

## **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

**05831 - 05833 & 05871**

### **Mark Scheme for June 2024**

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

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.

© OCR 2024

**MARKING PREPARATION****PREPARATION FOR ON-SCREEN MARKING****RM ASSESSOR**

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *RM Assessor Online Training*; *OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are available in RM Assessor.
3. Log-in to RM Assessor and mark the **required number** of practice responses (“scripts”) and the **required number** of standardization responses.

**PREPARATION FOR PAPER-BASED MARKING**

















1. Make sure that you have accessed and completed the relevant training packages for paper-based marking.
2. Make sure that you have read and understood the instructions for specialist marking, mark scheme and the question paper for this unit.
3. Before the standardization and set-up (SSU) meeting, you must mark 10 scripts from several different centres. Use **pencil**, mark lightly with pencil, and follow the **mark-scheme**. Bring these **marked scripts** to the SSU meeting.

**MARKING INSTRUCTIONS FOR ON-SCREEN AND PAPER-BASED MARKING**

1. Your first task as an examiner is to become thoroughly familiar with the material on which the examination depends. This material includes: the unit specification, the question paper and any associated rubrics/pre-releases etc., and the mark scheme.
2. You should ensure that you have copies of these materials.
3. You should ensure also that you are familiar with the administrative procedures relating to the marking process. These are set out in the OCR booklet, **Instructions for Examiners**. If you are examining for the first time, please read **carefully Appendix 5: Introduction to Script Marking: Notes for New Examiners**.
4. Please study the mark scheme carefully. The mark scheme is an integral part of the process that begins with the setting of the question paper and ends with the awarding of grades. Question papers and mark schemes are developed in association with each other so that issues of differentiation and positive achievement can be addressed from the start.
5. The mark scheme is a working document; it is not exhaustive; it does not always provide 'all of the correct' answers. The mark scheme can only provide 'educated guesses' about how the question will work out prior to exam sat date, and it is subject to revision after we have looked at a wide range of scripts during the standardization and set-up meeting.
6. Please read carefully all the scripts in your allocation and make every effort to look positively for achievement throughout the ability range. Always be prepared to use the full range of marks.
7. Mark strictly to the most up-to-date mark scheme. You should have a PRE-SSU mark scheme which should be used to mark scripts prior to the standardization and set-up meeting, and a definitive, finalized POST-SSU mark scheme which should be used when standardization script, seed script, and live marking begins.
8. Marks awarded must relate directly to the marking criteria.
9. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% (traditional paper-based marking of 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
10. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, and if using RM, email or via the RM Assessor messaging system

11. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there then add a tick to confirm that the work has been seen.
12. The RM Assessor **comments box**/SSU meeting is used by your Team Leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason if using RM Assessor.**  
  
If you have any questions or comments for your Team Leader, use face-to-face contact at the SSU meeting, the phone, the RM Assessor messaging system, or email.
13. Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

## 14. Annotations available for marking of scripts

Annotation	Meaning
	Correct response
	Incorrect response
	Positive
	Negative
	Development of point
	Level 1
	Level 2
	Level 3
	Omission mark
	Benefit of doubt given (this annotation counts as a mark so do not tick as well)
	Benefit of doubt not given
	Contradiction
	Repeat
	Too vague
	Noted but no credit given
	Ignore

**DO NOT USE ANY OTHER ANNOTATION**

**MARKING GUIDANCE****1. Crossed Out Responses**

Where a candidate has crossed out a response and provided a clear alternative then the crossed out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed out response where legible.

**2. Rubric Error Responses – Optional Questions**

Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM assessor, which will select the highest mark from those awarded. (The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)

**3. Multiple Choice Question Responses**

When a multiple choice question (any type including gap fill) has only a single, correct response and a candidate provides two responses (even if one of these responses is correct), then no mark should be awarded (as it is not possible to determine which was the first response selected by the candidate).

When a question requires candidates to select more than one option/multiple options, Health and Social Care marking principles (in line with our approach to positive marking) state that the first two/three/four options from top to bottom (dependent on what the question requires) will only be marked to ensure fairness for those candidates who have followed the instructions of the question (the underlying assumption here is that it is not possible to determine which were the main responses selected by the candidate, and candidates may be attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses).

**4. Contradictory Responses**

When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

**5. Short Answer Questions (requiring only a list by way of a response, usually worth only one mark per response)**

Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. (The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)

6. **Short Answer Questions (requiring a more developed response, worth two or more marks)**

If the candidates are required to provide a description of, say, three items or factors and four items or factors are provided, then mark on a similar basis – that is downwards (as it is unlikely in this situation that a candidate will provide more than one response in each section of the response space. Indicative content will be more prevalent in these questions due to the potentially wide parameters expected of candidates' answers.

7. **Longer Answer Questions (requiring a developed response)**

Where candidates have provided two (or more) responses to a medium or high tariff question which only required a single (developed) response and not crossed out the first response, then only the first response should be marked. Examiners will need to apply professional judgement as to whether the second (or a subsequent) response is a 'new start' or simply a poorly expressed continuation of the first response.

8. **Award NR (No Response):**

- a. if there is nothing written at all in the answer space
- b. OR if there is a comment which does not in any way relate to the question (e.g. 'can't do', 'don't know')
- c. OR if there is a mark (e.g. a dash, a question mark) which isn't an attempt at the question.
- d. Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).



## 9. Level of Response Questions

Read through the whole answer from start to finish, using the level descriptors to help you decide whether it is a strong or weak answer. The indicative content in the guidance column indicates the expected parameters for candidates' answers, but be prepared to recognise and credit unexpected approaches where they show relevance.

Using a 'best-fit' approach based on the skills and health & social care content evidenced within the answer, first decide which set of level descriptors, Level 1, 2 or 3, best describes the overall quality of the answer. Once the level is located, award a high, middle or low mark:

**The highest mark** where **all** of the level descriptor has been evidenced and **all** aspects of the communication statement (in italics) have been met.

**The high-middle mark** (four-mark level range) where **all/most** of the level descriptor has been evidenced and **most/all** aspects of the communication statement (in italics) have been met respectively.

**The low-middle mark** (four-mark level range) where **all/most** of the level descriptor has been evidenced with **some/most** aspects of the communication statement (in italics) have been met respectively.

**The middle mark** (three-mark level range) where **all/most** of the level descriptor has been evidenced and **some/most** aspects of the communication statement (in italics) have been met respectively.

**The lowest mark** should be awarded where **all/most** of the level descriptor has been evidenced and **few/some** aspects of the communication statement (in italics) have been met.

Be prepared to use the full range of marks. Do not reserve highest level marks 'in case' something turns up of a quality you have not yet seen. If an answer gives clear evidence of the qualities described in the level descriptors, reward appropriately.

**In summary:**

**The skills and health & social care content via the descriptors determines the level. The communication statement determines the mark within a level.**

Level of response questions on this paper are **1(c)(i)\***, **1(f)\***, **2(a)\***, **2(e)(i)\***, **3(b)(ii)\***, **4(b)(i)\*** and **5(d)\***.

**ABBREVIATIONS, ANNOTATIONS & CONVENTIONS USED IN THE MARK SCHEME**

<b>Annotation</b>	<b>Meaning</b>
/	alternative and acceptable answers for the same marking point
✓	Separates marking points - One tick = one mark, Two ticks = two marks etc.
<b>ACCEPT</b>	Answers that can be accepted
<b>DO NOT ACCEPT</b>	Answers which cannot be accepted
<b>IGNORE</b>	Statements which are irrelevant
( )	Words/letters/symbols which are not essential to gain credit
—	Underlined words must be present in answer to score a mark, i.e. no other answer is acceptable
<b>AW</b>	Alternative wording
<b>ORA</b>	Or reverse argument
<b>(number x number)</b>	e.g. 3x2 – 3 explanations required, 2 marks per explanation 1x1 – 1 description required, 1 mark for description
<b>MAX number word FROM:</b>	Candidate is only allowed a maximum set number of marking points from the list that begins with: 'max number word from:'
<b>ANY number word FROM:</b>	Candidate is allowed any set number of marking points from the list that begins with: 'any number word from:'

Question			Answer	Marks	Guidance
1	(a)	(i)	plasma ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>
1	(a)	(ii)	erythrocyte ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>
1	(a)	(iii)	monocyte ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>
1	(a)	(iv)	platelet ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>
1	(b)		Forces water and dissolved substances into surrounding tissues. ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>  <b>If more than one answer is given:</b> No mark should be awarded.

Question			Answer	Marks	Guidance
1	(c)	(i) *	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5-6 marks)</b> Detailed description of roles of the <b>three</b> labelled blood vessels.</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 description of roles of at least <b>two</b> of the labelled blood vessels.</p> <p><i>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.</i></p> <p><b>Level 1 (1-2 marks)</b> Limited description of roles of labelled blood vessels.</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 worthy of credit.</i></p>	6	<p><b>Vena cava</b></p> <ul style="list-style-type: none"> <li>• superior and inferior vena cava</li> <li>• is a vein</li> <li>• transports blood back to the heart</li> <li>• enters right atrium</li> <li>• carries deoxygenated blood</li> </ul> <p><b>Pulmonary artery</b></p> <ul style="list-style-type: none"> <li>• carries deoxygenated blood</li> <li>• carries blood from heart</li> <li>• leaves the right ventricle</li> <li>• carries blood to lungs</li> <li>• part of the pulmonary circulation</li> </ul> <p><b>Coronary artery</b></p> <ul style="list-style-type: none"> <li>• carries blood to heart (muscle/tissue)</li> <li>• which supplies it with oxygen</li> <li>• and nutrients / glucose</li> </ul> <p><b>General comments for blood vessels</b></p> <ul style="list-style-type: none"> <li>• veins (usually) carry deoxygenated blood</li> <li>• veins carry blood back to the heart</li> <li>• veins carry blood at low pressure</li> <li>• arteries (usually) carry oxygenated blood</li> <li>• arteries carry blood away from heart</li> <li>• arteries carry blood at high pressure</li> </ul>

Question			Answer	Marks	Guidance												
1	(c)	(ii)	<p><b>One</b> mark for each correct answer, <b>three</b> required.</p> <table><thead><tr><th>Structure</th><th></th><th>Role</th></tr></thead><tbody><tr><td>Atrioventricular node (AVN)</td><td>●</td><td>Initiates contraction of heart muscle and is also known as the 'pacemaker'.</td></tr><tr><td>Purkyne fibres</td><td>●</td><td>Delays impulses to allow time for atria to empty blood into the ventricles.</td></tr><tr><td>Sinoatrial node (SAN)</td><td>●</td><td>Specialised cardiac muscle that transmits impulses through ventricle walls.</td></tr></tbody></table>	Structure		Role	Atrioventricular node (AVN)	●	Initiates contraction of heart muscle and is also known as the 'pacemaker'.	Purkyne fibres	●	Delays impulses to allow time for atria to empty blood into the ventricles.	Sinoatrial node (SAN)	●	Specialised cardiac muscle that transmits impulses through ventricle walls.	3 (3x1)	<p>One mark per link. <b>DO NOT ALLOW</b> more than one link between boxes.</p>
Structure		Role															
Atrioventricular node (AVN)	●	Initiates contraction of heart muscle and is also known as the 'pacemaker'.															
Purkyne fibres	●	Delays impulses to allow time for atria to empty blood into the ventricles.															
Sinoatrial node (SAN)	●	Specialised cardiac muscle that transmits impulses through ventricle walls.															
1	(d)		Autonomic nervous system ✓	1	<p>For an <b>incorrect</b> answer use the <b>cross</b>.</p> <p><b>No other answers are acceptable.</b></p> <p><b>If more than one answer is given:</b> No mark should be awarded.</p>												

Question			Answer	Marks	Guidance
1	(e)	(i)	<p><b>One</b> cause with an <b>explanation</b> required. <b>Two</b> marks.</p> <p>fatty/cholesterol deposits / plaques ✓  <b>narrows arteries / blood vessels</b> ✓ (veins and capillaries are TV)</p> <p>blood clot ✓  <b>embolism (could travel here from another part of the body)</b> ✓  <b>blocks arteries / vessels</b> ✓ (veins and capillaries are TV)</p> <p>arteries / blood vessel bursts / haemorrhage ✓  <b>blood leaks around brain</b> ✓  <b>causing a build-up of pressure</b> ✓</p>	2	<p><b>Annotation:</b>  The number of ticks must match the number of marks awarded.</p> <p>For <b>incorrect</b> answers use the <b>cross</b>.</p> <p><b>Two marks:</b></p> <ul style="list-style-type: none"> <li>a cause identified</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>explanation (explanation must link to cause)</li> </ul> <p><b>One mark:</b></p> <ul style="list-style-type: none"> <li>a cause identified</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>explanation</li> </ul> <p><b>for example</b>  -narrow arteries (1 mark)  -blood clot causes blood to leak into the brain (1 mark)  -poor diet causes plaques to develop in arteries (1 mark)</p> <p><i><b>don't credit "blood supply to the brain being reduced" as it is in the question.</b></i></p> <p><i><b>Do Not Accept – responses relating blood vessels of the heart</b></i></p>

Question			Answer	Marks	Guidance
1	(e)	(ii)	<p><b>Four</b> marks for the outline of effects of stroke. Any <b>four</b> marks from:</p> <p>drooping of face on one side ✓</p> <p>problems lifting one or both arms ✓</p> <p>slurred speech / inability to speak ✓</p> <p>loss of balance / co-ordination ✓</p> <p>headache / pain behind eyes ✓</p> <p>loss of consciousnesses ✓</p> <p>reduced cognitive function ✓</p> <p>loss of mobility / paralysis ✓</p> <p>numbness / loss of feeling ✓</p> <p>problems in swallowing ✓</p> <p>blurred vision ✓</p>	4	<p><b>Four</b> marks for the outline of effects of stroke.</p> <p>The number of ticks must match the number of marks awarded.</p> <p>For <b>incorrect</b> answers use the <b>cross</b>.</p> <p><b>Accept any other correct response</b></p>

Question	Answer	Marks
1 (f)*	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (7-8 marks)</b>  Detailed discussion of <b>two or more</b> treatments designed to help recovery from stroke with strengths <b>and</b> weaknesses.</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>  Detailed discussion of <b>one</b> treatment designed to help recovery from stroke with strengths <b>and</b> weaknesses.  <b>OR</b>  Sound discussion of <b>two or more</b> treatments designed to help recovery from stroke with strengths <b>or</b> weaknesses  <b>OR</b>  <b>Submax (4 marks) sound discussion of one treatment with strengths and weaknesses.</b></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 discussion of <b>one</b> treatment for stroke with strengths <b>or</b> weaknesses.  <b>OR</b>  Simple list of <b>two</b> or more treatments.</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



Treatment	Strengths	Weaknesses
<b>e.g. clot busters / alteplase</b>	<ul style="list-style-type: none"> <li>dissolves blood clot</li> <li>restores blood flow to the brain</li> <li>fast acting</li> </ul>	<ul style="list-style-type: none"> <li>must be used as soon as possible after the stroke</li> <li>risk of bleeding</li> <li>only suitable for ischaemic strokes</li> <li>Named side effect – heart issues</li> </ul>
<b>e.g. blood thinners anticoagulant / warfarin / aspirin / anti-platelets</b>	<ul style="list-style-type: none"> <li>reduces chance of another clot</li> <li>some can be for long term use</li> <li>easy to take</li> </ul>	<ul style="list-style-type: none"> <li>have to remember to take them</li> <li>risk of bleeding</li> <li>may have to make dietary changes</li> <li>named side effect – digestive / liver issues</li> <li>cost</li> </ul>
<b>e.g. thrombectomy</b>	<ul style="list-style-type: none"> <li>removes clots</li> <li>restores blood flow</li> </ul>	<ul style="list-style-type: none"> <li>should be done as soon as possible after stroke</li> <li>invasive surgical procedure</li> <li>blood clot may not be accessible</li> <li>painful</li> <li>risk of infection</li> </ul>
<b>e.g. Craniotomy (surgery to repair burst blood vessel)</b>	<ul style="list-style-type: none"> <li>repairs burst blood vessels.</li> <li>restores blood flow</li> <li>reduces pressure within cranium</li> </ul>	<ul style="list-style-type: none"> <li>should be done as soon as possible after stroke</li> <li>invasive surgical procedure</li> <li>painful</li> <li>long recovery period</li> <li>risk of further brain injury</li> </ul>
<b>e.g. Statins</b>	<ul style="list-style-type: none"> <li>reduces development of atheromas</li> <li>thus reduce risk of future strokes</li> <li>easy to take</li> </ul>	<ul style="list-style-type: none"> <li>have to remember to take them</li> <li>dietary changes</li> <li>named side effect – muscle damage / headache / sleep problems / digestive issues</li> <li>cost</li> </ul>
<b>e.g. Blood pressure medication / Beta blockers / ACE inhibitors</b>	<ul style="list-style-type: none"> <li>reduces blood pressure</li> <li>thus reduce risk of future strokes</li> <li>easy to take</li> </ul>	<ul style="list-style-type: none"> <li>have to remember to take them</li> <li>named side effect – swelling, digestive issues</li> <li>cost</li> </ul>

Question	Answer	Marks	Guidance
2 (a)*	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5-6 marks)</b> Detailed explanation of roles of <b>three</b> structures in respiratory system in inspiration <b>and</b> expiration.</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 of roles of <b>two</b> structures in respiratory system in inspiration <b>and</b> expiration <b>OR</b> Sound explanation of roles of <b>two</b> structures in respiratory system in inspiration <b>or</b> expiration <b>OR</b> Sound explanation of roles of <b>one</b> structure in respiratory system in inspiration <b>and</b> expiration</p> <p><i>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.</i></p> <p><b>Level 1 (1–2 marks)</b> Limited explanation of roles of the structures in respiratory system in inspiration <b>or</b> expiration</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 worthy of credit.</i></p>	6	<p><b>Role of intercostal muscles</b></p> <ul style="list-style-type: none"> <li>• contract during inspiration</li> <li>• pulls ribcage up and outwards during inspiration</li> <li>• increasing volume of chest cavity</li> <li>• relax during expiration</li> <li>• pulls ribcage down and inwards during expiration</li> <li>• decreasing volume of chest cavity</li> </ul> <p><b>Diaphragm</b></p> <ul style="list-style-type: none"> <li>• contracts during inspiration</li> <li>• flattens during inspiration</li> <li>• increasing volume of chest cavity</li> <li>• relaxes during expiration</li> <li>• becomes dome-shaped during expiration</li> <li>• decreasing volume of chest cavity</li> </ul> <p><b>Pleural membranes</b></p> <ul style="list-style-type: none"> <li>• thin membranes</li> <li>• line the pleural cavity</li> <li>• have fluid on surface</li> <li>• creates surface tension</li> <li>• reduces friction</li> <li>• allow smooth movement during inspiration / expiration</li> </ul>

Question			Answer	Marks	Guidance																							
2	(b)		<p>One mark per correct row as shown in the table.</p> <table><tr><th rowspan="2">Statement</th><th colspan="3">Tick (✓) each correct box</th></tr><tr><th>Aerobic only</th><th>Anaerobic only</th><th>Both</th></tr><tr><td>Occurs inside cells</td><td></td><td></td><td>✓</td></tr><tr><td>Produces ATP</td><td></td><td></td><td>✓</td></tr><tr><td>Produces lactic acid</td><td></td><td>✓</td><td></td></tr><tr><td>Uses oxygen</td><td>✓</td><td></td><td></td></tr></table> <p>✓</p> <p>✓</p> <p>✓</p>	Statement	Tick (✓) each correct box			Aerobic only	Anaerobic only	Both	Occurs inside cells			✓	Produces ATP			✓	Produces lactic acid		✓		Uses oxygen	✓			3 (3x1)	<p>For an <b>incorrect</b> answer use the <b>cross</b>.</p> <p><b>No other answers are acceptable.</b></p> <p><b>If more than one answer is given for one statement:</b> No mark should be awarded.</p>
Statement	Tick (✓) each correct box																											
	Aerobic only	Anaerobic only	Both																									
Occurs inside cells			✓																									
Produces ATP			✓																									
Produces lactic acid		✓																										
Uses oxygen	✓																											
2	(c)	(i)	<p>Any <b>two</b> symptoms of CF associated with lungs from:</p> <ul style="list-style-type: none"><li>• chest infections</li><li>• coughing</li><li>• wheezing</li><li>• shortness of breath</li><li>• inflamed airways</li><li>• restricted airways</li><li>• thick / sticky mucus</li></ul>	2 (2x1)	<p>Any <b>two</b> symptoms for <b>two</b> marks, <b>two</b> required. Ignore refs to other organs as lungs are mentioned in the question.</p> <p>For an <b>incorrect</b> answer use the <b>cross</b>.</p> <p>Infections alone is TV Mucus alone is TV</p>																							

Question			Answer	Marks	Guidance
2	(c)	(ii)	<p><b>Two</b> marks for a treatment described. <b>One</b> treatment required</p> <p><b>Treatment for CF:</b></p> <ul style="list-style-type: none"> <li>• <b>antibiotics</b></li> <li>• treats infection</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>anti-inflammatories</b></li> <li>• reduce swelling</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>lung transplant/lobectomy</b></li> <li>• replaces/removes damaged lungs</li> <li>• improves gaseous exchange</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>physiotherapy / vibrating jacket</b></li> <li>• removes excess mucus in lungs</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>mucus thinning medication</b></li> <li>• mucus is easier to remove from the lungs</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• <b>bronchodilators</b></li> <li>• open airways, increasing airflow</li> </ul>	<p><b>2</b> (1x2)</p>	<p>The number of ticks must match the number of marks awarded.</p> <p>For <b>incorrect</b> answers use the <b>cross</b>.</p> <p><b>2 marks:</b> A treatment identified with a description that shows understanding</p> <p><b>1 mark:</b> A treatment identified <b>OR</b> a too vague treatment.</p> <p>DO NOT credit a description that is not linked to the treatment.</p> <p>Surgery helps remove excess mucus (0 marks)</p> <p>Surgery that replaces damaged lung (1 mark)</p> <p>Antibiotics makes mucus easier to remove from the lungs (1 mark)</p> <p>Do not credit lifestyle changes e.g. exercise / stopping smoking</p>

Question			Answer	Marks	Guidance												
2	(d)		One mark per correct answer as shown in the table.	5 (5x1)	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>												
			<table><tr><th>Structure</th><th>Function</th></tr><tr><td>anus</td><td>Opens to allow removal of faeces ✓</td></tr><tr><td>Bile duct ✓</td><td>Allows a digestive fluid to flow from gall bladder to the small intestine.</td></tr><tr><td>Large intestine ✓</td><td>Reabsorbs water from digested food and prepares waste products for removal.</td></tr><tr><td>rectum</td><td>Stores faeces until they are removed ✓</td></tr><tr><td>Small intestine ✓</td><td>Completes digestion and is the site of absorption of nutrients.</td></tr></table>			Structure	Function	anus	Opens to allow removal of faeces ✓	Bile duct ✓	Allows a digestive fluid to flow from gall bladder to the small intestine.	Large intestine ✓	Reabsorbs water from digested food and prepares waste products for removal.	rectum	Stores faeces until they are removed ✓	Small intestine ✓	Completes digestion and is the site of absorption of nutrients.
			Structure			Function											
			anus			Opens to allow removal of faeces ✓											
			Bile duct ✓			Allows a digestive fluid to flow from gall bladder to the small intestine.											
			Large intestine ✓			Reabsorbs water from digested food and prepares waste products for removal.											
			rectum			Stores faeces until they are removed ✓											
			Small intestine ✓			Completes digestion and is the site of absorption of nutrients.											

Question			Answer	Marks	Guidance
2	(e)	(i)*	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (7-8 marks)</b> Detailed discussion of similarities <b>and</b> differences between causes <b>and</b> effects of IBS and coeliac disease.</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 similarities <b>and</b> differences between causes <b>or</b> effects of IBS and coeliac disease.</p> <p><b>OR</b> Sound discussion of similarities <b>or</b> differences between causes <b>and</b> effects of IBS and coeliac disease.</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 discussion such as a simple list of effects of either IBS or coeliac disease.</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><b>Not exhaustive:</b></p> <p><u><b>Causes</b></u> <b>Similarities:</b></p> <ul style="list-style-type: none"> <li>• Both can be caused by infection</li> <li>• Both can be caused by food intolerance</li> <li>• Can be unknown in both conditions</li> </ul> <p><b>Differences:</b></p> <ul style="list-style-type: none"> <li>• food moves too quickly through digestive system (<b>IBS</b>)</li> <li>• food moves too slowly through digestive system (<b>IBS</b>)</li> <li>• problems with absorption of bile (<b>IBS</b>)</li> <li>• stress (<b>IBS</b>)</li> <li>• infections of digestive system (<b>IBS</b>)</li> <li>• autoimmune condition (<b>Coeliac</b>)</li> <li>• damage to villi (<b>Coeliac</b>)</li> </ul> <p><u><b>Effects</b></u> <b>Similarities:</b></p> <ul style="list-style-type: none"> <li>• diarrhoea / constipation</li> <li>• bloating / flatulence</li> <li>• abdominal pain</li> <li>• nausea</li> <li>• weight loss</li> </ul> <p><b>Differences:</b></p> <ul style="list-style-type: none"> <li>• <b>IBS</b> affects large intestines, whereas <b>Coeliac</b> affects small intestines</li> <li>• mucus in faeces (<b>IBS</b>)</li> <li>• feeling that bowels are not empty (<b>IBS</b>)</li> <li>• vomiting (<b>Coeliac</b>)</li> <li>• prevents body absorbing nutrients (<b>Coeliac</b>)</li> <li>• affects other body systems e.g. joint or bone pain (<b>Coeliac</b>)</li> </ul>

Question			Answer	Marks	Guidance
2	(e)	(ii)	<p>Any <b>two</b> from:</p> <ul style="list-style-type: none"> <li>tiredness - caused by abdominal pain / bloating</li> <li>impacts on social life - need to visit toilet often or due to food / drink intolerances</li> <li>work affected - caused by need to avoid stress or toilet issues</li> <li>embarrassment - caused by e.g. flatulence / toilet habits</li> <li>dietary changes – avoid triggers.</li> <li>Isolation – avoiding social situations as either embarrassed by symptoms or not wanting to be away from a toilet</li> <li>emotional impacts (self-esteem, depression, anxiety) – due negative impacts of symptoms</li> </ul>	<p><b>2</b> (2x1)</p>	<p><b>Two</b> marks for <b>two</b> impacts on life style</p> <p>The number of ticks must match the number of marks awarded.</p> <p>For <b>incorrect</b> answers use the <b>cross</b> or appropriate annotation from the following:</p> <p><b>Stating an impact alone is not creditable, must offer some description.</b></p> <p><b>Descriptions may be interchangeable</b></p>

Question			Answer	Marks	Guidance								
3	(a)		<table><tr><th>Statement</th><th>True (T) or False (F)</th></tr><tr><td>Bones provide a framework for the attachment of muscles.</td><td>True / T ✓</td></tr><tr><td>Ligaments attach muscles to bones.</td><td>False / F ✓</td></tr><tr><td>Muscles can only pull when they contract.</td><td>True / T ✓</td></tr></table>	Statement	True (T) or False (F)	Bones provide a framework for the attachment of muscles.	True / T ✓	Ligaments attach muscles to bones.	False / F ✓	Muscles can only pull when they contract.	True / T ✓	3 (3x1)	<p><b>Annotation:</b> The number of ticks must match the number of marks awarded.</p> <p>For an <b>incorrect</b> answer use the <b>cross</b>.</p> <p><b>No other answers are acceptable.</b></p> <p><b>If more than one answer is given e.g. T/F:</b> No mark should be awarded.</p>
Statement	True (T) or False (F)												
Bones provide a framework for the attachment of muscles.	True / T ✓												
Ligaments attach muscles to bones.	False / F ✓												
Muscles can only pull when they contract.	True / T ✓												
3	(b)	(i)	ball and socket ✓	1	<p>For an <b>incorrect</b> answer use the <b>cross</b>.</p> <p><b>No other answers are acceptable.</b></p>								



Question			Answer	Marks	Guidance
3	(b)	(ii)*	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5-6 marks)</b> Detailed explanations of risk factors <b>AND</b> biological causes of arthritis.</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> Detailed explanations of risk factors <b>OR</b> biological causes of arthritis OR Sound explanations of risk factors <b>AND</b> biological causes of arthritis</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 explanations of risk factors <b>OR</b> biological causes of arthritis. May be lists.</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>Points and explanations (not exhaustive)</b> <b>Points from explanations required for L2 and L3.</b></p> <p><b>Risk factors:</b></p> <ul style="list-style-type: none"> <li>• injury – damage to joints can cause the development of arthritis.</li> <li>• obesity – excessive forces on joints</li> <li>• ageing – greater time for damage to cartilage to develop.</li> <li>• genetics/family history – specific genes can make development of arthritis more likely.</li> <li>• gender – female have higher rates of arthritis.</li> <li>• smoking – cause inflammation</li> <li>• excessive exercise / physical activity – increases wear and tear on joints</li> </ul> <p><b>Biological causes and explanation:</b> (candidates are not required to identify the type of arthritis)</p> <p><b>Osteoarthritis</b></p> <ul style="list-style-type: none"> <li>• wear and tear of joint</li> <li>• loss of cartilage</li> <li>• increased friction</li> <li>• loss of joint space</li> <li>• causing bones to rub</li> <li>• friction causes inflammation and pain</li> <li>• bone spurs / growths</li> </ul> <p><b>Rheumatoid</b></p> <ul style="list-style-type: none"> <li>• autoimmune disease</li> <li>• can be triggered by virus</li> <li>• immune system attacks synovial membrane</li> <li>• causing inflammation</li> <li>• and a pannus to form</li> </ul>

Question			Answer	Marks	Guidance
3	(c)	(i)	bone ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>
3	(c)	(ii)	<p><b>Two</b> marks for <b>two</b> methods.</p> <p>Any <b>two</b> from:</p> <p>bone density scans / DEXA ✓</p> <p>Xray / CT ✓</p> <p>MRI ✓</p> <p>blood tests ✓</p> <p>ultrasound ✓</p>	2 (2x1)	<p><b>One</b> mark for each correct answer, <b>two</b> required.</p> <p>For an <b>incorrect</b> answer use the <b>cross</b>.</p>

Question			Answer	Marks	Guidance												
4	(a)		<b>One</b> mark for each correct answer, <b>four</b> required.	4 (4x1)	<b>Annotation:</b> The number of ticks must match the number of marks awarded.  For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>  <b>If more than one answer letter is given:</b> No mark should be awarded.												
			<table><tr><th>Descriptions</th><th>Letter on diagram</th></tr><tr><td>A coiled tube that contains jelly-like fluid.</td><td><b>C</b></td></tr><tr><td>A thin membrane that transmits vibrations to the middle ear.</td><td><b>F</b> ✓</td></tr><tr><td>A tube that helps to keep the pressure of the middle ear the same as outside the ear.</td><td><b>D</b> ✓</td></tr><tr><td>Fluid filled tubes that help with balance.</td><td><b>A</b> ✓</td></tr><tr><td>Small bones that transmit vibrations.</td><td><b>E</b> ✓</td></tr></table>			Descriptions	Letter on diagram	A coiled tube that contains jelly-like fluid.	<b>C</b>	A thin membrane that transmits vibrations to the middle ear.	<b>F</b> ✓	A tube that helps to keep the pressure of the middle ear the same as outside the ear.	<b>D</b> ✓	Fluid filled tubes that help with balance.	<b>A</b> ✓	Small bones that transmit vibrations.	<b>E</b> ✓
		Descriptions	Letter on diagram														
		A coiled tube that contains jelly-like fluid.	<b>C</b>														
		A thin membrane that transmits vibrations to the middle ear.	<b>F</b> ✓														
		A tube that helps to keep the pressure of the middle ear the same as outside the ear.	<b>D</b> ✓														
		Fluid filled tubes that help with balance.	<b>A</b> ✓														
		Small bones that transmit vibrations.	<b>E</b> ✓														

Question	Answer	Marks	Guidance
4 (b) (i)*	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5-6 marks)</b> Detailed explanations of cause <b>AND</b> effects of hearing loss.</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 explanations of cause <b>AND</b> effects of hearing loss. <b>OR</b> Detailed explanations of cause <b>OR</b> effects of hearing loss.</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 explanations of cause <b>OR</b> effects of hearing loss. May be lists.</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> <p><b>Do not credit impact on daily life/lifestyle</b></p>	6	<p><b>Points not exhaustive:</b></p> <p><b>Causes with explanations:</b></p> <ul style="list-style-type: none"> <li>• ageing – wear and tear on cells and tissues</li> <li>• exposure to loud noises- damages cells and tissues</li> <li>• ear wax- leads to blockage of ear canal</li> <li>• infection- inflammation and fluid build up -can lead to blockages in tubes</li> <li>• burst ear drum-sound waves / vibrations can't be transmitted</li> <li>• osteoporosis – density of ossicles is reduced, decreasing transmission of vibrations.</li> <li>• genetics- problems with structures in the ear</li> <li>• damage to hair cells- less sound waves converted into electrical impulses</li> <li>• injury – damage to ear structures</li> </ul> <p><b>Effects:</b></p> <ul style="list-style-type: none"> <li>• sound waves not transmitted to the cochlear as effectively (conductive hearing loss)</li> <li>• less sound waves are converted into electrical impulses</li> <li>• therefore less impulses are transmitted to the brain (auditory cortex)</li> <li>• difficulty hearing higher pitch sounds</li> <li>• inability to hear quiet sounds</li> <li>• can result in complete deafness</li> <li>• can cause temporary or permanent hearing loss</li> </ul>

Question			Answer	Marks	Guidance
4	(b)	(ii)	Any <b>two</b> treatments from:  remove ear wax / ear drops / syringing ✓  hearing aids ✓  cochlear implants ✓  antibiotics ✓  grommets ✓	<b>2</b> (2x1)	<b>Two</b> marks for <b>two</b> treatments  The number of ticks must match the number of marks awarded.  For <b>incorrect</b> answers use the <b>cross</b> .  <b>Implants alone is too vague</b>  <b>Don't credit support devices e.g. hearing dog</b>
4	(c)	(i)	sensory ✓	<b>1</b>	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>
4	(c)	(ii)	axon ✓	<b>1</b>	For an <b>incorrect</b> answer use the <b>cross</b> .  <b>Accept Schwann cell and myelin sheath</b>

Question			Answer	Marks	Guidance
5	(a)		medulla ✓ renal vein ✓ calyx ✓ bladder ✓ urethra ✓	5 (5x1)	<b>One</b> mark for each correct answer, <b>five</b> required. For an <b>incorrect</b> answer use the <b>cross</b> . <b>Answers must be in order shown here.</b> <b>No other answers are acceptable.</b>
5	(b)		liver ✓	1	For an <b>incorrect</b> answer use the <b>cross</b> . <b>No other answers are acceptable.</b>

Question			Answer	Marks	Guidance										
5	(c)		One mark for each correct answer, <b>four</b> required.	4 (4x1)	<b>Annotation:</b> The number of ticks must match the number of marks awarded.  For an <b>incorrect</b> answer use the <b>cross</b> .  <b>No other answers are acceptable.</b>  <b>If more than one answer is given:</b> No mark should be awarded.										
			<table><tr><th>Descriptions</th><th>Structure</th></tr><tr><td>A small ball of capillaries where blood enters for filtration.</td><td>Glomerulus ✓</td></tr><tr><td>Part of the nephron tubule where glucose is reabsorbed back into the blood.</td><td>Convolut ed tubule ✓</td></tr><tr><td>Part of nephron tubule where most of the water is reabsorbed.</td><td>Loop of Henle / Convolut ed tubule ✓</td></tr><tr><td>Part of the nephron tubule where ultrafiltration occurs.</td><td>Bowman’s capsule ✓</td></tr></table>			Descriptions	Structure	A small ball of capillaries where blood enters for filtration.	Glomerulus ✓	Part of the nephron tubule where glucose is reabsorbed back into the blood.	Convolut ed tubule ✓	Part of nephron tubule where most of the water is reabsorbed.	Loop of Henle / Convolut ed tubule ✓	Part of the nephron tubule where ultrafiltration occurs.	Bowman’s capsule ✓
			Descriptions			Structure									
			A small ball of capillaries where blood enters for filtration.			Glomerulus ✓									
			Part of the nephron tubule where glucose is reabsorbed back into the blood.			Convolut ed tubule ✓									
			Part of nephron tubule where most of the water is reabsorbed.			Loop of Henle / Convolut ed tubule ✓									
			Part of the nephron tubule where ultrafiltration occurs.			Bowman’s capsule ✓									

Question	Answer	Marks	Guidance
5 (d)*	<p>Please refer to the marking instructions on page 8 of this mark scheme for guidance on how to mark this question.</p> <p><b>Level 3 (5-6 marks)</b> Detailed explanations of biological causes of nephrotic syndrome.</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 explanations of biological causes of nephrotic syndrome.</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 explanations of biological causes of nephrotic syndrome. May be lists.</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>Points not exhaustive:</b></p> <p><b>Causes with explanations</b></p> <p><b>loss of kidney function due to:</b></p> <ul style="list-style-type: none"> <li>• damage to the kidney</li> <li>• infection</li> <li>• other diseases e.g. diabetes</li> <li>• cancer</li> <li>• faulty gene</li> </ul> <p><b>results in:</b></p> <ul style="list-style-type: none"> <li>• increase in permeability of filtration membranes</li> <li>• leading to ultrafiltration not occurring properly</li> <li>• high levels of proteins in urine</li> <li>• low levels of protein in blood</li> </ul> <p>Don't credit risk factors.</p> <p>Link to symptoms is not required in candidate responses</p>



## Need to get in touch?

If you ever have any questions about OCR qualifications or services (including administration, logistics and teaching) please feel free to get in touch with our customer support centre.

### Call us on

**01223 553998**

### Alternatively, you can email us on

**support@ocr.org.uk**

### For more information visit



**ocr.org.uk/qualifications/resource-finder**



**ocr.org.uk**



**Twitter/ocrextams**



**/ocrextams**



**/company/ocr**



**/ocrextams**



**CAMBRIDGE**  
UNIVERSITY PRESS & ASSESSMENT

OCR is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored. © OCR 2024 Oxford Cambridge and RSA Examinations is a Company Limited by Guarantee. Registered in England. Registered office The Triangle Building, Shaftesbury Road, Cambridge, CB2 8EA.

Registered company number 3484466. OCR is an exempt charity.

OCR operates academic and vocational qualifications regulated by Ofqual, Qualifications Wales and CCEA as listed in their qualifications registers including A Levels, GCSEs, Cambridge Technicals and Cambridge Nationals.

OCR provides resources to help you deliver our qualifications. These resources do not represent any particular teaching method we expect you to use. We update our resources regularly and aim to make sure content is accurate but please check the OCR website so that you have the most up-to-date version. OCR cannot be held responsible for any errors or omissions in these resources.

Though we make every effort to check our resources, there may be contradictions between published support and the specification, so it is important that you always use information in the latest specification. We indicate any specification changes within the document itself, change the version number and provide a summary of the changes. If you do notice a discrepancy between the specification and a resource, please [contact us](#).

Whether you already offer OCR qualifications, are new to OCR or are thinking about switching, you can request more information using our [Expression of Interest form](#).

Please [get in touch](#) if you want to discuss the accessibility of resources we offer to support you in delivering our qualifications.