



## **NCFE CACHE Level 3 Extended Diploma in Health and Social Care (Adults) (Northern Ireland) (603/5355/7)**

## **NCFE CACHE Technical Level 3 Extended Diploma in Health and Social Care (601/8435/8)**

Unit title: Anatomy and physiology for health and social care

Summer 2023

Assessment code: HSCNI/SAE

Paper number: P001678

### **Mark Scheme**

v2.0 Pre-standardisation

This mark scheme has been written by the Assessment Writer and refined, alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this mark scheme is to give you:

- examples and criteria of the types of response expected from a learner
- information on how individual marks are to be awarded
- the allocated assessment objective(s) and total mark for each question.

## Marking guidelines

### *General guidelines*

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all learners, who must receive the same treatment. You must mark the first learner in exactly the same way as you mark the last.

- The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
- Reward learners positively giving credit for what they have shown, rather than what they might have omitted.
- Utilise the whole mark range and always award full marks when the response merits them.
- Be prepared to award zero marks if the learner's response has no creditworthy material.
- Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
- The marks awarded for each response should be clearly and legibly recorded in the grid on the back of the question paper.
- If you are in any doubt about the application of the mark scheme, you must consult with your Team Leader or the Chief Examiner.

### *Guidelines for using extended response marking grids*

Extended response marking grids have been designed to award a learner's response holistically and should follow a best-fit approach. The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

When determining a level, you should use a bottom up approach. If the response meets all the descriptors in the lowest level, you should move to the next one, and so on, until the response matches the level descriptor. Remember to look at the overall quality of the response and reward learners positively, rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best-fit approach at this stage, and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. You must also consider the relative weightings of the assessment objectives, so as not to over/under credit a response. Standardisation materials, marked by the Chief Examiner, will help you with determining a mark. You will be able to use exemplar learner responses to compare to live responses, to decide if it is the same, better or worse.

You are reminded that the indicative content provided under the marking grid is there as a guide, and therefore you must credit any other suitable responses a learner may produce. It is not a requirement either, that learners must cover all of the indicative content to be awarded full marks.

## Assessment objectives

This unit requires learners to:

<b>A01</b>	Recall of knowledge and understanding
<b>A02</b>	Application of knowledge and understanding
<b>A03</b>	Analysis to demonstrate knowledge of concepts and/or theories

The weightings of each assessment objective can be found in the qualification specification.

Qu	Mark scheme	Total marks
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**Section A**

**Total for this section: 20 marks**

1 (a)	<p><b>Which one (1) of the following pieces of equipment is used to measure respiratory rate?</b></p> <p>Award <b>one (1)</b> mark for:</p> <ul style="list-style-type: none"> <li>• D watch (1)</li> </ul>	<p><b>1</b></p> <p><b>AO1=1</b></p>
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1 (b)	<p><b>Taking in oxygen is one function of respiration by the lungs.</b></p> <p><b>Identify the other function of respiration.</b></p> <p>Award <b>one (1)</b> mark for correct identification:</p> <ul style="list-style-type: none"> <li>• removal of waste products (1).</li> <li>• <b>Accept removal of CO<sub>2</sub> (1)</b></li> </ul>	<p><b>1</b></p> <p><b>AO1=1</b></p>
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1 (c)	<p><b>Identify three (3) structures of the respiratory system involving the passage of air that are after the trachea.</b></p> <p>Award up to <b>three (3)</b> marks for correct identification:</p> <ul style="list-style-type: none"> <li>• bronchi (1)</li> <li>• bronchioles (1)</li> <li>• alveoli (1).</li> </ul>	<p><b>3</b></p> <p><b>AO1=3</b></p>
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1 (d)	<p><b>Explain the process of gaseous exchange within the lungs.</b></p> <p>Award up to <b>four (4)</b> marks for an accurate explanation.</p> <ul style="list-style-type: none"> <li>• Oxygen reaches the alveoli which are tiny air sacs (1). The walls of the alveoli are only one cell thick (1) to allow for diffusion (1). Oxygen enters the bloodstream via the capillaries (1) and carbon dioxide leaves the bloodstream into the alveoli to be exhaled (1).</li> </ul> <p>Accept other suitable responses.</p>	<p><b>4</b></p> <p><b>AO3=4</b></p>
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1 (e)	<p><b>Identify the two (2) muscles of respiration and describe the structure and / or function of one (1) of these muscles.</b></p> <p>Award up to <b>two (2)</b> marks for correct identification:</p>	<p><b>5</b></p> <p><b>AO1=2</b></p>
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	<ul style="list-style-type: none"> <li>• diaphragm (1)</li> <li>• intercostals (1).</li> </ul> <p>Award up to <b>three (3)</b> marks for an accurate description.</p> <ul style="list-style-type: none"> <li>• Diaphragm – a thin skeletal muscle that sits below the lungs (1) it contracts creating a vacuum when an individual inhales and relaxes to push the air out when an individual exhales (1). The diaphragm separates the abdomen from the chest (1).</li> <li>• Intercostals – These are situated between the ribs (1). They contract to raises the ribcage causing inhalation (1) and then relax which lowers the ribcage to allow for exhalation (1). They work in conjunction with the diaphragm (1).</li> </ul> <p>Accept other suitable responses.</p>	<p><b>AO2=3</b></p>
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<p><b>1 (f)</b></p>	<p><b>Explain how ventilation is controlled.</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Mark</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><b>3</b></td> <td style="text-align: center;"><b>5–6</b></td> <td> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the mechanism for the control of ventilation.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;"><b>2</b></td> <td style="text-align: center;"><b>3–4</b></td> <td> <p>Application of knowledge is mostly appropriate, showing some clear understanding of the mechanism for the control of ventilation. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;"><b>1</b></td> <td style="text-align: center;"><b>1–2</b></td> <td> <p>Application of knowledge is limited and may show a lack of understanding of the mechanism for the control of ventilation. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p> </td> </tr> <tr> <td></td> <td style="text-align: center;"><b>0</b></td> <td>No creditworthy material.</td> </tr> </tbody> </table>	Level	Mark	Description	<b>3</b>	<b>5–6</b>	<p>Application of knowledge is appropriate and accurate and shows clear understanding of the mechanism for the control of ventilation.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p>	<b>2</b>	<b>3–4</b>	<p>Application of knowledge is mostly appropriate, showing some clear understanding of the mechanism for the control of ventilation. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p>	<b>1</b>	<b>1–2</b>	<p>Application of knowledge is limited and may show a lack of understanding of the mechanism for the control of ventilation. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>		<b>0</b>	No creditworthy material.	<p><b>6</b></p> <p><b>AO2=3</b></p> <p><b>AO3=3</b></p>
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<b>3</b>	<b>5–6</b>	<p>Application of knowledge is appropriate and accurate and shows clear understanding of the mechanism for the control of ventilation.</p> <p>Analysis to demonstrate understanding of the mechanism for the control of ventilation is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p>															
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	<b>0</b>	No creditworthy material.															

	<p><b>Indicative Content</b></p> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Respiration is controlled by parts of the brain</li> <li>• The pons controls the rate of involuntary respiration</li> <li>• The medulla oblongata signals the muscles involved in breathing</li> <li>• The motor cortex (within the cerebral cortex) controls breathing via the respiratory pathway</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Chemoreceptors in the blood measure pH which indicates carbon dioxide levels</li> <li>• Two centres of the pons work together to either stimulate or limit breathing rate</li> <li>• This results in the medulla sending signals to the respiratory muscles to affect expiration and inspiration.</li> <li>• These nerve signals can be overridden by chemoreceptor messages in periods of activity / exercise.</li> </ul> <p>Accept other suitable responses.</p>	
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**Section B**

**Total for this section: 20 marks**

<b>2 (a)</b>	<p><b>Discuss the likely effects of muscular dystrophy on Charlie's wellbeing.</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Mark</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><b>3</b></td> <td style="text-align: center;"><b>9–12</b></td> <td> <p>A wide range of relevant knowledge and understanding of the impact of muscular dystrophy on the wellbeing of Charlie is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the impact of muscular dystrophy on the wellbeing of Charlie.</p> <p>Analysis to demonstrate understanding of the impact of muscular dystrophy on the wellbeing of Charlie is detailed and highly effective, with reasoned judgements made. Clear links are made.</p> </td> </tr> </tbody> </table>	Level	Mark	Description	<b>3</b>	<b>9–12</b>	<p>A wide range of relevant knowledge and understanding of the impact of muscular dystrophy on the wellbeing of Charlie is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the impact of muscular dystrophy on the wellbeing of Charlie.</p> <p>Analysis to demonstrate understanding of the impact of muscular dystrophy on the wellbeing of Charlie is detailed and highly effective, with reasoned judgements made. Clear links are made.</p>	<p><b>12</b></p> <p><b>AO1=2</b></p> <p><b>AO2=5</b></p> <p><b>AO3=5</b></p>
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<b>3</b>	<b>9–12</b>	<p>A wide range of relevant knowledge and understanding of the impact of muscular dystrophy on the wellbeing of Charlie is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the impact of muscular dystrophy on the wellbeing of Charlie.</p> <p>Analysis to demonstrate understanding of the impact of muscular dystrophy on the wellbeing of Charlie is detailed and highly effective, with reasoned judgements made. Clear links are made.</p>						

2	5–8	<p>A range of relevant knowledge and understanding of the impact of muscular dystrophy on the wellbeing of Charlie is shown. There may be a few errors.</p> <p>Application of knowledge is mostly appropriate, showing some clear understanding of the impact of muscular dystrophy on the wellbeing of Charlie. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the impact of muscular dystrophy on the wellbeing of Charlie is effective and mostly relevant with simplistic judgments made. Some clear links are made.</p>
1	1–4	<p>A limited range of relevant knowledge and understanding of the impact of muscular dystrophy on the wellbeing of Charlie is shown but is often fragmented.</p> <p>Application of knowledge is limited and may show a lack of understanding of the impact of muscular dystrophy on the wellbeing of Charlie. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the impact of muscular dystrophy on the wellbeing of Charlie lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>
	0	No relevant material.

**Indicative content**

Answers may take a holistic approach or focus on the individual physical, cognitive, emotional and social aspects of Charlie’s wellbeing.

Physical

**AO1**

- Charlie may have difficulties with mobility

**AO2**

- Charlie may experience muscle pain
- Charlie’s joints may become stiff or loose

**AO3**

- Charlie may develop difficulty with swallowing
- Charlie may have heart problems

Cognitive

**AO1**

	<ul style="list-style-type: none"> <li>• Charlie may develop learning difficulties</li> </ul> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• This could lead to Charlie experiencing difficulties with multitasking</li> <li>• Charlie could also experience some issues with problem solving</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Charlie may, however, have an IQ within the normal range</li> <li>• This may mean an impairment of cognitive abilities without an intellectual impairment</li> </ul> <p><u>Emotional</u></p> <p><b>AO1</b></p> <ul style="list-style-type: none"> <li>• Muscular dystrophy may affect how Charlie feels about himself</li> </ul> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Charlie could experience frustration when unable to mobilise or carry out day to day tasks</li> <li>• This could result in angry outbursts at those around him.</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Charlie could become anxious due to physical restrictions and his feelings about his abilities</li> <li>• This could result in them later developing depression</li> </ul> <p><u>Social</u></p> <p><b>AO1</b></p> <ul style="list-style-type: none"> <li>• Charlie’s social interactions may reduce due to his poor mobility</li> </ul> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Charlie may not be able to visit friends due to accessibility problems</li> <li>• Friends may find it challenging to include Charlie in their activities</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Charlie may miss school days, making it harder to socialise with friends</li> <li>• Missed school days may result in fewer opportunities for Charlie to engage in extracurricular activities.</li> </ul> <p>Accept other suitable responses.</p>	
<p><b>2 (b)</b></p>	<p><b>Two types of movement are available at the elbow joint. One is flexion.</b></p> <p><b>Identify the other type of movement.</b></p> <p>Award <b>one (1)</b> mark for the correct answer:</p> <ul style="list-style-type: none"> <li>• extension (1).</li> </ul>	<p><b>1</b></p> <p><b>AO1=1</b></p>
<p><b>2 (c)</b></p>	<p><b>Agonist and synergist are two roles of muscles.</b></p>	<p><b>4</b></p>



	<p><b>Identify two (2) other roles of muscles and describe one (1) of these roles of muscles.</b></p> <p>Award up to <b>two (2)</b> marks for correct identification:</p> <ul style="list-style-type: none"> <li>• antagonist (1)</li> <li>• fixator (1).</li> </ul> <p>Award up to <b>two (2)</b> marks for an accurate description.</p> <ul style="list-style-type: none"> <li>• Antagonist – This role is to oppose the action of another muscle (1). These muscles are found in pairs (1). One muscle contracts, whilst the other muscle relaxes (1).</li> <li>• Fixator – Stabilises a part of the body during movement (1). Assists the function of the agonist muscle (1) by giving a stable point for the muscle to pull against (1).</li> </ul> <p>Accept other suitable responses.</p>	<p><b>AO1=2</b></p> <p><b>AO2=2</b></p>
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<p><b>2 (d)</b></p>	<p><b>There are two (2) types of muscle fibres.</b></p> <p><b>Identify one (1) of these muscle fibre types and explain the function of this muscle fibre type.</b></p> <p>Award <b>one (1)</b> mark for correct identification and up to <b>two (2)</b> marks for an accurate explanation:</p> <ul style="list-style-type: none"> <li>• type 1 (1)</li> <li>• type 2 (A and B) (1).</li> </ul> <p>Award up to <b>two (2)</b> marks for an accurate explanation.</p> <ul style="list-style-type: none"> <li>• Type 1 – This is a “slow twitch” muscle fibre (1). They generate force at a slow rate (1) and have a slower rate of fatigue (1). <b>Example is gluts gluteus maximus or gluts</b></li> <li>• Type 2 – this is a “fast twitch” muscle fibre (1). They generate force at a faster rate (1) and have a faster rate of fatigue (1).</li> </ul> <p>Accept other suitable responses.</p>	<p><b>3</b></p> <p><b>AO1=1</b></p> <p><b>AO3=2</b></p>
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**Section C**

**Total for this section: 20 marks**

<p><b>3 (a)</b></p>	<p><b>Discuss the likely effects of cardiovascular disease on Natalia’s cognitive and emotional wellbeing.</b></p> <table border="1" data-bbox="293 1991 1206 2058"> <thead> <tr> <th>Level</th> <th>Mark</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Level	Mark	Description				<p><b>9</b></p> <p><b>AO1=3</b></p> <p><b>AO2=3</b></p>
Level	Mark	Description						

		<p><b>3</b></p>	<p><b>7–9</b></p> <p>A wide range of relevant knowledge and understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia.</p> <p>Analysis to demonstrate understanding of cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia is detailed and highly effective, with reasoned judgements made. Clear links are made.</p>	<p><b>AO3=3</b></p>
		<p><b>2</b></p>	<p><b>4–6</b></p> <p>A range of relevant knowledge and understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia is shown, but may be lacking in sufficient detail, with a few errors.</p> <p>Application of knowledge is mostly appropriate, showing some clear understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia. There may be a few errors.</p> <p>Analysis to demonstrate understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia is effective and mostly relevant with simplistic judgments made. Some clear links are made.</p>	
		<p><b>1</b></p>	<p><b>1–3</b></p> <p>A limited range of relevant knowledge and understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia but is often fragmented.</p> <p>Application of knowledge is limited and may show a lack of understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of how cardiovascular disease may impact on the cognitive and emotional wellbeing of Natalia lacks detail and may have limited</p>	

		effectiveness and relevance. Links may be made but are often inappropriate.	
	<b>0</b>	No relevant material.	
<p><b>Indicative content</b></p> <p><u>Cognitive</u></p> <p><b>AO1</b></p> <ul style="list-style-type: none"> <li>• Pain and discomfort from cardiovascular disease may make it harder for Natalia to concentrate</li> <li>• This could make it harder for Natalia to remember things</li> <li>• Which in turn could lead to confusion</li> </ul> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Natalia could become disorientated following cardiovascular disease</li> <li>• This could lead to other impaired thinking and reasoning</li> <li>• Cardiovascular disease could lead to Alzheimer’s and dementia</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Poor circulation as a result of cardiovascular disease can result in reduced oxygen to the brain</li> <li>• This leads to a reduction in sodium levels</li> <li>• Some of the cognitive impairment may not return</li> </ul> <p><u>Emotional</u></p> <p><b>AO1</b></p> <ul style="list-style-type: none"> <li>• Natalia could be fearful as a result of cardiovascular disease</li> <li>• Natalia may be wary of carrying out activities due to potential risks</li> <li>• Not carrying out activities may isolate Natalia leading to her feeling lonely</li> </ul> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Natalia may not be able to work, which could affect her self esteem</li> <li>• Natalia may start to feel worthless and that she is not contributing</li> <li>• Not working could lead to financial difficulties which may cause Natalia to worry more</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Natalia could become anxious due to her health and subsequent issues</li> </ul>			

	<ul style="list-style-type: none"> <li>• Natalia's reduced self-esteem could lead to depression</li> <li>• Natalia's mental health issues could affect her compliance with medication making her feel worse.</li> </ul> <p>Accept other suitable responses.</p>	
<p><b>3 (b)</b></p>	<p><b>Arteries are a type of major blood vessel that carry blood away from the heart.</b></p> <p><b>Identify the type of major blood vessel that carry blood to the heart and explain the structure of this blood vessel type.</b></p> <p>Award <b>one (1)</b> mark for correct identification:</p> <ul style="list-style-type: none"> <li>• veins (1).</li> </ul> <p>Award up to <b>three (3)</b> marks for an accurate explanation.</p> <ul style="list-style-type: none"> <li>• Veins – Composed of three layers (1). An outer layer of connective tissue (1) a middle layer of smooth muscle (1) and an inner layer of endothelial cells (1).</li> <li>• <b>Accept valves</b></li> </ul> <p>Accept other suitable responses.</p>	<p><b>4</b></p> <p><b>AO1=1</b></p> <p><b>AO3=3</b></p>
<p><b>3 (c)</b></p>	<p><b>Identify the smallest type of blood vessels and describe these blood vessels.</b></p> <p>Award <b>one (1)</b> mark for correct identification:</p> <ul style="list-style-type: none"> <li>• capillaries (1).</li> </ul> <p>Award up to <b>three (3)</b> marks for an accurate description.</p> <ul style="list-style-type: none"> <li>• Capillaries – The most numerous blood vessels (1). They connect arteries to veins (1). They have thin walls (1) to allow the transfer of oxygen, nutrients and waste products to and from tissue (1).</li> <li>• <b>Low pressure in the capillaries</b></li> </ul> <p>Accept other suitable responses.</p>	<p><b>4</b></p> <p><b>AO1=1</b></p> <p><b>AO2=3</b></p>
<p><b>3 (d)</b></p>	<p><b>Identify three (3) valves in the heart.</b></p> <p>Award up to <b>three (3)</b> marks for correct identification:</p> <ul style="list-style-type: none"> <li>• tricuspid (1)</li> </ul>	<p><b>3</b></p> <p><b>AO1=3</b></p>

	<ul style="list-style-type: none"> <li>• bicuspid (or mitral) (1)</li> <li>• pulmonary (1)</li> <li>• aortic (1).</li> </ul>	
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**Section D**

**Total for this section: 20 marks**

<b>4 (a)</b>	<p><b>Identify the hormone produced in the ovaries.</b></p> <p>Award <b>one (1)</b> mark for:</p> <ul style="list-style-type: none"> <li>• B oestrogen (1)</li> </ul>	<p><b>1</b></p> <p><b>AO1=1</b></p>
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<b>4 (b)</b>	<p><b>When the external temperature increases, thermoregulation is used to keep the body cooler.</b></p> <p><b>Identify three (3) mechanisms that are used to keep the body cooler and explain the function of one (1) of these mechanisms.</b></p> <p>Award <b>one (1)</b> mark for a correct identification up to <b>three (3)</b> marks:</p> <ul style="list-style-type: none"> <li>• hairs lie flat (1)</li> <li>• sweating (1)</li> <li>• vasodilation (1)</li> <li>• skin reddens (1).</li> </ul> <p>Award up to <b>two (2)</b> marks for an accurate explanation.</p> <ul style="list-style-type: none"> <li>• Hairs lie flat – This prevents air being trapped and insulating the body (1). It allows sweat to evaporate more easily (1) and heat to be given off through vasodilation (1).</li> <li>• Sweating –Sweat on the skin evaporates (1). This causes heat energy to be removed from the skin (1) cooling the body down (1).</li> <li>• Vasodilation –The blood vessels leading to the capillaries become wider (1). This allows more blood flow to the skin (1) therefore increasing the surface area of blood vessel (1) to allow heat to escape (1).</li> <li>• Skin reddens – Due to the increase of blood to the skin, it reddens (1). The darkening of the skin allows more heat to be given off (1) and therefore escape from the body (1).</li> </ul>	<p><b>5</b></p> <p><b>AO1=3</b></p> <p><b>AO3=2</b></p>
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	Accept other suitable responses.	
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<b>4 (c)</b>	<p><b>Identify three (3) ways to use a thermometer to take a person’s temperature.</b></p> <p>Award up to <b>three (3)</b> marks for a correct answer:</p> <ul style="list-style-type: none"> <li>• oral (1)</li> <li>• ear (1)</li> <li>• forehead (1)</li> <li>• underarm (1)</li> <li>• rectal (1).</li> </ul>	<p><b>3</b></p> <p><b>AO1=3</b></p>
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<b>4 (d)</b>	<p><b>Explain the role of negative feedback in homeostasis.</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Mark</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><b>3</b></td> <td style="text-align: center;"><b>5–6</b></td> <td> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the role of negative feedback.</p> <p>Analysis to demonstrate understanding of the role of negative feedback is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;"><b>2</b></td> <td style="text-align: center;"><b>3–4</b></td> <td> <p>Application of knowledge is mostly appropriate, showing some clear understanding of the role of negative feedback. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the role of negative feedback is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;"><b>1</b></td> <td style="text-align: center;"><b>1–2</b></td> <td> <p>Application of knowledge is limited and may show a lack of understanding of the role of negative feedback. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the role of negative feedback lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p> </td> </tr> <tr> <td></td> <td style="text-align: center;"><b>0</b></td> <td>No creditworthy material.</td> </tr> </tbody> </table> <p><b>Indicative content</b></p>	Level	Mark	Description	<b>3</b>	<b>5–6</b>	<p>Application of knowledge is appropriate and accurate and shows clear understanding of the role of negative feedback.</p> <p>Analysis to demonstrate understanding of the role of negative feedback is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p>	<b>2</b>	<b>3–4</b>	<p>Application of knowledge is mostly appropriate, showing some clear understanding of the role of negative feedback. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the role of negative feedback is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p>	<b>1</b>	<b>1–2</b>	<p>Application of knowledge is limited and may show a lack of understanding of the role of negative feedback. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the role of negative feedback lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>		<b>0</b>	No creditworthy material.	<p><b>6</b></p> <p><b>AO2=3</b></p> <p><b>AO3=3</b></p>
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	<p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Responds when a change in environment is detected</li> <li>• This environment could be external to the body</li> <li>• This environment could be internal to the body</li> <li>• Negative feedback resets conditions to their normal state</li> </ul> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Works in a negative feedback loop</li> <li>• Receptors detect a change and send signals to the hypothalamus</li> <li>• This in turn instructs the release hormones or proteins</li> <li>• These act to oppose the stimulus that triggered the response.</li> </ul> <p>Accept other suitable responses.</p>	
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<b>4 (e)</b>	<p><b>Stress can affect physiological measurements.</b></p> <p><b>Identify four (4) physiological measurements affected by stress and briefly explain the effect that stress has on one (1) of these measurements.</b></p> <p>Award up to <b>four (4)</b> marks for correct identification:</p> <ul style="list-style-type: none"> <li>• respiration rate (1)</li> <li>• pulse (1)</li> <li>• blood pressure (1)</li> <li>• oxygen saturation (1)</li> <li>• temperature (1).</li> </ul> <p>Award <b>one (1)</b> mark for a brief explanation.</p> <ul style="list-style-type: none"> <li>• Respiration rate increases (1) as the body needs more oxygen to fight or run (1).</li> <li>• Pulse increases (1) to get oxygen to the muscles faster (1).</li> <li>• Blood pressure increases (1) to increase blood flow (1).</li> <li>• Oxygen saturation reduces (1) as oxygen is utilised by muscles (1).</li> <li>• Temperature increases (1) as increased activity produces heat (1).</li> </ul> <p>Accept other suitable responses.</p>	<p><b>5</b></p> <p><b>AO1=4</b></p> <p><b>AO3=1</b></p>
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### Assessment Objective Grid

Question	AO1	AO2	AO3	Total
1a	1			1
1b	1			1
1c	3			3
1d			4	4
1e	2	3		5
1f		3	3	6
2a	2	5	5	12
2b	1			1
2c	2	2		4
2d	1		2	3
3a	3	3	3	9
3b	1		3	4
3c	1	3		4
3d	3			3
4a	1			1
4b	3		2	5
4c	3			3
4d		3	3	6
4e	4		1	5
<b>Total</b>	<b>32</b>	<b>22</b>	<b>26</b>	<b>80</b>