</b></p> <ul data-bbox="1411 962 1758 1169" style="list-style-type: none"> <li>• use glucose</li> <li>• uses ADP</li> <li>• produces ATP</li> <li>• take place inside cells</li> <li>• provide energy</li> <li>• produces water</li> </ul> <ul data-bbox="1411 1209 2060 1377" style="list-style-type: none"> <li>• <b>Sub max 3</b> if only aerobic or anaerobic points given</li> <li>• For full marks candidates must make clear comparisons e.g. e.g. “Aerobic respiration produces more ATP than anaerobic”.</li> </ul>

Question			Answer	Marks	Guidance
1	(c)	(i)	<p><b>ANY ONE FROM:</b></p> <ul style="list-style-type: none"> <li>• Faulty gene</li> <li>• Sticky or thick mucus</li> <li>• Incorrect protein made</li> <li>• Water not drawn into mucus</li> </ul>	<p><b>2</b> (1x2)</p>	<p>Don't accept more mucus alone, needs to say it's thick or sticky</p>
1	(c)	(ii)	<p><b>ANY ONE FROM:</b></p> <p><b>Effects on respiratory system:</b></p> <ul style="list-style-type: none"> <li>• lung damage</li> <li>• chest infections</li> <li>• inflammation of airways</li> <li>• restricted airflow/breathing difficulties</li> <li>• continuous coughing</li> </ul>	<p><b>1</b> (1x1)</p>	<p>Coughing alone is too vague</p>
1	(c)	(iii)	<p><b>ANY ONE FROM:</b></p> <ul style="list-style-type: none"> <li>• Physiotherapy/Airway clearance technique/Vibrating Jacket</li> <li>• Inhalers/bronchodilators</li> <li>• antibiotics</li> <li>• vaccinations (flu jab)</li> <li>• dietary supplements</li> <li>• enzyme pills</li> <li>• exercise</li> <li>• lung transplants</li> <li>• stopping smoking</li> <li>• regular check ups</li> </ul>	<p><b>1</b> (1x1)</p>	<p><b>ACCEPT</b> Other appropriate ways</p> <p>Medication alone is too vague</p> <p>Don't accept slapping on the back without clarification e.g. to help loosen and get rid of mucus</p>

Question		Answer	Marks	Guidance										
1	(d)	<table border="1"> <thead> <tr> <th>Statement</th> <th>True or False</th> </tr> </thead> <tbody> <tr> <td>The liver breaks down alcohol by a process called deamination.</td> <td><b>False</b></td> </tr> <tr> <td>The liver produces bile.</td> <td><b>True</b></td> </tr> <tr> <td>The liver produces the toxic waste, urea.</td> <td><b>True</b></td> </tr> <tr> <td>The liver stores vitamins.</td> <td><b>True</b></td> </tr> </tbody> </table>	Statement	True or False	The liver breaks down alcohol by a process called deamination.	<b>False</b>	The liver produces bile.	<b>True</b>	The liver produces the toxic waste, urea.	<b>True</b>	The liver stores vitamins.	<b>True</b>	<b>4</b> (4x1)	If more than one option entered in one space mark as incorrect  <b>Accept F or T, or crosses of ticks for False or True</b>
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The liver breaks down alcohol by a process called deamination.	<b>False</b>													
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Question	Answer	Marks	Guidance
1 (e)*	<p>Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5–6 marks)</b> Detailed discussion of possible effects and their biological explanation. <b>AND</b> Uses appropriate terminology.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (3–4 marks)</b> Sound discussion of possible effects and their biological explanation. <b>AND</b> Answer includes mostly relevant and accurate information.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–2 marks)</b> Limited or basic discussion of possible effects and their biological explanation. <b>AND/OR</b> May be identification only – list like</p> <p><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p><b>0 marks</b> <i>No response or no response worthy of credit.</i></p>	6	<p><i>Discuss the possible effects of cirrhosis on the body and the biological explanation for these effects.</i></p> <p><b>Points may include (not exhaustive)</b> <b>Biological explanation:</b></p> <ul style="list-style-type: none"> <li>• e.g. alcohol-related</li> <li>• inflammation of liver</li> <li>• scarring of liver</li> <li>• continuous damage to liver</li> <li>• liver failure</li> <li>• e.g. haemochromatosis</li> <li>• faulty gene</li> <li>• excess iron in liver</li> <li>• e.g. fatty liver disease</li> <li>• fat build up in liver cells</li> <li>• e.g. hepatitis</li> </ul> <p><b>Effects of cirrhosis on the body:</b></p> <ul style="list-style-type: none"> <li>• confusion</li> <li>• itchy skin</li> <li>• jaundice</li> <li>• loss of appetite</li> <li>• memory problems</li> <li>• nausea/vomiting</li> <li>• oedema/swelling of e.g. ankles or legs</li> <li>• ascites</li> <li>• decreased bile production</li> <li>• weight loss</li> <li>• liver failure</li> <li>• can't detoxify alcohol</li> <li>• Abdominal pain (pain alone is TV)</li> <li>• Weak or tired</li> </ul> <p>• <b>Sub max 3</b> if only biological or effects covered.</p>

Question			Answer	Marks	Guidance
2	(a)		<ul style="list-style-type: none"><li>• conjunctiva</li><li>• pupil</li><li>• iris</li><li>• lens</li><li>• macula</li><li>• optic nerve</li></ul>	<b>6</b> (6x1)	<b>DO NOT ACCEPT</b> words in any other order  If more than one option entered in one space mark as incorrect
2	(b)	(i)	cataracts	<b>1</b> (1x1)	

Question	Answer	Marks	Guidance
2 (b) (ii)*	<p>Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5–6 marks)</b> Detailed explanation of at least two aspects of treatments for an eye malfunction. <b>AND</b> Uses appropriate terminology.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (3–4 marks)</b> Sound explanation and some reference to aspects of treatments for an eye malfunction. <b>AND</b> Answer includes mostly relevant and accurate information.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–2 marks)</b> Limited or basic explanation of treatments for an eye malfunction. <b>AND</b> May be identification or description only. Answers may be list like.</p> <p><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p><b>0 marks</b> <i>No response or no response worthy of credit.</i></p>	6	<p><i>Explain the treatments available for <b>one</b> malfunction of the eye. You may use the malfunction identified in (b)(i) or another of your choice.</i></p> <p><b>Cataracts</b></p> <ul style="list-style-type: none"> <li>stronger lenses in glasses – if condition mild, makes text clearer / makes text easier to see</li> <li>surgery - remove clouded lens / replace lens</li> </ul> <p><b>Glaucoma</b></p> <ul style="list-style-type: none"> <li>treatments to reduce pressure</li> <li>eye drops - administered daily, dissolve blockages</li> <li>laser treatment - unblocks ducts / reduces fluid production</li> <li>surgery - unblocks ducts / reduces fluid production</li> <li>treatments prevent further loss of sight, but don't restore loss sight.</li> </ul> <p><b>AMD</b></p> <ul style="list-style-type: none"> <li>no cure for dry AMD</li> <li>improved diet (Vitamins A, C + E) - to slow progression of disease</li> <li>injections for (wet) AMD - named drug e.g. Avastin / slows growth of blood vessels / improves vision</li> <li>laser treatment for (wet) AMD - photodynamic therapy / light-sensitive dye injected / destroys blood vessels</li> </ul> <p><b>Retinopathy</b></p> <ul style="list-style-type: none"> <li>injections into eye – medication / named drug e.g. Lucentis / reduces swelling / slows vision loss / improves vision</li> <li>surgery - removes scar tissue</li> <li>laser treatment - reduces swelling of retina, destroys new blood vessels</li> <li>control diabetes (blood sugar) / control blood pressure</li> </ul> <p><b>Accept other relevant examples with explanations</b></p> <p><b>Sub-max of 3</b> for one treatment well done.</p> <p>Don't accept lifestyle changes</p>

Question			Answer	Marks	Guidance										
2	(c)	(i)	<table border="1"> <thead> <tr> <th>Structure</th> <th>Letter</th> </tr> </thead> <tbody> <tr> <td>Axon</td> <td>Q or S</td> </tr> <tr> <td>Cell body</td> <td>P</td> </tr> <tr> <td>Myelin sheath</td> <td>R</td> </tr> <tr> <td>Node of Ranvier</td> <td>S</td> </tr> </tbody> </table>	Structure	Letter	Axon	Q or S	Cell body	P	Myelin sheath	R	Node of Ranvier	S	4 (4x1)	If more than one option entered in one space mark as incorrect
			Structure	Letter											
			Axon	Q or S											
			Cell body	P											
			Myelin sheath	R											
Node of Ranvier	S														
2	(c)	(ii)	<b>ANY ONE FROM:</b> <ul style="list-style-type: none"> <li>• synaptic cleft</li> <li>• synapse</li> <li>• synaptic gap</li> </ul>	1 (1x1)											

Question			Answer	Marks	Guidance
2	(d)	(i)	<b>ANY ONE FROM:</b> <ul style="list-style-type: none"><li>• ball and socket</li><li>• pivot</li><li>• sliding/gliding</li><li>• hinge</li><li>• condyloid</li><li>• saddle</li></ul>	<b>1</b> (1x1)	Accept sliding or gliding as single terms Don't accept fixed

Question	Answer	Marks	Guidance
2 (d) (ii)*	<p>Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5–6 marks)</b> Detailed explanation with clear knowledge and understanding of movement caused by paired muscles. <b>AND</b> Uses appropriate terminology and explanation explicitly linked to movement caused by muscles</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (3–4 marks)</b> Sound explanation and some reference to movement caused by paired muscles. <b>AND</b> Answer includes mostly relevant and accurate information.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–2 marks)</b> Limited or basic explanation of movement caused by paired muscles. <b>AND/OR</b> May be identification or description only. Answers may be list like.</p> <p><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p><b>0 marks</b> <i>No response or no response worthy of credit.</i></p>	6	<p><i>Explain how the action of muscles around joint identified in 2(d)(i) results in movement.</i></p> <p><b>Points may include:</b></p> <ul style="list-style-type: none"> <li>• named muscles pairs e.g. biceps / triceps</li> <li>• muscles are antagonistic</li> <li>• muscles work in pairs</li> <li>• the agonist muscle contracts</li> <li>• and shortens</li> <li>• pulls bone in one direction</li> <li>• the antagonist muscle relaxes</li> <li>• and lengthens</li> <li>• other muscle must contract to return to original position</li> <li>• example used to explain e.g. raising and lowering arm</li> <li>• muscles can only pull</li> <li>• muscles can't push</li> <li>• role of tendons</li> </ul>

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2	(e)	<table border="1"> <thead> <tr> <th>Statement</th> <th>True or False</th> </tr> </thead> <tbody> <tr> <td>Bone density scans are used to monitor osteoporosis.</td> <td><b>True</b></td> </tr> <tr> <td>Osteoarthritis can be caused by injury to a joint.</td> <td><b>True</b></td> </tr> <tr> <td>Osteoporosis can be caused by loss of cartilage in joints.</td> <td><b>False</b></td> </tr> </tbody> </table>	Statement	True or False	Bone density scans are used to monitor osteoporosis.	<b>True</b>	Osteoarthritis can be caused by injury to a joint.	<b>True</b>	Osteoporosis can be caused by loss of cartilage in joints.	<b>False</b>	<b>3</b> (3x1)	<p>If more than one option entered in one space mark as incorrect</p> <p><b>Accept F or T, or crosses of ticks for False or True</b></p>
Statement	True or False											
Bone density scans are used to monitor osteoporosis.	<b>True</b>											
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Question	Answer	Marks	Guidance
3 (a)*	<p>Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5–6 marks)</b> Detailed explanation with clear knowledge and understanding of the principles of homeostasis, using one or more clear examples. <b>AND</b> Uses appropriate terminology.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (3–4 marks)</b> Sound explanation and some reference to the principles of homeostasis. May cover multiple examples in less depth. <b>AND</b> Answer includes mostly relevant and accurate information.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–2 marks)</b> Limited or basic explanation of the principles of homeostasis. <b>AND/OR</b> May be identification or description only. Answers may be list like.</p> <p><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p><b>0 marks</b> <i>No response or no response worthy of credit.</i></p>	6	<p><b>Principles (applies to any example used):</b></p> <ul style="list-style-type: none"> <li>• Maintenance of constant internal environment</li> <li>• Explanation of negative feedback</li> <li>• Changes detected</li> <li>• e.g. rising/falling levels detected by control system</li> <li>• Body response</li> <li>• e.g. levels increased/decreased by control system</li> <li>• Role of hormones</li> </ul> <p><b>Keeping water content constant</b></p> <ul style="list-style-type: none"> <li>• Hypothalamus monitors water levels</li> <li>• Sends messages to pituitary gland</li> <li>• Release less/more Anti-diuretic hormone (ADH)</li> <li>• Kidneys reabsorb more or less water</li> <li>• Maintains osmotic / water potential of cells</li> <li>• Urine production increased/decreased</li> </ul> <p><b>Controlling blood glucose concentration</b></p> <ul style="list-style-type: none"> <li>• Pancreas monitors blood glucose</li> <li>• Pancreas releases insulin lowers glucose in blood</li> <li>• Liver cells respond to insulin</li> <li>• Liver cells store glucose as glycogen</li> <li>• Pancreas releases glucagon</li> <li>• Glucagon raises glucose in blood</li> <li>• Causes liver to convert glycogen back into glucose</li> </ul> <p><b>Maintaining body temperature</b></p> <ul style="list-style-type: none"> <li>• Hypothalamus monitors body temperature</li> <li>• If too hot cool down</li> <li>• Sweat</li> <li>• Hairs on skin lie flat</li> <li>• Blood to skin surface (vasodilation)</li> <li>• If too cold warm up</li> <li>• Shiver</li> <li>• Hairs on skin stand up</li> <li>• Blood away from skin surface (vasoconstriction)</li> </ul> <p>Must refer to negative feedback mechanism for full marks.</p> <p>Submax 3 if just one side of the mechanism covered well, e.g. if body temperature is too high.</p>



Question			Answer	Marks	Guidance
3	(b)	(i)	nephrotic syndrome	1 (1x1)	If more than one option entered in one space mark as incorrect
3	(b)	(ii)	<b>ANY ONE FROM:</b> <ul style="list-style-type: none"> <li>• nephrotic syndrome</li> <li>• stroke</li> </ul>	1 (1x1)	If more than one option entered in one space mark as incorrect
3	(b)	(iii)	<b>ANY TWO FROM:</b> <ul style="list-style-type: none"> <li>• stroke</li> <li>• multiple sclerosis (accept MS)</li> </ul>	2 (2x1)	If more than one option entered in one space mark as incorrect
3	(b)	(iv)	<b>ANY ONE FROM:</b> <ul style="list-style-type: none"> <li>• multiple sclerosis (accept MS)</li> <li>• diabetes (as type 1 is autoimmune)</li> </ul>	1 (1x1)	If more than one option entered in one space mark as incorrect  <b>Don't accept Type 2 diabetes</b>

Question	Answer	Marks	Guidance
3 (c)*	<p>Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (7–8 marks)</b> Detailed evaluation of at least two treatments and at least two lifestyle changes <b>AND</b> Both positive and negatives and uses appropriate terminology.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (4–6 marks)</b> Sound evaluation of one/two treatments <b>and/or</b> one/two lifestyle changes <b>AND</b> Both positives and negatives of one aspect mostly relevant and accurate information.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–3 marks)</b> Limited or basic evaluation of treatments <b>or</b> lifestyle changes <b>AND/OR</b> Either positives or negatives. May be identification or description only. Answers may be list like.</p> <p><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p><b>0 marks</b> <i>No response or no response worthy of credit.</i></p>	8	<p><i>Evaluate the possible treatments, including any lifestyle changes that are available for diabetes.</i></p> <p><b>Examples of treatment and lifestyle changes (not exhaustive)</b></p> <p><b>Accept any other correct responses</b></p> <ul style="list-style-type: none"> <li>• <b>sub-max of 4</b> for one treatment or lifestyle changes done well (positives and negatives), or for a one-sided response (including both lifestyle changes and treatment) e.g. focuses on the positives</li> <li>• Don't credit impact on lifestyle e.g. can't eat out with friends.</li> <li>• Lifestyle changes refers to preventive/reductive changes e.g. losing weight if overweight.</li> </ul>

Treatments/Lifestyle Changes	Positives	Negatives
<b>Insulin injections</b>	<ul style="list-style-type: none"> <li>-replaces insulin levels</li> <li>-reduces glucose levels</li> <li>-prevents hyperglycaemia</li> <li>-prevents coma</li> </ul>	<ul style="list-style-type: none"> <li>-need to check glucose levels</li> <li>-take before meals</li> <li>-painful</li> <li>-disruption to normal routines</li> <li>-risk of lowering glucose levels too much</li> <li>-fear needles</li> </ul>
<b>Insulin pump</b>	<ul style="list-style-type: none"> <li>-replaces insulin levels</li> <li>-reduces glucose levels</li> <li>-prevents hyperglycaemia</li> <li>-prevents coma</li> <li>-more flexibility with routines (don't have to monitor blood glucose)</li> </ul>	<ul style="list-style-type: none"> <li>-risk of pump malfunction</li> <li>-risk of skin infections</li> <li>-cost</li> <li>-self-conscious of wearing the pump</li> <li>-could affect sporting activities</li> </ul>
<b>Transplant (pancreatic cells)</b>	<ul style="list-style-type: none"> <li>-prevents big variations in glucose levels</li> <li>-prevents very low glucose levels</li> <li>-improved quality of life</li> <li>-long term benefits</li> </ul>	<ul style="list-style-type: none"> <li>-need to take anti-rejection medication</li> <li>-not a cure</li> <li>-may still need to take insulin</li> <li>-painful procedure</li> <li>-scaring</li> <li>-needs a donor</li> </ul>
<b>Incretin mimetics</b>	<ul style="list-style-type: none"> <li>-prevents big variations in glucose levels</li> <li>-helps body produce more insulin</li> </ul>	<ul style="list-style-type: none"> <li>-side effects</li> </ul>
<b>Drugs</b> e.g. metformin	<ul style="list-style-type: none"> <li>-stimulates pancreas to produce insulin</li> <li>-lowers blood glucose levels</li> <li>-e.g. weight loss drugs</li> <li>-prevent obesity</li> </ul>	<ul style="list-style-type: none"> <li>-side effects</li> <li>-may need to be taken long term</li> <li>-must remember to take them</li> </ul>
<b>Weight loss surgery/Gastric banding</b>	<ul style="list-style-type: none"> <li>-prevent obesity</li> <li>-helps lose weight quickly</li> <li>-can put diabetes into remission</li> </ul>	<ul style="list-style-type: none"> <li>-painful procedure/recovery</li> <li>-scaring</li> <li>-post-surgery infections</li> <li>-malnutrition</li> <li>-digestive problems/bowel obstructions</li> </ul>
<b>Dietary changes</b>	<ul style="list-style-type: none"> <li>-can cure type 2 diabetes</li> <li>-reduces risk of obesity</li> <li>-can reduce need for medication</li> <li>-improve emotional well-being</li> </ul>	<ul style="list-style-type: none"> <li>-requires willpower</li> <li>-healthy food more expensive</li> <li>-ability to prepare healthy food</li> <li>-knowledge of healthy diet</li> </ul>
<b>Exercise</b>	<ul style="list-style-type: none"> <li>-can cure type 2 diabetes</li> <li>-reduces risk of obesity</li> <li>-can reduce need for medication</li> <li>-improve emotional well-being</li> </ul>	<ul style="list-style-type: none"> <li>-may affect emotional well-being</li> <li>-requires willpower</li> <li>-might be self-conscious about exercising</li> <li>-cost</li> </ul>
<b>Reduced Alcohol</b>	<ul style="list-style-type: none"> <li>-helps lose weight</li> <li>-reduced glucose intake/spikes</li> <li>-improve emotional well-being</li> </ul>	<ul style="list-style-type: none"> <li>-addiction</li> <li>-lost socialisation</li> <li>-requires will power</li> </ul>

Question		Answer	Marks	Guidance										
4	(a)	<ul style="list-style-type: none"> <li>• vena cava</li> <li>• artery</li> <li>• tricuspid</li> <li>• atrium</li> <li>• aorta</li> </ul>	5 (5x1)	<b>DO NOT ACCEPT</b> words in any other order  If more than one option entered in one space mark as incorrect										
4	(b)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Statements</th> <th style="text-align: center;">Tick (✓) one only</th> </tr> </thead> <tbody> <tr> <td>The atrioventricular node (AVN) is known as the pacemaker.</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>The atrioventricular node (AVN) delays the electrical impulse.</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>The Purkyne fibres passes the electrical impulse from the atria to the ventricles.</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>The sinoatrial node (SAN) receives the impulse from the atrioventricular node (AVN)</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>	Statements	Tick (✓) one only	The atrioventricular node (AVN) is known as the pacemaker.	<input type="checkbox"/>	The atrioventricular node (AVN) delays the electrical impulse.	<input checked="" type="checkbox"/>	The Purkyne fibres passes the electrical impulse from the atria to the ventricles.	<input type="checkbox"/>	The sinoatrial node (SAN) receives the impulse from the atrioventricular node (AVN)	<input type="checkbox"/>	1 (1x1)	<b>If more than one box is ticked: 0 marks</b>
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Question			Answer	Marks	Guidance
4	(c)	(i)	(wave) T	1 (1x1)	If more than one option entered 0 marks
4	(c)	(ii)	(wave) P	1 (1x1)	If more than one option entered 0 marks
4	(c)	(iii)	(complex) QRS	1 (1x1)	<b>ACCEPT: Q or R or S</b>

Question		Answer	Marks	Guidance
4	(d)	<p><b>ANY TWO FROM:</b></p> <p><b>Role of blood proteins</b></p> <ul style="list-style-type: none"> <li>• named blood protein e.g. albumin</li> <li>• increase osmotic potential of blood</li> <li>• lower water potential of blood</li> <li>• opposite force to hydrostatic pressure</li> <li>• affect viscosity of blood</li> <li>• important in drawing fluid back into capillaries from tissues</li> <li>• low levels increase tissue fluid formation</li> </ul> <p><b>ANY TWO FROM:</b></p> <p><b>Role of hydrostatic pressure</b></p> <ul style="list-style-type: none"> <li>• opposite force to osmotic potential of blood proteins</li> <li>• caused by the heart contracting</li> <li>• higher in arteriole end</li> <li>• lower in venule end</li> <li>• pressure difference as blood flows through capillary</li> <li>• <b>forces</b> blood plasma / water out of capillaries and/or into cells / tissues</li> </ul>	<p><b>4</b> (1x4)</p>	<p>Don't accept fibrinogen as an example as a blood protein, as it is not relevant to movement of fluid in and out of blood capillaries.</p> <p>Don't credit the rewording of the question e.g. writing about the movement of fluids with no clear understanding.</p>

Question		Answer		Marks	Guidance										
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Question	Answer	Marks	Guidance
5 (b)*	<p>Please refer to the marking instructions on page 5 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (7–8 marks)</b> Detailed discussion of three aspects including symptoms and impacts of coeliac disease. <b>AND</b> Uses accurate terminology and follows logical sequence.</p> <p><i>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</i></p> <p><b>Level 2 (4–6 marks)</b> Sound discussion of two aspects including symptoms and impacts of coeliac disease <b>AND</b> One symptom and one impact with mostly relevant and accurate information.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–3 marks)</b> Limited or basic discussion of symptoms and impacts of coeliac disease <b>AND/OR</b> Either aspect of one symptom or one impact. May be identification or description only. Answers may be list like.</p> <p><i>There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.</i></p> <p><b>0 marks</b> <i>No response or no response worthy of credit.</i></p>	8	<p><i>Discuss the symptoms of Coeliac disease and the impact it may have on Ben's lifestyle.</i></p> <p><b>Examples of possible symptoms (not exhaustive):</b></p> <ul style="list-style-type: none"> <li>• pain</li> <li>• bloating</li> <li>• flatulence</li> <li>• diarrhoea</li> <li>• constipation</li> <li>• fatigue</li> <li>• indigestion</li> <li>• malnutrition</li> <li>• unexpected weight loss</li> <li>• anaemia</li> <li>• appetite loss</li> </ul> <p><b>Examples of possible impacts on lifestyle (not exhaustive):</b></p> <ul style="list-style-type: none"> <li>• special diet needed e.g. to curb symptoms</li> <li>• remove gluten from diet</li> <li>• need to take supplements e.g. vitamins</li> <li>• problems with eating in restaurants e.g. to avoid gluten</li> <li>• need to read food labels when shopping</li> <li>• problems with take away or ready meals e.g. to avoid gluten</li> <li>• may affect sporting activities e.g. due to pain or diarrhoea</li> <li>• may affect social activities</li> <li>• embarrassment e.g. due to flatulence</li> <li>• irritability e.g. due to fatigue</li> <li>• time off work/education e.g. due to pain, fatigue</li> <li>• emotional impacts e.g. due to pain, flatulence</li> <li>• <b>sub-max of 4</b> for symptoms or impact on lifestyle done well</li> <li>• Must link symptoms to impact on lifestyle for Level 3</li> </ul>



Question		Answer	Marks	Guidance												
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