



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

January 2023

Assessment code: HSCNI/SAE

Paper number: P001677

Mark Scheme

V2 Post-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 reverse 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:

A01	Recall knowledge and show understanding.
A02	Apply knowledge and understanding.
A03	Analyse to demonstrate knowledge of concepts and/or theories

Qu	Mark scheme	Total marks
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Section A

Total for this section: 20 marks

<p>1 (a)</p>	<p>Which one (1) of the following pieces of equipment would be used to measure oxygen saturation?</p> <p>A Pulse oximeter</p> <p>B Sphygmomanometer</p> <p>C Thermometer</p> <p>D Watch</p> <p>Award one (1) mark for the correct answer</p> <p>A Pulse oximeter (1).</p>	<p>1</p> <p>AO1=1</p>
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<p>1 (b)</p>	<p>The mouth / nose, pharynx and epiglottis are structures of the respiratory system.</p> <p>Identify three (3) other structures of the respiratory system and explain the function of one (1) of these structures.</p> <p>Award one (1) mark for correct identification:</p> <ul style="list-style-type: none"> • larynx (1) • trachea (1) • bronchi (1) • bronchiole (1) • alveoli (1). • Diaphragm (1) <p>Award up to two (2) marks for an appropriate explanation:</p> <ul style="list-style-type: none"> • larynx – assists with breathing (1) and speaking (1) protects lower airways (1) • trachea – carries air from the larynx (1) to the bronchi (1) also known as the windpipe (1) • bronchi - carries air from the trachea (1) to the lungs (1) and the bronchioles (1) • bronchiole – carries air from the bronchi (1) moisturises air (1) screens out foreign particles (1) 	<p>5</p> <p>AO1=3</p> <p>AO3=2</p>
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	<ul style="list-style-type: none"> • alveoli – where gaseous exchange occurs (1) oxygen passes into the bloodstream (1) and carbon dioxide passes into the lungs (1). • A thin skeletal muscle that contracts at inhalation (1) and flattens or relaxes at exhalation (1) <p>Accept other suitable responses.</p>	
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1 (c)	<p>Discuss why it is important to gain consent prior to obtaining physiological measurements.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Marks</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">5 – 6</td> <td> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the importance of gaining consent prior to obtaining physiological measurements.</p> <p>Analysis to demonstrate understanding of the importance of gaining consent prior to obtaining physiological measurements is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">3 – 4</td> <td> <p>Application of knowledge is mostly appropriate, showing some clear understanding of the importance of gaining consent prior to obtaining physiological measurements. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the importance of gaining consent prior to obtaining physiological measurements is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1 – 2</td> <td> <p>Application of knowledge is limited and may show a lack of understanding of the importance of gaining consent prior to obtaining physiological measurements. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the importance of gaining consent prior to obtaining physiological measurements 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;">0</td> <td>No creditworthy material.</td> </tr> </tbody> </table>	Level	Marks	Description	3	5 – 6	<p>Application of knowledge is appropriate and accurate and shows clear understanding of the importance of gaining consent prior to obtaining physiological measurements.</p> <p>Analysis to demonstrate understanding of the importance of gaining consent prior to obtaining physiological measurements is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p>	2	3 – 4	<p>Application of knowledge is mostly appropriate, showing some clear understanding of the importance of gaining consent prior to obtaining physiological measurements. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the importance of gaining consent prior to obtaining physiological measurements is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p>	1	1 – 2	<p>Application of knowledge is limited and may show a lack of understanding of the importance of gaining consent prior to obtaining physiological measurements. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the importance of gaining consent prior to obtaining physiological measurements lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>		0	No creditworthy material.	<p>6</p> <p>AO2=3</p> <p>AO3=3</p>
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	<p>Indicative content</p> <p>AO2</p> <ul style="list-style-type: none"> • Practitioners must maintain a professional approach and follow policies and procedures. • Procedures should be explained beforehand, so the service user understands. • Service users have the right to say no. • It is important to give measurement feedback to service users. <p>AO3</p> <ul style="list-style-type: none"> • Failure to follow policies and procedures could result in disciplinary action or legal issues. • Service users should always give informed consent prior to any procedure being carried out as it is a fundamental right of a service user. • If a service user is denied the right to say no then carrying out a procedure could be considered assault. • Service users could have increased anxiety if consent is not given which could exacerbate their existing condition. <p>Accept other suitable responses.</p>	
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<p>1 (d)</p>	<p>Changes in health, care planning and assisting diagnosis are three reasons for the accurate and timely recording of information.</p> <p>Identify two (2) other reasons and explain one (1) of these reasons.</p> <p>Award one (1) mark for each correct identification up to two (2) marks:</p> <ul style="list-style-type: none"> • policies and procedures (1) • safeguarding (1) • monitoring (1). • Changes in medication (1) • Record medicine given so no double dosing or missed giving out (1) <p>Award up to two (2) marks for an accurate explanation:</p>	<p>4</p> <p>AO1=2</p> <p>AO2=1</p> <p>AO3=1</p>
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	<p><u>Policies and procedures</u></p> <p>AO2</p> <ul style="list-style-type: none"> failure to follow policies and procedures can lead to unsafe practice (1) this could cause harm to service users (1) <p>AO3</p> <ul style="list-style-type: none"> this could also lead to disciplinary action (1) or even legal proceedings (1) <p><u>Safeguarding</u></p> <p>AO2</p> <ul style="list-style-type: none"> failing to safeguard individuals can lead to harm (1) this could be considered assault (1) <p>AO3</p> <ul style="list-style-type: none"> this could lead to disciplinary action (1) or even legal proceedings (1) <p><u>Monitoring</u></p> <p>AO2</p> <ul style="list-style-type: none"> accurate monitoring is required to effectively plan care (1) as changes in an individual's health could be spotted early (1) <p>AO3</p> <ul style="list-style-type: none"> this will help to keep service users healthy (1) and ensure safe practice (1). <p>Accept other suitable responses.</p>	
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<p>1 (e)</p>	<p>Stress and medication are factors that can affect physiological measurements.</p> <p>Name four (4) other factors that can affect physiological measurements.</p> <p>Award one (1) mark for each correct factor up to four (4) marks:</p> <ul style="list-style-type: none"> biological sex (1) age (1) hormone levels (1) diet (1) levels of activity (1). Illness / Infections (1) 	<p>4</p> <p>AO1=4</p>
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Section B

Total for this section: 20 marks

2 (a)	Discuss the possible impact of Crohn’s disease on Oscar’s wellbeing.		12
	Level	Marks	Description
	3	9 – 12	<p>A wide range of relevant knowledge and understanding of the possible impact of Crohn’s disease on the wellbeing of Oscar is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the possible impact of Crohn’s disease on the wellbeing of Oscar.</p> <p>Analysis to demonstrate understanding the possible impact of Crohn’s disease on the wellbeing of Oscar is detailed and highly effective, with reasoned judgements made. Clear links are made.</p>
	2	5 – 8	<p>A wide range of relevant knowledge and understanding of the possible impact of Crohn’s disease on the wellbeing of Oscar is shown. There may be a few errors.</p> <p>Application of knowledge is mostly appropriate, showing some clear understanding the possible impact of Crohn’s disease on the wellbeing of Oscar. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the possible impact of Crohn’s disease on the wellbeing of Oscar 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 possible impact of Crohn’s disease on the wellbeing of Oscar is shown but is often fragmented.</p> <p>Application of knowledge is limited and may show a lack of understanding of the possible impact of Crohn’s disease on the wellbeing of Oscar. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the possible impact of Crohn’s disease on the wellbeing of Oscar lacks detail and may have</p>	

AO1=2
AO2=5
AO3=5

		limited effectiveness and relevance. Links may be made but are often inappropriate.
	0	No relevant material.

Indicative content

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

Physical

AO1

- Many of the physical issues facing Oscar will be related to his digestive system.
- Oscar could be in a lot of pain and discomfort.

AO2

- Oscar could have a change in bowel movements such as diarrhoea or constipation.
- Oscar could have an urgency to his bowel movements or a feeling of incomplete bowel movements.

AO3

- Oscar could have a loss in appetite resulting in weight loss.
- Oscar could suffer with fatigue or feel that he has no energy.

Cognitive

AO1

- Oscar could struggle to concentrate due to pain and discomfort.
- This could affect Oscar’s ability to remember things.

AO2

- As a teacher, Oscar needs to be able to educate and inform learners which is difficult if he is focussing on his needs regarding the use of toilets.
- Oscar would find it difficult to study background information to support his job as a teacher due to disruptions to his study time caused by diarrhoea.

	<p>AO3</p> <ul style="list-style-type: none">• Some studies show that cognitive function could be impaired during a Crohn's disease flare up.• This includes difficulty with concentration, formulation of speech and memory. <p><u>Emotional</u></p> <p>AO1</p> <ul style="list-style-type: none">• Oscar could feel embarrassed about his needing to use the toilet during classes.• Oscar might worry about having potential “accidents” during normal daily activities. <p>AO2</p> <ul style="list-style-type: none">• Oscar's worries could escalate and he could start to suffer with anxiety as his condition is a long-term illness.• Oscar could develop depression as he can not see any way that things could improve for him. <p>AO3</p> <ul style="list-style-type: none">• Oscar could be in denial about his illness which could lead to dependent behaviours.• Oscar could have a poor self-image and this may affect outlook regarding personal relationships. <p><u>Social</u></p> <p>AO1</p> <ul style="list-style-type: none">• Oscar may choose not to go out due to feeling pain and discomfort.• Not knowing when he might need the toilet might make Oscar choose not to socialise in new situations. <p>AO2</p> <ul style="list-style-type: none">• Oscar may be restricted in what he can eat or drink, limiting some social interaction opportunities.• Oscar may not share his condition with friends and family causing a strain in relationships. <p>AO3</p>	
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	<ul style="list-style-type: none"> • Oscar may not desire intimacy with a partner as a result of the embarrassment he feels due to Crohn’s disease which could put strain on personal relationships. • Due to the above factors, Oscar may be reluctant to form close friendships with people as he may feel that he is unable to fulfil obligations or contribute to relationships due to his Crohn’s disease. <p>Accept other suitable responses.</p>	
<p>2 (b)</p>	<p>One type of digestion is mechanical.</p> <p>Identify the other type of digestion.</p> <p>Award one (1) mark for:</p> <ul style="list-style-type: none"> • chemical (1). 	<p>1</p> <p>AO1=1</p>
<p>2 (c)</p>	<p>Name two (2) digestive enzymes and describe one (1) of these enzymes.</p> <p>Award one (1) mark for correct named digestive enzyme up to two (2) marks:</p> <ul style="list-style-type: none"> • amylase (1) • protease (1) • lipase (1). • Maltase (1) • Sucrase (1) • Trypsinogen / Trypsin (1) • Chymotrypsin (1) • Any other digestive enzyme <p>Award up to two (2) marks for an accurate description:</p> <ul style="list-style-type: none"> • amylase – produced in the mouth in saliva (1), breaks down carbohydrates (1) into glucose (1) • protease – produced in the small intestine (1), breaks down proteins (1) into amino acids (1) • lipase – produced in the small intestine (1), breaks down fats (1) into fatty acids (1). <p>Accept other suitable responses.</p>	<p>4</p> <p>AO1=2</p> <p>AO2=2</p>

2 (d)	<p>Identify and explain the structure and / or function of one (1) section of the small intestine.</p> <p>Award one (1) mark for a correct identification:</p> <ul style="list-style-type: none"> • duodenum (1) • jejunum (1) • ileum (1). • Non-striated or smooth muscle (1) <p>Award up to two (2) marks for an accurate explanation:</p> <ul style="list-style-type: none"> • duodenum – the first section of the small intestine (1) responsible for chemical digestion using enzymes (1) is responsible for controlling the release of food from the stomach (1) • jejunum – the second section of the small intestine (1) responsible for the absorption of small nutrients (1) which are passed to the liver (1) • ileum – the last section of the small intestine (1) absorbs nutrients not absorbed by jejunum such as B12 (1) has a large surface area for absorption due to villi (1). • Non-striated or smooth muscle ensures peristaltic movement (1) <p>Accept other suitable responses.</p>	<p>3</p> <p>AO1=1</p> <p>AO3=2</p>
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Section C

Total for this section: 20 marks

3 (a)	<p>Discuss the possible impact of arthritis on Emily’s social and emotional wellbeing.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Marks</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">7 – 9</td> <td> <p>A range of relevant knowledge and understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily.</p> <p>Analysis to demonstrate understanding of arthritis may possibly impact the social and</p> </td> </tr> </tbody> </table>	Level	Marks	Description	3	7 – 9	<p>A range of relevant knowledge and understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily.</p> <p>Analysis to demonstrate understanding of arthritis may possibly impact the social and</p>	<p>9</p> <p>AO1=3</p> <p>AO2=3</p> <p>AO3=3</p>
Level	Marks	Description						
3	7 – 9	<p>A range of relevant knowledge and understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily is shown, which is accurate and detailed.</p> <p>Application of knowledge is appropriate and accurate and shows clear understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily.</p> <p>Analysis to demonstrate understanding of arthritis may possibly impact the social and</p>						

			emotional wellbeing of Emily is detailed and highly effective, with reasoned judgements made. Clear links are made.
	2	4 – 6	<p>A range of relevant knowledge and understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily 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 arthritis may possibly impact the social and emotional wellbeing of Emily. There may be a few errors.</p> <p>Analysis to demonstrate understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily is effective and mostly relevant with simplistic judgments made. Some clear links are made.</p>
	1	1 – 3	<p>A range of relevant knowledge and understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily but is often fragmented.</p> <p>Application of knowledge is limited and may show a lack of understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of how arthritis may possibly impact the social and emotional wellbeing of Emily lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>
		0	No relevant material.
<p>Indicative content</p> <p><u>Social</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Emily may not wish to go out due to pain and discomfort. • Emily may spend less time with her friends. • Emily may spend more time alone. 			

	<p>AO2</p> <ul style="list-style-type: none">• Emily may have to give up hobbies, such as walking due to her condition.• Emily may not be able to drink due to pain medication which could affect her social life.• Emily may be fatigued which makes her less interested in socialising. <p>AO3</p> <ul style="list-style-type: none">• Emily’s pain and fatigue may put strain on intimate relationships as she may not be able to partake in activities she previously could do.• Emily may not mix as much with work colleagues due to pain and fatigue which could cause relationships at work to become strained.• Emily might find her work more challenging, resulting in difficulties and a possible change of career. <p><u>Emotional</u></p> <p>AO1</p> <ul style="list-style-type: none">• Pain and discomfort could cause Emily’s mood to become low.• Emily may feel lonely.• Emily could feel stressed at the thought of a longer-term illness. <p>AO2</p> <ul style="list-style-type: none">• Emily could feel socially isolated due to not socialising as much as she did.• Emily could develop depression or anxiety as a result of her condition.• Emily could become angry and frustrated at not being able to carry out activities. <p>AO3</p> <ul style="list-style-type: none">• Emily could feel that she is drifting away from friends, colleagues and family leading to a more severe depression.• Emily’s condition could put significant strain on her relationship, especially if she cannot work.• May work less hours or stop working resulting in financial loss and worry about financial security	
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	<ul style="list-style-type: none">• Emily could overcome her difficulties and seek support, enabling her to reassess her life and make changes to accommodate her arthritis. <p>Accept other suitable responses.</p>	
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<p>3 (b)</p>	<p>The axial skeleton is one of two parts of the skeletal system.</p> <p>Identify the other part of the skeletal system and describe it.</p> <p>Award one (1) mark for correct identification:</p> <ul style="list-style-type: none"> • appendicular skeleton (1). <p>Award up to three (3) marks for an accurate description:</p> <ul style="list-style-type: none"> • the appendicular skeleton is comprised of 126 bones (1) • the appendicular skeleton comprises of all of the bones in the limbs (1) • the appendicular skeleton also comprises of the pelvic girdle and the shoulder girdle (1) • the appendicular skeleton supports movement (1) • the appendicular skeleton gives shape (1). <p>Accept other suitable responses.</p>	<p>4</p> <p>AO1=1</p> <p>AO2=3</p>
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<p>3 (c)</p>	<p>Name one (1) long bone in the leg and explain the structure and / or function of long bones.</p> <p>Award one (1) mark for a correct identification:</p> <ul style="list-style-type: none"> • femur (1) • tibia (1) • fibula (1). <p>Award up to three (3) marks for an accurate explanation:</p> <ul style="list-style-type: none"> • they are defined as bones that are longer than they are wide (1) • mostly located in the appendicular skeleton (1) • long bones are found in the upper and lower limbs (1) • they are hard dense bones that provide structure and strength (1) • they contain yellow and red marrow that produce blood cells (1). • Point of attachment of ligaments and tendons (1) <p>Accept other suitable responses.</p>	<p>4</p> <p>AO1=1</p> <p>AO3=3</p>
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3 (d)	<p>Storage of calcium and production of blood cells are two functions of the skeletal system.</p> <p>Identify three (3) other functions of the skeletal system.</p> <p>Award one (1) mark for each correct identification up to three (3) marks:</p> <ul style="list-style-type: none">• support (1)• protection (1)• attachment of muscles (1)• gives the body shape (1). <p>Accept other suitable responses.</p>	3 AO1=3
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Section D

Total for this section: 20 marks

4 (a)	<p>Which one (1) of the following organs of the body produces insulin?</p> <p>A Kidney</p> <p>B Lung</p> <p>C Pancreas</p> <p>D Spleen</p> <p>Award one (1) mark for the correct answer:</p> <p>C Pancreas (1).</p>	<p>1</p> <p>AO1=1</p>
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4 (b)	<p>Explain the process of osmoregulation.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 10%;">Level</th> <th style="width: 10%;">Marks</th> <th style="width: 80%;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">5 – 6</td> <td> <p>Application of knowledge is appropriate and accurate and shows clear understanding of the process of osmoregulation.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">3 – 4</td> <td> <p>Application of knowledge is mostly appropriate, showing some clear understanding of the process of osmoregulation. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p> </td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1 – 2</td> <td> <p>Application of knowledge is limited and may show a lack of understanding of the process of osmoregulation. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation 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;">0</td> <td>No creditworthy material.</td> </tr> </tbody> </table>	Level	Marks	Description	3	5 – 6	<p>Application of knowledge is appropriate and accurate and shows clear understanding of the process of osmoregulation.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation is detailed and highly effective, with clearly reasoned consequences. Clear links are made.</p>	2	3 – 4	<p>Application of knowledge is mostly appropriate, showing some clear understanding of the process of osmoregulation. There may be a few errors.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation is effective and mostly relevant, with simplistic consequences. Some clear links are made.</p>	1	1 – 2	<p>Application of knowledge is limited and may show a lack of understanding of the process of osmoregulation. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>		0	No creditworthy material.	<p>6</p> <p>AO2=3</p> <p>AO3=3</p>
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1	1 – 2	<p>Application of knowledge is limited and may show a lack of understanding of the process of osmoregulation. There may be a number of errors.</p> <p>Analysis to demonstrate understanding of the process of osmoregulation lacks detail and may have limited effectiveness and relevance. Links may be made but are often inappropriate.</p>															
	0	No creditworthy material.															

	<p>Indicative content</p> <p>AO2</p> <ul style="list-style-type: none"> • Osmoregulation is a homeostatic mechanism involved with maintaining the water and salt balance. • The primary organ involved with osmoregulation is the kidneys. • The hormone that regulates osmoregulation is the antidiuretic hormone (ADH). • ADH regulates water reabsorption. <p>AO3</p> <ul style="list-style-type: none"> • Osmoreceptors in the hypothalamus detect dehydration causing the pituitary gland to release ADH. • The presence of increased ADH increases water reabsorption into the bloodstream. • When hydration is completed, the pituitary gland stops producing ADH. • As ADH levels reduce, so does reabsorption and excess fluid is excreted to the bladder from the kidneys. <p>Accept other suitable responses.</p>	
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4 (c)	<p>Identify two (2) functions of chemoreceptors and explain one (1) of these functions.</p> <p>Award one (1) mark for correct identification up to two (2) marks:</p> <ul style="list-style-type: none"> • monitor oxygen (1) • carbon dioxide and hydrogen ions (1) • endocrine regulation (1). <p>Award up to two (2) marks for an accurate explanation:</p> <ul style="list-style-type: none"> • monitor oxygen – arterial chemoreceptors respond to changes in the pressure of oxygen (1) and ventilation levels are regulated as a response (1) to keep oxygen levels maintained (1) 	<p>4</p> <p>AO1=2</p> <p>AO3=2</p>
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	<ul style="list-style-type: none"> • carbon dioxide and hydrogen ions – Arterial chemoreceptors respond to carbon dioxide levels also (1) as do central chemoreceptors in the brain (1) they do this by monitoring hydrogen ions (1) which change the pH of the blood (1) • endocrine regulation – the hypothalamus is responsible for hormone secretion (1) various chemoreceptors throughout the body alert the hypothalamus to changes in hormone levels (1) hormone levels are generally detected in the bloodstream (1). <p>Accept other suitable responses.</p>	
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<p>4 (d)</p>	<p>When the external temperature reduces, thermoregulation is used to keep the body warm.</p> <p>Identify three (3) mechanisms that are used to keep the body warm and explain the function of one (1) of these mechanisms.</p> <p>Award one (1) mark for a correct identification up to three (3) marks:</p> <ul style="list-style-type: none"> • hairs erect (1) • goosebumps (1) • vasoconstriction (1) • shivering (1). <p>Award up to two (2) marks for an accurate explanation:</p> <ul style="list-style-type: none"> • hairs erect – as muscles contract they create a depression in the skin (1) this causes the hair to protrude (1) the erection of the hair traps air as insulation (1) • goosebumps - as muscles contract they create a depression in the skin (1) this causes the skin to protrude (1) the protrusion of the skin forms a thicker layer and therefore better insulation (1) • vasoconstriction – small muscles in the walls of the blood vessels cause them to contract (1) this reduces blood flow (1) thus preventing heat loss from blood vessels close to the surface of the skin (1) • shivering – this is a reflex response (1) nerve impulses are sent from the hypothalamus (1) shivering produces kinetic energy to warm the body (1). <p>Accept other suitable responses.</p>	<p>5</p> <p>AO1=3</p> <p>AO3=2</p>
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4 (e)	<p>The failure of thermoregulation has two possible effects.</p> <p>Name the two (2) possible effects of a failure in thermoregulation and describe the symptoms of one (1) of these effects on the human body.</p> <p>Award one (1) mark for each correct identification up to two (2) marks:</p> <ul style="list-style-type: none">• hyperthermia (1)• hypothermia (1). <p>Award up to two (2) marks for an accurate description of the consequences:</p> <ul style="list-style-type: none">• hyperthermia – heart rate may increase (1) the person may feel weak and faint (1) the individual’s body could swell (1) prolonged hyperthermia could be fatal (1) overheating of vital organs such as the brain (1)• hypothermia – heart rate can slow (1) and breathing can become difficult (1) the individual can become drowsy (1) and confused (1) prolonged hypothermia can be fatal (1). <p>Accept other suitable responses.</p>	4 AO1=2 AO2=2
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Assessment Objective Grid

Question	AO1	AO2	AO3	Total
1 (a)	1			1
1 (b)	3		2	5
1 (c)		3	3	6
1 (d)	2	1	1	4
1 (e)	4			4
				20
2 (a)	2	5	5	12
2 (b)	1			1
2 (c)	2	2		4
2 (d)	1		2	3
				20
3 (a)	3	3	3	9
3 (b)	1	3		4
3 (c)	1		3	4
3 (d)	3			3
				20
4 (a)	1			1
4 (b)		3	3	6
4 (c)	2		2	4
4 (d)	3		2	5
4 (e)	2	2		4
				20
Total	32	22	26	80