

# WJEC Level 3 Health and Social Care: Principles and Contexts

## Unit 7: Anatomy and physiology for health and social care

Approved by Qualifications Wales

This qualification forms part of the new suite of Health and Social Care, and Childcare qualifications in Wales provided by City & Guilds/WJEC.

This Qualifications Wales regulated qualification is not available to centres in England.

For first assessment from 2024

## Sample Assessment Materials (External)

Version 2 - September 2023



# SUMMARY OF AMENDMENTS

Version	Description	Page number/s
2	Position of arrows d + e corrected on Q.1 diagram, with answers d + e corrected in mark scheme to reflect this.	2, 13

# Contents

	Page
Question paper	1
Mark scheme	11
Mapping	29

Candidate Name	Centre Number				Candidate Number				
					0				



**LEVEL 3 Health and Social Care: Principles and Contexts**

**UNIT 7**

**Anatomy and physiology for health and social care**

**SAMPLE ASSESSMENT MATERIALS**

**Duration 2 hours**

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	10	
2	2	
3	12	
4	12	
5	8	
6	10	
7	18	
8	12	
9	16	
	<b>100</b>	

**Instructions to candidates**

Answer all questions.

Write your answers in the spaces provided in this booklet.

Use black ink or black ball-point pen. Do not use pencil or gel pen. Do not use correction fluid.

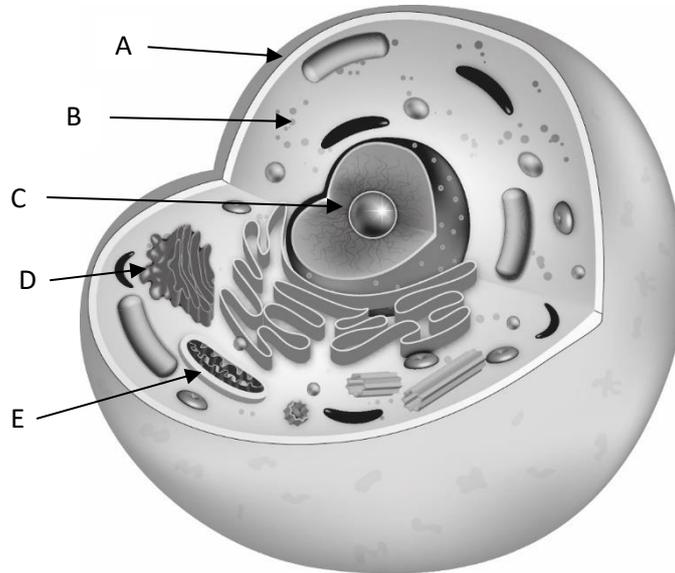
**Information for candidates**

The total for the paper is 100 marks.

The number of marks is given in brackets at the end of each question or part-question.

Answer **all** questions.

- 1** Complete the table below, identifying the following cell structures **and** outline their function within the cell:  
**Nucleus, cytoplasm, mitochondria, golgi apparatus, cell membrane.** [10]



Getty Images © 1326537376

	Structure	(Mark)	Function	(Mark)
A		(1)		(1)
B		(1)		(1)
C		(1)		(1)
D		(1)		(1)
E		(1)		(1)

2      Connective and muscle are two types of tissues. Identify **two** other types of tissue. [2]

.....  
.....

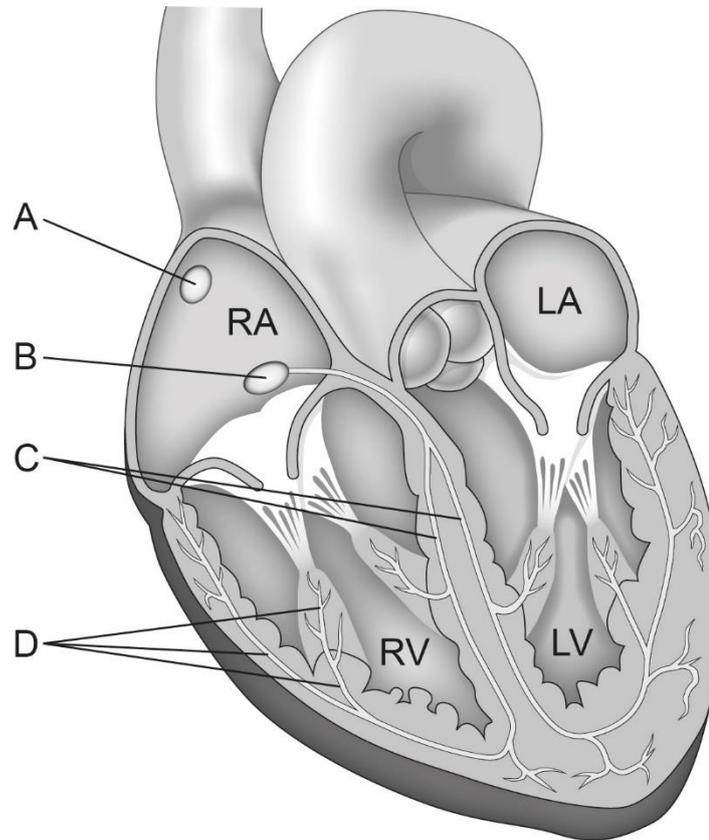
3      (a)      State **four** different types of bones. [4]

.....  
.....  
.....  
.....

(b)      One function of the musculoskeletal system is to maintain posture. [8]  
            Explain **two** other functions of the musculoskeletal system.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

4 (a) Identify the labelled parts on the diagram of the heart below: [4]



A	
B	
C	
D	

- 4 (b) Explain how the electrical conduction system of the heart maintains heart rate. [8]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



6 (b) Examine the role of the liver in regulating blood glucose. [6]

.....

.....

.....

.....

.....

.....

7 (a) Outline how an individual would independently measure their own blood pressure using a blood pressure monitor. [4]

.....

.....

.....

.....

.....

.....

.....

.....

7 (b) Explain what is meant by the blood pressure reading '140/80 mmHg' in terms of the cardiovascular system. [6]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

7 (c) Apart from blood pressure, identify and explain how **two** other methods can help an individual to monitor their own health and well-being. [8]

Method (1)

.....

Explanation (3)

.....

.....

.....

.....

.....

.....

.....

Method (1)

.....

Explanation (3)

.....

.....

.....

.....

.....

.....

.....

- 8 (a) Lifestyle factors and choices can impact human physiology systems. Physical activity is one factor that impacts the human body.

Discuss how a lack of physical activity may contribute towards the development of cardiovascular diseases.

[6]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

- (b) Explain how **one other** lifestyle factor may impact human physiology. [6]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



## MARK SCHEME

### Guidance for examiners

#### Positive marking

It should be remembered that candidates are writing under examination conditions and credit should be given for what the candidate writes, rather than adopting the approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

For questions that are objective or points-based, the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision made.

Mark schemes often list points which may be included in candidates' answers. The list is not exhaustive. *The inclusion of 'Credit any other valid response'* (or similar instruction) within mark schemes allows for the possible variation in candidates' responses. Credit should be given according to the accuracy and relevance of candidates' answers.

Appropriate terminology is reflected in exemplar responses in mark schemes. However, unless there is a specific requirement within a question, candidates may be awarded marks where the answer is accurate but expressed in their own words.

#### Banded mark schemes

For band marked questions mark schemes are in two parts, the indicative content, and the assessment grid.

The indicative content suggests the range of points and issues which may be included in candidates' answers. It can be used to assess the quality of the candidate's response. As noted above, indicative content is not intended to be exhaustive, and candidates do not have to include all the indicative content to reach the highest level of the mark scheme.

However, in order to reach the highest level of the mark scheme a candidate must meet the requirements of the highest mark band. Where a response is not creditworthy, that is, it contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

In Level 3 Health and Social Care: Principles and Contexts, each question will address one or more assessment objectives: from AO1, AO2 or AO3. Where appropriate, the assessment grid subdivides the total mark to allocate for a question into individual assessment objectives. These are shown in bands in the mark scheme. For each assessment objective, descriptors will indicate the different skills and qualities at the appropriate level.

Candidates' responses to questions are assessed against the relevant assessment objectives. Where a question addresses more than one assessment objective, candidates may achieve different bands within that question. In these cases, a mark will be awarded for each assessment objective, then totalled, to give an overall mark for the question.

The marking of banded mark questions should always be positive. This means that, for each candidate's response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding they are not deducted from a maximum on the basis of errors or omissions.

Examiners should first read and annotate the candidate's answer to pick out the evidence that is being assessed in that question. The mark scheme can then be applied. This is done as a two-stage process.

### **Stage 1 – Deciding on the band**

Beginning at the lowest band, examiners should look at the candidate's answer and check whether it matches the descriptors for that band. If the descriptors at the lowest band are satisfied, examiners should move up to the next band and repeat this process for each band until the descriptors match the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the candidate's response should be used to decide on the mark within the band. For instance, if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

### **Stage 2 – Deciding on the mark**

During standardising (the marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a candidate's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

## UNIT 7

### MARK SCHEME

Question	Answer	AO1	AO2	AO3	Total mark
<b>1</b>	Complete the table below, identifying the following cell structures and outline their function within the cell: <b>Nucleus, cytoplasm, mitochondria, golgi apparatus, cell membrane. 7.1</b>	<b>10</b>			<b>10</b>

Award **one** mark for each correct structure and **one** mark for each correct function, up to a maximum of 10 marks.

	<b>Structure</b>	<b>Function</b>
<b>a</b>	cell membrane	Cell barrier keeping unwanted material out of the cell, allowing the transport of nutrients into and waste products out of the cell.
<b>b</b>	cytoplasm	Gel-like material that contains dissolved nutrients, salts and organelles. Many of the cell's chemical reactions take place in the cytoplasm.
<b>c</b>	nucleus	Controls and regulates the activities of the cell, contains genetic material, including DNA.
<b>d</b>	golgi apparatus	Transporting and changing proteins and lipids.
<b>e</b>	mitochondria	Contains enzymes for respiration, generates chemical energy in the cell, producing ATP.

Credit any other valid response.

Question	Answer	AO1	AO2	AO3	Total mark
<b>2</b>	Connective and muscle are two types of tissues. Identify <b>two</b> other types of tissue 7.1	<b>2</b>			<b>2</b>
	<ul style="list-style-type: none"> <li>• epithelial</li> <li>• nervous.</li> </ul> <p>Award <b>one</b> mark for each correct identification.</p> <p>Do not award any other response.</p>				

Question	Answer	AO1	AO2	AO3	Total mark
3 (a)	State <b>four</b> different <b>types</b> of bones	4			4
	<ul style="list-style-type: none"> <li>• flat</li> <li>• irregular</li> <li>• sesamoid</li> <li>• long</li> <li>• short.</li> </ul> <p>Award <b>one</b> mark for each correct identification up to a maximum of four marks.</p>				
3 (b)	One function of the musculoskeletal system is to maintain posture. Explain <b>two</b> other functions of the musculoskeletal system.		8 (4, 4)		8
	<p><b>Do not award marks for any explanation of posture.</b></p> <p><b>Award 1 mark</b> for a limited explanation of a function of the musculoskeletal system.</p> <p><b>Award 2 marks</b> for a basic explanation of a function of the musculoskeletal system.</p> <p><b>Award 3 marks</b> for a good explanation of a function of the musculoskeletal system.</p> <p><b>Award 4 marks</b> for an excellent explanation of the function of the musculoskeletal system.</p> <p>Award up to 4 marks for each explanation, up to a maximum of 8 marks.</p> <p>Answers may refer to:</p> <p><b>Support</b> – keeps the body upright and provides a framework for muscle and tissue attachment.</p> <p><b>Protection</b> – provides protection of internal organs e.g. rib cage and sternum provide protection of the heart and lungs, cranium for the brain.</p> <p><b>Movement</b> – allows movement of the body as a whole and its individual parts. Provides surfaces for the attachment of muscles. Bones allow for movement through the muscular attachment.</p> <p><b>Blood cell production</b> – certain bones in the skeleton contain bone marrow which produces red blood cells, white blood cells and platelets.</p> <p><b>Storage of minerals</b> - bones will allow for storage of minerals for release as and when the body needs minerals. E.g. calcium, iron etc.</p> <p>Credit any other valid response.</p>				

Question	Answer	AO1	AO2	AO3	Total mark										
4 (a)	<p><b>Identify the labelled parts on the diagram of the heart below:</b></p> <p>Award one mark for each correct identification up to a maximum of 4 marks.</p> <table border="1" data-bbox="280 443 863 763"> <thead> <tr> <th data-bbox="280 443 424 506"></th> <th data-bbox="424 443 863 506">Identified heart structure</th> </tr> </thead> <tbody> <tr> <td data-bbox="280 506 424 568">A</td> <td data-bbox="424 506 863 568">SA node</td> </tr> <tr> <td data-bbox="280 568 424 631">B</td> <td data-bbox="424 568 863 631">AV node</td> </tr> <tr> <td data-bbox="280 631 424 694">C</td> <td data-bbox="424 631 863 694">Bundle of His</td> </tr> <tr> <td data-bbox="280 694 424 763">D</td> <td data-bbox="424 694 863 763">Purkinje fibres</td> </tr> </tbody> </table>		Identified heart structure	A	SA node	B	AV node	C	Bundle of His	D	Purkinje fibres	4			4
	Identified heart structure														
A	SA node														
B	AV node														
C	Bundle of His														
D	Purkinje fibres														
4 (b)	<p><b>Explain how the electrical conduction system of the heart maintains heart rate.</b></p> <p>Award a maximum of 8 marks.</p> <p>Answers may refer to:</p> <ul style="list-style-type: none"> <li>• electrical conduction system begins in the Sinoatrial (SA) node</li> <li>• SA node is in the right atrium of the heart</li> <li>• the SA node is the ‘pacemaker’ of the heart because it normally initiates impulses that cause atrial contraction</li> <li>• as the atrium fills with blood the valves (tricuspid and bicuspid) open and blood flows into the ventricles</li> <li>• the SA node triggers a wave of contraction that spreads over walls of both atria emptying the atria and completing the filling of the ventricles</li> <li>• the AV (Atrioventricular) node is between the atrium and ventricle of the heart and conducts the impulses that arrive via the atria and originated in the SA node</li> <li>• the AV node sends an electrical impulse to the bundle of His which travels down the septum through two branches until it reaches the Purkinje fibres in both ventricles</li> <li>• as the electrical impulse spreads both ventricles contract slightly apart</li> <li>• left ventricle contracts slightly ahead of right ventricle</li> <li>• blood flows from the right ventricle through the pulmonary valve into the pulmonary artery to the lungs</li> <li>• blood flows from the left ventricle through the aortic valve into the aorta to the rest of the body</li> <li>• after the contraction of the ventricles there is a period when the atria and ventricles are relaxed and the heart muscle recovers before receiving the next electrical impulse or signal to contract.</li> </ul> <p>Credit any other valid response.</p>		8		8										

Band	AO2
4	<p style="text-align: center;"><b>7-8 marks</b></p> <p>An excellent explanation which shows:</p> <ul style="list-style-type: none"> <li>• thorough knowledge and understanding of the electrical conduction system of the heart</li> <li>• very secure grasp of the stages involved in the electrical conduction system and the parts involved - SA node, AV node, bundle of His, Purkinje fibres.</li> </ul>
3	<p style="text-align: center;"><b>5-6 marks</b></p> <p>A good explanation which shows:</p> <ul style="list-style-type: none"> <li>• generally secure knowledge and understanding of the electrical conduction system of the heart</li> <li>• secure grasp of the stages involved in the electrical conduction system and the parts involved - S/A node, A/V node, bundle of His, Purkinje fibres.</li> </ul>
2	<p style="text-align: center;"><b>3-4 marks</b></p> <p>A basic explanation which shows:</p> <ul style="list-style-type: none"> <li>• some knowledge and understanding of the electrical conduction system of the heart</li> <li>• generally secure grasp of some of the stages involved in the electrical conduction system and the parts involved - S/A node, A/V node, bundle of His, Purkinje fibres (candidates may explore one or two of these parts of the heart).</li> </ul>
1	<p style="text-align: center;"><b>1-2 marks</b></p> <p>A limited explanation which shows:</p> <ul style="list-style-type: none"> <li>• limited knowledge and understanding of the electrical conduction system of the heart</li> <li>• some/limited grasp of the stages involved in the electrical conduction system and some of the parts involved - S/A node, A/V node, bundle of His, Purkinje fibres.</li> </ul>
0	<p style="text-align: center;"><b>0 marks</b></p> <p style="text-align: center;">Response not creditworthy or not attempted.</p>

Question	Answer	AO1	AO2	AO3	Total mark
5	<p><i>The digestive system is made up of several organs, which are involved in the digestion and absorption of food.</i></p> <p><i>Analyse the function of the organs involved in the digestion and absorption of food.</i></p> <p style="text-align: right;"><i>[8]</i></p>			8	8
	<p>Award a maximum of 8 marks.</p> <p>Answers may refer to:</p> <p>Function of organs involved in the digestion of food</p> <ul style="list-style-type: none"> <li>• mouth/teeth – break down the food into smaller chunks</li> <li>• salivary gland – produces saliva which contains enzymes to start the digestion of complex carbohydrates and fats and helps the formation of the bolus (ball of chewed food) ready for swallowing</li> <li>• epiglottis/pharynx – the bolus of food travels through pharynx into the oesophagus, the epiglottis prevents food from entering windpipe</li> <li>• oesophagus – responsible for pushing the food down into the stomach through peristalsis (wave like movement)</li> <li>• stomach – creates acidic gastric juices which break down the bolus by contracting in a churning motion to create chyme. Enzymes (pepsins) are secreted which start the digestion of proteins</li> <li>• small intestine – digests fats, proteins and carbohydrates. Cells in the small intestine's wall neutralise the acid and produce enzymes to digest the food. Pancreatic juice and bile also enter the small intestine and the digestion of all food is completed. The digested food is then absorbed into the bloodstream</li> <li>• gall bladder – stores bile which helps fats enter the bloodstream</li> <li>• liver – produces bile to aid the emulsification of fats aiding their digestion</li> <li>• pancreas – produces pancreatic juice containing digestive enzymes</li> <li>• Lining of the small intestine contains villi where the products of digestion are absorbed into the bloodstream</li> <li>• Ilium - helps to further digest food coming from the stomach and other parts of the small intestine</li> <li>• duodenum – first part of the small intestine and this mixes the chyme with the enzymes and bile to break it down into molecules small enough to be absorbed</li> <li>• once all the useful liquid has been absorbed the remaining chyme passes into the large intestine</li> <li>• large intestine – semi liquid chyme is converted into solid waste by the colon which absorbs excess water</li> <li>• the large intestine absorbs most of the remaining water and bacteria metabolise the semi-liquid chyme producing faeces</li> <li>• rectum and anus – faeces are stored here until it is ready to be released through the anus.</li> </ul>				

	<p>Candidates may make reference to: Stages of digestion</p> <ul style="list-style-type: none"> <li>• reduces complex food molecules to simple substances capable of being absorbed into the bloodstream and delivered to cells</li> <li>• removes undigested waste at intervals</li> <li>• ingestion – food enters the body through the mouth (mechanical or physical digestion)</li> <li>• food is chewed (bolus) enters the stomach through the oesophagus</li> <li>• food is passed through the body by a process called peristalsis (wave like movement)</li> <li>• digestion – enzymes break down the food e.g. starch into glucose, proteins into amino acids, lipids (fats absorption - glucose, amino acids and fatty acids and glycerol are absorbed through the small intestine into the bloodstream</li> <li>• egestion – excess water is absorbed back into the body in the large intestine, leaving undigested food stored in the rectum, the lower part of the large intestine.</li> <li>• elimination – undigested food waste then comes out of the rectum through the anus as faeces.</li> <li>• chemical digestion – liver produces bile which digests fats (lipids)</li> <li>• pancreas produces digestive enzymes which enhances digestion.</li> </ul> <p>Credit any other valid response.</p>				
<b>Band</b>	<b>AO3</b>				
<b>4</b>	<p><b>7-8 marks</b></p> <p>An excellent analysis which shows:</p> <ul style="list-style-type: none"> <li>• thorough knowledge and understanding of the stages involved in the digestive system</li> <li>• a very confident grasp of the organs involved in the digestion and absorption of food.</li> </ul>				
<b>3</b>	<p><b>5-6 marks</b></p> <p>A good analysis which shows:</p> <ul style="list-style-type: none"> <li>• secure knowledge and understanding of the stages involved in the digestive system</li> <li>• a confident grasp of the organs involved in the digestion and absorption of food.</li> </ul>				
<b>2</b>	<p><b>3-4 marks</b></p> <p>A basic analysis which shows:</p> <ul style="list-style-type: none"> <li>• generally secure knowledge and understanding of some of the stages involved in the digestive system</li> <li>• a generally confident grasp of some of the organs involved in the digestion and absorption of food.</li> </ul>				
<b>1</b>	<p><b>1-2 marks</b></p> <p>A limited analysis which shows:</p> <ul style="list-style-type: none"> <li>• basic knowledge and understanding of some of the stages involved in the digestive system</li> <li>• limited grasp of some of the organs involved in the digestion and absorption of food.</li> </ul>				
<b>0</b>	<p><b>0 marks</b></p> <p>Response not creditworthy or not attempted.</p>				

Question	Answer	AO1	AO2	AO3	Total mark
6 (a)	<i>Describe the role of the pancreas in regulating blood glucose.</i>	4			4
	<p><b>Award up 2 marks for a basic description of the role of the pancreas in regulating blood sugar.</b></p> <p><b>Award up to 4 marks for a good description of the role of the pancreas in regulating blood sugar.</b></p> <p>Answers may refer to:</p> <ul style="list-style-type: none"> <li>• pancreas secretes insulin and glucagon</li> <li>• glucagon breaks down glycogen, which is stored in the liver, to glucose</li> <li>• insulin enables blood glucose to enter cells, where it is used to produce energy. Stimulates storage of excess glucose as glycogen</li> <li>• insulin and glucagon maintain homeostasis</li> <li>• if blood glucose is too high the pancreas secretes more insulin</li> <li>• if blood glucose is too low pancreas secretes more glucagon.</li> </ul> <p>Credit any other valid response.</p>				

Question	Answer	AO1	AO2	AO3	Total mark
6 (b)	Examine the role of the liver in regulating blood glucose.			6	6
	<p>Award a maximum of 6 marks.</p> <p>Answers may refer to:</p> <p>The liver produces, stores and releases glucose depending on the body's need for glucose.</p> <p>This process is controlled by the hormone insulin (the main regulator of sugar in the blood) and glucagon.</p> <p>The liver acts as the body's glucose store, storing it in the form of glycogen which helps to keep the circulating blood sugar levels steady and constant.</p> <p>When the blood glucose levels are low the:</p> <ul style="list-style-type: none"> <li>• liver converts glycogen to glucose/glycogenolysis</li> <li>• liver converts {non-carbohydrate substances/amino acids/glycerol} to glucose/gluconeogenesis.</li> </ul> <p>When the blood glucose levels are high:</p> <ul style="list-style-type: none"> <li>• liver stores glucose as glycogen/glycogenesis</li> <li>• liver converts glucose to fat</li> <li>• liver uses the glucose for respiration.</li> </ul> <p>Credit any other valid response.</p>				
Band	AO3				
3	<p><b>5-6 marks</b></p> <p>A very good examination which shows:</p> <ul style="list-style-type: none"> <li>• very secure knowledge and understanding of the role of the liver in regulating blood glucose</li> <li>• a confident grasp of the role of the liver when blood glucose levels are too high and too low.</li> </ul>				
2	<p><b>3-4 marks</b></p> <p>A good examination which shows:</p> <ul style="list-style-type: none"> <li>• secure knowledge and understanding of the role of the liver in regulating blood glucose</li> <li>• a secure grasp of the role of the liver when blood glucose levels are too high and/or too low.</li> </ul>				
1	<p><b>1-2 marks</b></p> <p>A basic examination which shows:</p> <ul style="list-style-type: none"> <li>• basic knowledge and understanding of the role of the liver in regulating blood glucose</li> <li>• some grasp of the role of the liver when blood glucose levels are too high and/or too low.</li> </ul>				
0	<p><b>0 marks</b></p> <p>Response not creditworthy or not attempted.</p>				

Question	Answer	AO1	AO2	AO3	Total mark
7 (a)	Outline how an individual would independently measure their own blood pressure using a blood pressure monitor.	4			4
	<p>Award a maximum of 4 marks.</p> <p>Answers may refer to:</p> <ul style="list-style-type: none"> <li>a sphygmomanometer is the device used to measure an individual's blood pressure. It is usually an electronic device, but answers may refer to a manual or electronic device</li> <li>with either device the process below applies: <ul style="list-style-type: none"> <li>the cuff is inflated/pumped up around upper arm to prevent blood flow</li> <li>the cuff is deflated until blood flow begins – this gives the systolic pressure</li> <li>cuff loosened further until there is free blood flow – this gives the diastolic pressure.</li> </ul> </li> </ul> <p>Credit any other valid response.</p>				
<b>AO1</b>					
<b>Award up to 4 marks</b>					
<p>A good outline which shows:</p> <ul style="list-style-type: none"> <li>secure knowledge and understanding of how blood pressure is measured</li> <li>a secure grasp of systolic pressure and diastolic pressure.</li> </ul>					
<b>Award up to 2 marks</b>					
<p>A basic outline which shows:</p> <ul style="list-style-type: none"> <li>basic knowledge and understanding of how blood pressure is measured</li> <li>a basic grasp of systolic pressure and/or diastolic pressure.</li> </ul>					
<b>0 marks</b>					
Response not creditworthy or not attempted.					

Question	Answer	AO1	AO2	AO3	Total mark
7 (b)	<p>Explain what is meant by the blood pressure reading '140/80 mmHg' in terms of the cardiovascular system.</p>		6		6
	<p>Award a maximum of 6 marks.</p> <p>Answers may refer to:</p> <ul style="list-style-type: none"> <li>the reading refers to blood pressure, this measures the pressure of blood travelling around the circulatory system through the heart and lungs (CV system)</li> <li>blood pressure measures the resistance and force in which blood travels around the body</li> <li>the higher number, 140 mmHg, is the systolic pressure and refers to the force at which the heart pumps blood around the body</li> <li>the lower number, 80 mmHg, is the diastolic pressure and refers to the resistance to the blood flow in the blood vessels, namely the arteries</li> <li>the reading 140/80 mmHg is in the normal range, anything above 140 mmHg is high and below 90 mmHg is low</li> <li>140 mmHg is the maximum arterial pressure occurring during contraction of the left ventricle of the heart. This occurs when the heart beats</li> <li>80 mmHg – is the minimum arterial pressure due to the relaxation of the ventricles. This occurs in between heart beats.</li> </ul> <p>Credit any other valid response.</p>				
Band	AO2				
	<b>5-6 marks</b>				
3	<p>A very good explanation which shows:</p> <ul style="list-style-type: none"> <li>thorough knowledge and understanding of blood pressure and its role in the circulatory system</li> <li>a confident grasp of the reading 140/80 mmHg and the way in which blood is transported around the circulatory system and its relationship with the heart.</li> </ul>				
	<b>3-4 marks</b>				
2	<p>A good explanation which shows:</p> <ul style="list-style-type: none"> <li>generally secure knowledge and understanding of blood pressure and its role in the circulatory system</li> <li>generally secure grasp of the reading 140/80 mmHg and the way in which blood is transported around the circulatory system and/or its relationship with the heart.</li> </ul>				
	<b>1-2 marks</b>				
1	<p>A basic explanation which shows:</p> <ul style="list-style-type: none"> <li>some knowledge and understanding of blood pressure and its role in the circulatory system</li> <li>some/limited grasp of the reading 140/80 mmHg and the way in which blood is transported around the circulatory system and/or its relationship with the heart.</li> </ul>				
0	<p><b>0 marks</b> Response not creditworthy or not attempted.</p>				

Question	Answer	AO1	AO2	AO3	Total mark
7 (c)	<p><i>Apart from blood pressure, identify and explain how <b>two</b> other methods can help an individual to monitor their own health and well-being</i></p>	2	6		8
	<p>Award <b>up to 4 marks</b> for each correct method.</p> <p><b>Award 1 mark</b> for identification of each method that can help an individual to monitor their own health and well-being.</p> <p><b>Award 1 mark</b> for a basic explanation of each method that can help an individual to monitor their own health and well-being.</p> <p><b>Award 2 marks</b> for a good explanation showing clear knowledge and understanding of each method that can help an individual to monitor their own health and well-being.</p> <p><b>Award 3 marks</b> for an excellent explanation showing clear knowledge and understanding of each method that can help an individual to monitor their own health and well-being.</p> <p>Candidates may refer to <b>any</b> two from the methods below:</p> <p><b>taking physical measurements:</b></p> <ul style="list-style-type: none"> <li>• height, weight, temperature, peak flow, heart rate, pulse oximeters.</li> </ul> <p><b>using personal health monitors and devices:</b></p> <ul style="list-style-type: none"> <li>• wearable sensors, mobile apps to monitor health and fitness levels, smart scales.</li> </ul> <p><b>using mobile phone technology:</b></p> <ul style="list-style-type: none"> <li>• apps as a means to enhancing self-management of well-being.</li> </ul> <p>An individual can use these methods to monitor their own health and well-being:</p> <ul style="list-style-type: none"> <li>• monitoring weight and measuring height to calculate BMI and monitor this value on the BMI chart</li> <li>• monitoring their weight to see if it has increased/decreased in order to maintain/increase or decrease weight</li> <li>• monitoring temperature by use of thermometers to see if an individual has a temperature outside of the normal range which may indicate illness</li> <li>• peak flow monitors measure how effective the lungs are working and would indicate if there was an issue with the respiratory system</li> </ul>				

	<ul style="list-style-type: none"> <li>• heart rate monitors measure the effectiveness of the heart within the cardiovascular system and may indicate if there was a problem with the system. It would also indicate the rate of the heart in terms of work output would indicate if there is an issue with the respiratory system. Heart rate monitors can help to monitor pre-existing conditions</li> <li>• pulse oximeters indicate the oxygen that is present in the respiratory system, the percentage that is measured</li> <li>• overall physical measurements provide a way in which individuals monitor their overall health and well-being, they are not indicative tools which would not provide a diagnosis of a condition, rather monitor a condition or / and provide a way in which an individual can independently improve the situation</li> <li>• wearable sensors, mobile apps to monitor health and fitness levels, smart scales – these would provide a way in which an individual can monitor and improve their condition. Data can be shared with an existing health practitioner</li> <li>• apps as a self-management tool to monitor and improve an individual's health and well-being.</li> </ul> <p>Credit any other valid response.</p>				
--	--	--	--	--	--

Question	Answer	AO1	AO2	AO3	Total mark
8 (a)	<p><i>Lifestyle factors and choices can impact human physiology systems. Physical activity is one factor that impacts the human body.</i></p> <p><i>Discuss how a lack of physical activity may contribute towards the development of cardiovascular diseases.</i></p>			6	6
	<p>Award a maximum of 6 marks.</p> <p>Answers may refer to:</p> <ul style="list-style-type: none"> <li>physical activity will increase blood pumping around the body, raising oxygen levels travelling around the body. It exercises the heart muscle and ensures oxygen supply</li> <li>lack of physical activity can cause weight gain. Increased weight gain raises the risk of elevated blood pressure and higher heart rates. This increases the risk of heart attack and stroke</li> <li>if a person does not exercise or takes little exercise the blood cholesterol levels can become elevated. This can lead to a build-up of fatty deposits within the arteries. Fatty deposits build in the arteries and if left untreated can cause heart disease</li> <li>cholesterol plaques can build up in the blood vessels causing atherosclerosis – this can lead to a hardening of the blood vessels. Physical activity can help to lower cholesterol levels.</li> </ul> <p>Credit any other valid response.</p>				
Band	AO3				
	<b>5-6 marks</b>				
3	<p>A very good discussion which shows:</p> <ul style="list-style-type: none"> <li>secure knowledge and understanding of how a lack of physical activity may contribute to the development of cardiovascular diseases</li> <li>a confident grasp of a range of negative ways in which a lack of physical activity impacts the CV system.</li> </ul>				
	<b>3-4 marks</b>				
2	<p>A good discussion which shows:</p> <ul style="list-style-type: none"> <li>generally secure knowledge and understanding of how a lack of physical activity may contribute to the development of cardiovascular diseases</li> <li>a generally secure grasp of a range of negative ways in which a lack of physical activity impacts the CV system.</li> </ul>				
	<b>1-2 marks</b>				
1	<p>A basic explanation which shows:</p> <ul style="list-style-type: none"> <li>some knowledge and understanding of how a lack of physical activity may contribute to the development of cardiovascular diseases</li> <li>some grasp of a few negative ways in which a lack of physical activity impacts the CV system.</li> </ul>				
	<b>0 marks</b>				
	Response not creditworthy or not attempted.				

Question	Answer	AO1	AO2	AO3	Total Mark
8 (b)	<p>Explain how <b>one other</b> lifestyle factor may impact human physiology.</p>		6		6
	<p>Award a maximum of 6 marks.</p> <p>Answers may refer to:</p> <p><b>Smoking:</b></p> <ul style="list-style-type: none"> <li>effects the physiological systems and could cause disease e.g., cancer, COPD.</li> </ul> <p><b>Substance misuse:</b></p> <ul style="list-style-type: none"> <li>substance misuse e.g., alcohol, drugs may lead to addiction, impact on organs e.g., cirrhosis on the liver.</li> </ul> <p><b>Nutrition and hydration:</b></p> <ul style="list-style-type: none"> <li>benefits of a balanced diet and healthy hydration can improve all systems, lower blood pressure, lower cholesterol, reduced BMI</li> <li>poor nutrition and hydration could impact physiological systems and could cause physiological conditions e.g., obesity, cardiovascular disease.</li> </ul> <p><b>Stress, anxiety, and depression:</b></p> <ul style="list-style-type: none"> <li>may impact physiological systems, e.g., by increasing levels of the hormone cortisol and affecting appetite and the body's ability to perform at an optimum level.</li> </ul> <p><b>Sexual health:</b></p> <ul style="list-style-type: none"> <li>effects of unprotected sex e.g., STDs and infertility, unplanned pregnancy</li> </ul> <p>Credit any other valid response.</p>				
<b>Band</b>	<b>AO2</b>				
	<b>5-6 marks</b>				
3	<p>A very good explanation which shows:</p> <ul style="list-style-type: none"> <li>thorough knowledge and understanding of one other factor</li> <li>a confident grasp of the way in which the factor can impact human physiology.</li> </ul>				
	<b>3-4 marks</b>				
2	<p>A good explanation which shows:</p> <ul style="list-style-type: none"> <li>generally secure knowledge and understanding of one other factor</li> <li>a generally secure grasp of the way in which the factor can impact human physiology.</li> </ul>				
	<b>1-2 marks</b>				
1	<p>A basic explanation which shows:</p> <ul style="list-style-type: none"> <li>some knowledge and understanding of one other factor</li> <li>some grasp of the way in which the factor can impact human physiology.</li> </ul>				
	<b>0 marks</b>				
0	Response not creditworthy or not attempted.				

Question	Answer	AO1	AO2	AO3	Total mark
9	<p><i>Information on the health-related lifestyles and behaviours of adults living in Wales recorded in the National Survey for Wales 2019-20, continues to show that 61% of adults are classified as overweight or obese, including 25% who are obese and 3% who are morbidly obese. <a href="https://gov.wales/national-survey-wales">https://gov.wales/national-survey-wales</a></i></p> <p><i>Describe how nutrition and hydration contribute to obesity in adults and assess how nutrition and hydration affects the cardiovascular system. [16]</i></p> <p>Award a maximum of 16 marks.</p> <p>Answers may include:</p> <ul style="list-style-type: none"> <li>• by not eating a healthy balanced diet and consuming too many calories</li> <li>• individuals not eating five portions of fruit and vegetables a day or following the eat well guidance can lead to an unbalanced diet containing high levels of saturated fats and refined carbohydrates</li> <li>• imbalance of foods from the following: carbohydrates, fats, protein, dairy and alternatives</li> <li>• portion sizes have increased over time and individuals are eating more calories than needed which can lead to obesity and increase risk of cardiovascular disease.</li> <li>• Recommended daily intake (RDI) is 2000 calories a day for adults, exceeding this will lead to weight gain and increased stress on physiological systems</li> <li>• poor nutrition that exceeds RDI will lead to cardiovascular diseases</li> <li>• insufficient calories will cause stress on the heart and malnutrition</li> <li>• excessive calories can impact the heart in terms of an increased chance of stroke/heart disease through excess weight gain leading to obesity</li> <li>• a diet high in saturated fat can lead to a build-up of atherosclerosis and fatty deposits in the blood vessels which may lead to increased risk of stroke and heart failure</li> <li>• increased blood pressure resulting from an individual consuming too much salt, increased blood pressure is a factor in developing heart disease and stroke</li> <li>• obesity occurs when a person's BMI or body fat is too high</li> <li>• individuals should consume the recommended number of calories per day</li> <li>• energy balance</li> <li>• calorie intake should not exceed calorie output. Excess calories are stored as fat and leads to weight gain</li> <li>• poor nutrition and hydration may lead to an individual consuming more calories than they expend</li> <li>• blood vessels will have a build-up of fatty deposits, which left untreated may cause serious diseases such as angina, heart disease and heart failure</li> </ul>	6		10	16

	<ul style="list-style-type: none"> <li>• individuals should drink two litres of water a day avoiding, where possible, caffeine, alcohol and carbonated sugary drinks to maintain hydration.</li> <li>• not drinking enough water can lead to dehydration and can impact on the effective working of the cardiovascular system (the heart, lungs, blood vessels)</li> <li>• dehydration can cause physiological systems to fail.</li> </ul> <p>Candidates may refer to physical activity for lowering risk of diseases and obesity.</p> <p>Candidates may also refer to a balance of healthy diet, hydration, and physical activity.</p> <p>Credit any other valid response.</p>				
Band	AO1	AO3			
4	<p>There are no Band 4 marks for this assessment objective.</p> <p>6 marks are awarded as for Band 3.</p>	<p><b>9-10 marks</b></p> <p>An excellent assessment demonstrating:</p> <ul style="list-style-type: none"> <li>• perceptive and informed judgements about the potential impact of how nutrition and hydration affect the CV system</li> <li>• a wide range of examples of CV diseases and a confident and detailed assessment of how nutrition and hydration contribute to obesity.</li> </ul>			
3	<p><b>5-6 marks</b></p> <p>A very good description, which shows:</p> <ul style="list-style-type: none"> <li>• thorough knowledge and understanding of nutrition and hydration</li> <li>• a confident grasp of the CV system.</li> </ul>	<p><b>6-8 marks</b></p> <p>A good assessment demonstrating:</p> <ul style="list-style-type: none"> <li>• reasoned judgements about the potential impact of how nutrition and hydration affect the CV system</li> <li>• a range of examples of CV diseases and a generally confident assessment of how nutrition and hydration contribute to obesity.</li> </ul>			
2	<p><b>3-4 marks</b></p> <p>A good description, which shows:</p> <ul style="list-style-type: none"> <li>• generally secure knowledge and understanding of nutrition and hydration</li> <li>• a generally secure grasp of the CV system.</li> </ul>	<p><b>3-5 marks</b></p> <p>A basic assessment demonstrating:</p> <ul style="list-style-type: none"> <li>• generally valid judgements about the potential impact of how nutrition and hydration affect the CV system</li> <li>• some examples of CV diseases and a basic assessment of how nutrition and hydration contribute to obesity.</li> </ul>			
1	<p><b>1-2 marks</b></p> <p>A basic description, which shows:</p> <ul style="list-style-type: none"> <li>• some knowledge and understanding of nutrition and hydration</li> <li>• some grasp of the CV system.</li> </ul>	<p><b>1-2 marks</b></p> <p>A limited assessment demonstrating:</p> <ul style="list-style-type: none"> <li>• little evidence of judgements about the potential impact of how nutrition and hydration affect the CV system</li> <li>• few/no examples of CV diseases and little / no assessment of how nutrition and hydration contribute to obesity.</li> </ul>			
	<p><b>0 marks</b></p> <p>Response not creditworthy or not attempted.</p>	<p><b>0 marks</b></p> <p>Response not creditworthy or not attempted.</p>			

Mapping of Assessment Objectives					
	Content	AO1	AO2	AO3	Total mark
1.	7.1	10			10
2.	7.1	2			2
3. (a)	7.2	4			4
3. (b)	7.2		8		8
4. (a)	7.2	4			4
4. (b)	7.2		8		8
5.	7.2			8	8
6. (a)	7.2	4			4
6. (b)	7.2			6	6
7. (a)	7.2	4			4
7. (b)	7.3		6		6
7. (c)	7.4	2	6		8
8. (a)	7.3			6	6
8. (b)	7.3		6		6
9	7.3	6		10	16
<b>TOTAL</b>		<b>36</b>	<b>34</b>	<b>30</b>	<b>100 Marks</b>
		<b>30-34</b>	<b>33-37</b>	<b>30-35</b>	