

**CAMBRIDGE TECHNICALS LEVEL 3 (2016)**

**Examiners' report**

# **HEALTH AND SOCIAL CARE**

**05830–05833, 05871**

**Unit 4 Summer 2023 series**

# Contents

Introduction .....	3
Unit 4 series overview .....	4
Question 1 (a) .....	5
Question 1 (b) (i) .....	5
Question 1 (b) (ii) .....	6
Question 1 (b) (iii) .....	6
Question 1 (c) .....	6
Question 1 (d)* .....	7
Question 1 (e) (i) .....	7
Question 1 (e) (ii)* .....	8
Question 1 (f) .....	9
Question 2 (a) (i) .....	10
Question 2 (a) (ii) .....	11
Question 2 (b) (i) .....	11
Question 2 (b) (ii)* .....	12
Question 2 (c) (i) and (ii) .....	12
Question 3 (a) (i) .....	13
Question 3 (a) (ii) .....	14
Question 3 (b) (i)* .....	14
Question 3 (b) (ii) .....	15
Question 4 (a) .....	15
Question 4 (b) (i) and (ii) .....	16
Question 4 (b) (iii) .....	16
Question 4 (b) (iv) .....	17
Question 4 (c)* .....	17
Question 4 (d) (i) .....	18
Question 4 (d) (ii) .....	19
Question 4 (e) .....	20
Question 4 (f)* .....	21
Question 5 (a) .....	21
Question 5 (b)* .....	22
Question 5 (c) (i), (ii), (iii) and (iv) .....	23
Copyright information .....	24

## Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

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## Unit 4 series overview

Performance in this exam series was slightly different from recent exam series. There was an increased proportion of point-based questions where potential responses were not provided. This was reflected in the higher percentage of questions where no responses were provided by candidates. In addition, some candidates struggled to achieve Level 2 or Level 3 on some of the Level of Response questions. This was particularly the case for the question on hypertension and nephrotic syndrome. This appears to be linked to limited understanding of the biological causes of hypertension and treatments for nephrotic syndrome. However, candidates performed well in the other Level of Response questions, with many achieving Level 2. As with previous exam series, questions about impact on daily life are becoming a particular strength of most candidates. As with recent series some candidates provide one-sided responses, only addressing one aspect of question, which frequently limits them to a Level 1 answer.

A minority of candidates utilised the additional pages, but either did not indicate they had done so, or incorrectly labelled them. However, most candidates who used the extra pages did signal they had and labelled the additional work with the correct number.

Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
<ul style="list-style-type: none"> <li>• answered all questions</li> <li>• addressed all parts of LOR questions</li> <li>• provided Level 2+ responses for at least 5 of the LOR questions</li> <li>• achieved 60% or more of the marks available on the short response point-based questions</li> <li>• provided well-structured responses addressing the stem of the questions.</li> </ul>	<ul style="list-style-type: none"> <li>• did not respond to all the questions</li> <li>• did not provide a response to at least 1 LOR question</li> <li>• did not address all aspects of LOR questions</li> <li>• achieved less than 40% of the marks available for the short response point-based questions.</li> </ul>

### Question 1 (a)

1 Processes in the digestive system have roles in providing the body cells with essential nutrients.

(a) Match each of the processes of the digestive system with its role by drawing a line between the boxes.

One of the lines has been completed for you.

Processes	Role
absorption	An enzyme in saliva converts starch to maltose.
assimilation	Fats are emulsified into smaller globules.
chemical digestion	Products of digestion get taken up and stored in liver cells.
mechanical digestion	The products of fat digestion diffuse into lacteals.

[3]

Most candidates got either 1 or 3 marks for this question. The most common correct response was the role of chemical digestion.

### Question 1 (b) (i)

(b) Bile is the fluid in the digestive system that is needed to emulsify fats during mechanical digestion.

(i) Name the part of the digestive system where the emulsification of fats takes place.

..... [1]

Approximately half of candidates provided a correct response to this question. Common incorrect responses included stomach, pancreas, and liver. Some candidates gave a more precise response of duodenum.

### Question 1 (b) (ii)

(ii) Name the part of the digestive system that produces bile.

..... [1]

Some candidates provided the correct response of the liver. However most candidates provided the incorrect response, including gallbladder, bile duct and stomach.

### Question 1 (b) (iii)

(iii) Name the part of the digestive system that stores bile.

..... [1]

More candidates were able to identify the correct response "gallbladder". The liver was a common incorrect response.

### Question 1 (c)

(c) Gallstones are a malfunction of the digestive system that can cause a blockage in the bile duct.

Name and describe **one** method that is used to treat gallstones.

.....  
.....  
.....  
..... [2]

This was a well-answered question, with less successful responses focusing on surgery to remove gallstones or the gallbladder.

### Question 1 (d)\*

(d)\* The stomach is part of the digestive system.

Describe the actions of the stomach in both mechanical **and** chemical digestion.

.....

.....

.....

.....

.....

.....

..... [6]

Only a minority of candidates achieved a Level 3 response. Most candidates provided Level 1 or low Level 2 responses. The primary factor limiting candidates' responses was describing both chemical and mechanical digestion.

### Question 1 (e) (i)

(e) The liver is part of the digestive system that also has breakdown functions. One of these breakdown functions is to remove alcohol and drugs from the blood stream.

(i) Which **one** of the following is the name of the chemical process in which the liver breaks down alcohol?

Put a tick (✓) in the box next to the correct chemical process.

Chemical process	Tick (✓) one only
Cell respiration	
Deamination	
Detoxification	

[1]

Most candidates answered this question correctly.

### Question 1 (e) (ii)\*

(ii)\* Sarah has symptoms of liver cirrhosis caused by drinking excessive amounts of alcohol over many years.

Discuss how her condition can be monitored and the lifestyle changes she could make to prevent further damage to her liver.

.....

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.....

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.....

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.....

.....

**[6]**

Very few candidates didn't provide a response to this question and provided correct responses. However, many candidates were limited to Level 1, as they provided list like responses. For example, stating Sarah should stop drinking alcohol or have blood tests. To reach Level 2 or Level 3 candidates were required to develop these points. For example, stopping drinking alcohol as this prevents further scar tissue developing in the liver, or having regular blood tests so that the liver function can be monitored. Only a minority of candidates were able to do this for both monitoring and lifestyle changes.



### Question 1 (f)

(f) The liver also has a role in regulating the levels of glucose in the blood.

Complete the passage about the role of the liver in the regulation of blood glucose by choosing the most appropriate word(s) from the list below.

- |                    |                       |                 |                  |
|--------------------|-----------------------|-----------------|------------------|
| <b>effector</b>    | <b>fat</b>            | <b>feedback</b> | <b>glycogen</b>  |
| <b>homeostasis</b> | <b>osmoregulation</b> | <b>pancreas</b> | <b>pituitary</b> |

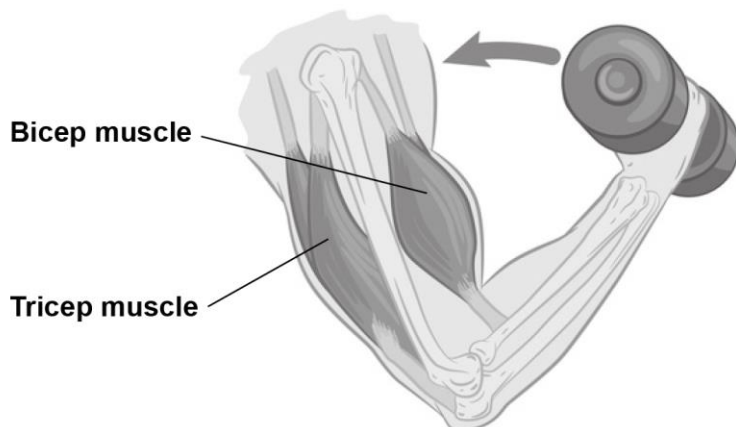
After a meal, glucose levels in the blood increase. This change from normal levels is detected and insulin is secreted by the ..... Insulin acts on liver cells which remove glucose from the blood and convert it into ..... for storage. This restores normal levels of glucose. The regulation of glucose is done using a ..... mechanism and is an example of ..... that maintains normal or optimal conditions in the body.

**[4]**

Most candidates got 3 marks for this question, with osmoregulation the most common incorrect response for the third point. Many candidates gave all four correct responses.

### Question 2 (a) (i)

- 2 The musculoskeletal system contains joints that are moved by the action of muscles.  
The diagram below shows muscles in the upper arm moving the elbow joint to lift a weight.



- (a) (i) Outline how muscle action at the elbow joint straightens the arm to **lower** the weight.

.....

.....

.....

.....

.....

.....

..... [3]

Some candidates discussed the muscular action of raising the weight, which was not required and received no credit. Approximately half the responses received 2 marks on this question, identifying that the bicep relaxes and the tricep contracts.

### Question 2 (a) (ii)

(ii) Ligaments are components of synovial joints.

Which **one** of the following is the correct description of a ligament?

Put a tick (✓) in the box next to the correct description.

Description of a ligament	Tick (✓) one only
Fibrous cord that attaches one bone to another bone to hold them in position.	
Fibrous cord that holds the muscle to the bone.	
Tough fibrous tissue that protects the ends of the bones.	
Tough membrane that acts as a shock absorber.	

[1]

Most candidates provided a correct response for this question.

### Question 2 (b) (i)

(b) Layla is 55 years old and works as a hairdresser. She has developed severe osteoarthritis in her hands.

(i) State **two** symptoms of osteoarthritis.

1 .....

.....

2 .....

.....

[2]

Generally, a well answered question, with pain and stiffness in the joints the most frequent responses. Some candidates gave vague responses, e.g. pain or lack of movement. It is important that responses are linked to the condition, i.e. the joints.

### Question 2 (b) (ii)\*

(ii)\* Discuss the impacts of osteoarthritis on Layla’s daily life.

.....

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..... [8]

Generally, a well answered question, with most candidates gaining a Level 2 or higher. Responses at this level addressed the stem of the question, focusing specifically on Layla. Most candidates discussed the impact on her work, making links between the osteoarthritis affecting her hands and difficulties this would have on her employment as a hairdresser. Some candidates provided generic responses without considering Layla, e.g. discussing issues with walking. These responses frequently received a Level 1 mark.

### Question 2 (c) (i) and (ii)

(c) Layla has been told that the endocrine gland in her neck is malfunctioning and is likely to be one of the causes of the osteoarthritis.

(i) Name the endocrine gland found in the neck.

..... [1]

(ii) Name the type of chemical produced by endocrine glands.

..... [1]

2 (c) (i) and (ii) were left unanswered by some candidates. Some candidates provided correct responses to both questions.

### Question 3 (a) (i)

3 The table shows some components of the blood and their functions as part of the cardiovascular system.

(a) (i) Complete the table by choosing words or sentences from the list below.

**A cell that destroys bacteria to prevent infection.**

**A cell that transports glucose.**

**A cell that transports oxygen.**

**Haemoglobin**

**Lymphocyte**

**Monocyte**

**Platelet**

The first row has been completed for you.

Blood component	Function
Plasma	Fluid that transports substances dissolved in water.
Erythrocyte	..... .....
.....	A cell that produces antibodies to fight infection.
Neutrophil	..... .....
.....	A cell fragment that has a role in blood clotting.

[4]

Many candidates gained 3 or 4 marks on this question. Monocytes was a common incorrect response for “A cell that produces antibodies to fight infection”. Platelets was the most frequently correct response for the last point.

### Question 3 (a) (ii)

- (ii) Temperature regulation is an important function of the blood.  
Outline why it is important to regulate body temperature.

.....

.....

.....

..... [2]

Most candidates provide a response to this question, but only a minority achieved any credit. Candidates often provided responses commenting on “sweating” or “shivering” which received no credit. Correct responses often focused on enzymes becoming denatured and optimum body temperature.

### Question 3 (b) (i)\*

- (b) Hypertension is a malfunction of the cardiovascular system that results in blood pressure being higher than normal.
  - (i)\* Explain biological causes and risk factors for hypertension.

.....

.....

.....


.....

.....

..... [6]

This question was answered by nearly all candidates, but only a few achieved a Level 2 or Level 3. A limiting factor was not explaining the biological causes of hypertension. Most candidates knew it was high blood pressure but offered no explanation of the causes. Furthermore, many responses listed many risk factors with no explanation of them. Candidates should be aware that covering fewer risk factors in greater depth is more beneficial than simply listing several factors.

**Assessment for learning**



The biological causes of hypertension and how risk factors affect blood pressure is an area where candidates need to develop their knowledge and understanding.

### Question 3 (b) (ii)

(ii) State **one** possible treatment for hypertension.

..... [1]

This was a well answered question with “medication to reduce blood pressure” and “beta blockers” frequent correct responses.

### Question 4 (a)

4 Inspiration is the process of breathing in to move air into the lungs.

(a) Complete the passage about inspiration by choosing the most appropriate word(s) from the list below.

- |                          |                 |                    |               |
|--------------------------|-----------------|--------------------|---------------|
| <b>alveoli</b>           | <b>contract</b> | <b>dome-shaped</b> | <b>flat</b>   |
| <b>pleural membranes</b> | <b>pressure</b> | <b>relax</b>       | <b>volume</b> |

During inspiration, the diaphragm contracts and becomes .....

The intercostal muscles ..... to move the ribs upwards and

outwards. This causes an increase in the ..... of the thorax and

air moves in. Fluid between the ..... prevent friction as the lungs

move.

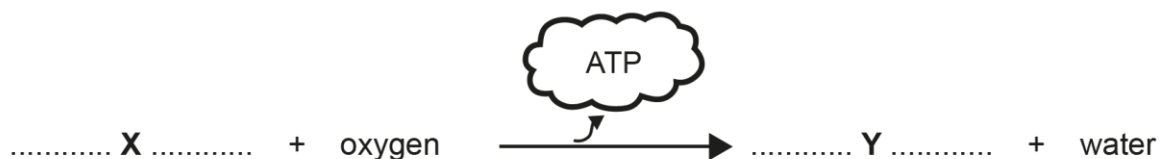
[4]

In this response “contract” and “pleural membrane” were common correct answers. Some candidates gave “dome-shaped” and “pressure” for the first and third points demonstrating confusion with the mechanisms of breathing.

### Question 4 (b) (i) and (ii)

(b) Inspiration provides oxygen for aerobic respiration to produce ATP.

The equation below shows aerobic respiration.



(i) Name the reactant X.

..... [1]

(ii) Name the waste product Y.

..... [1]

Most candidates either got both 4 (b) (i) and (ii) correct or both responses incorrect.

### Question 4 (b) (iii)

(iii) State the role of ATP.

.....  
..... [1]

Only a minority of candidates correctly linked ATP to its role in “providing energy to cells” or “metabolism”.



### Question 4 (b) (iv)

(iv) During intense exercise anaerobic respiration occurs.

State **two** differences between aerobic and anaerobic respiration.

1 .....

.....

2 .....

.....

[2]

This was a well-answered question, with candidates focusing on “oxygen” and “carbon dioxide” and “lactic acid” as differences between aerobic and anaerobic respiration.

### Question 4 (c)\*

(c)\* Hiro was diagnosed with cystic fibrosis when he was three years old.

Explain the causes and effects of cystic fibrosis.

.....

.....

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.....

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.....

.....

[6]

Most candidates provided responses that addressed both aspects of this question and gained a Level 2 or Level 3. Some candidates provided very detailed explanations achieving full marks. Some candidates misunderstood that the term ‘effects’ requires an explanation of the effects on the body, with candidates instead explaining about the effects on daily life. The question did not require this and it received no credit.

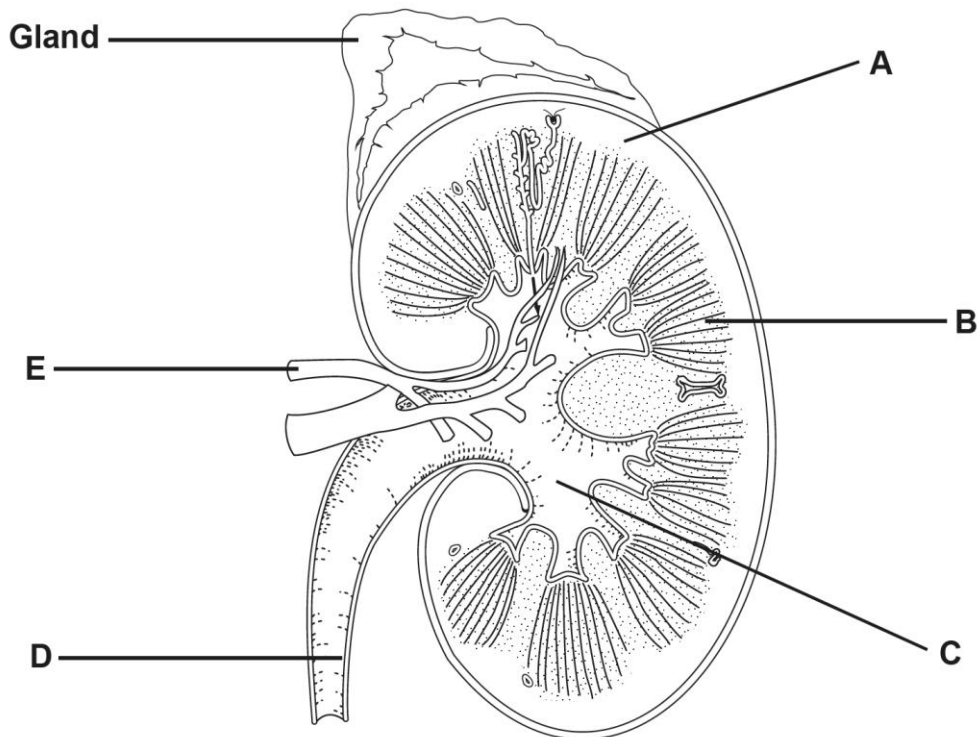
### Assessment for learning

 The term “effects” refers to the biological effects within the body, whilst “daily life” or “lifestyle” refers to impact on an individual’s day to day life e.g. impacts on work.

**Question 4 (d) (i)**

**(d)** Cystic fibrosis can affect kidney function.

The diagram below shows the structure of the kidney.



**(i)** Complete the table below by selecting the correct letter that identifies the structures labelled on the diagram.

Structure	Letter
Calyx	.....
Cortex	.....
Medulla	.....
Ureter	.....

**[4]**

There were mixed responses to this question, with candidates gaining a range of marks from 0 to 4. Ureter was the most common correct answer, with calyx the least correctly identified structure.

### Question 4 (d) (ii)

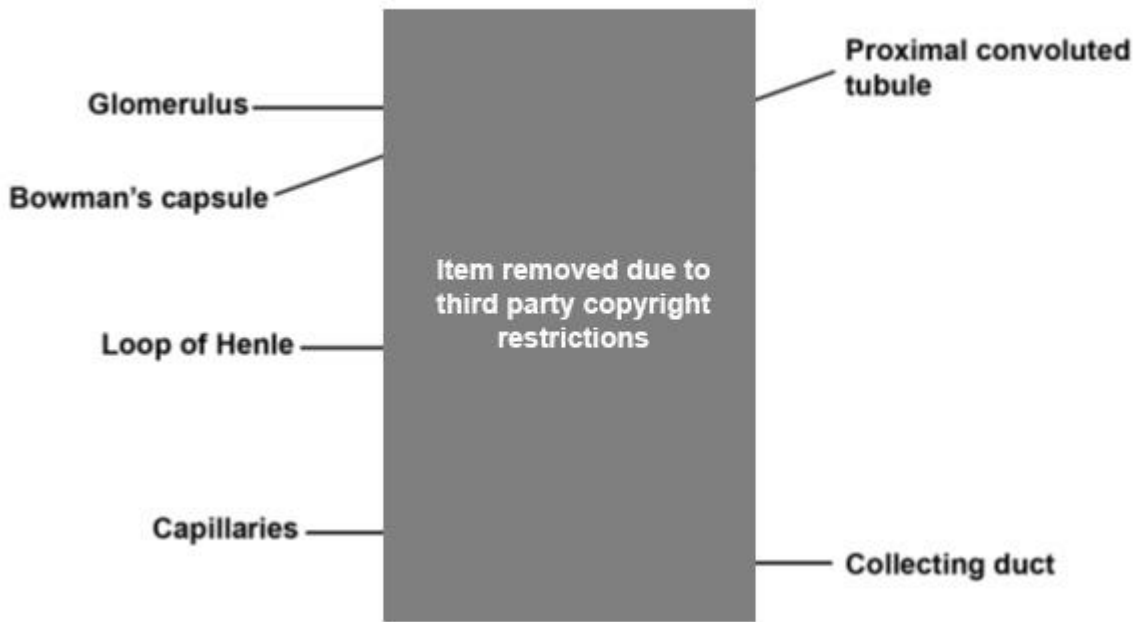
(ii) State the function of the gland labelled on the diagram.

.....  
..... [1]

Most candidates identified that the structure was the adrenal gland and were able to identify the function was to produce adrenaline. Some candidates assumed it was part of the kidney and provided a kidney function e.g. filter water.

### Question 4 (e)

The structure of a kidney nephron is shown below.



(e) Describe **two** main functions of the kidney carried out by kidney nephrons.

1 .....

.....

.....

.....

.....

.....

.....

.....

.....

.....


.....

.....

[4]

This question was not well-answered and was often left with no response. Only a minority of candidates achieved 4 marks.

#### Assessment for learning

 The functions of the nephrons is an area where candidates need to enhance their knowledge and understanding.

### Question 4 (f)\*

(f)\* Eve has nephrotic syndrome, a malfunction of the kidneys.

Evaluate **two** treatments that could be used to reduce the effects of nephrotic syndrome on Eve’s body.

.....

.....

.....

.....

.....

.....

..... [6]

Most candidates understand the requirements of the command verb “evaluate” and provided positives and negatives for treatments. However, only some candidates could correctly identify two treatments for nephrotic syndrome. This meant only some candidates gained a Level 3. Kidney transplant was the most common treatment identified.

### Question 5 (a)

5 The ear is part of the sensory system.

(a) Complete the table below by deciding whether each statement about the structure and functions of components of the ear is True (T) or False (F).

Statement	True (T) or False (F)
Semi-circular canals have a role in maintaining balance.	.....
The cochlea is one of three bones that transmit vibrations through the middle ear.	.....
The Eustachian tube makes sure that pressure in the middle ear is the same as that in the atmosphere.	.....
The pinna or external ear channels sound waves towards the ear drum.	.....

[4]

This was a well-answered question with many candidates achieving full marks. The first two statements were the most frequent incorrect responses.

### Question 5 (b)\*

**(b)\*** Jack has total hearing loss caused by a brain injury.

Explain the care needs and impact of hearing loss on Jack's lifestyle.

.....

.....

.....

.....

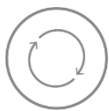
.....

.....

..... [8]

The quality of response to this question was varied. Some candidates provided well rounded responses where they explained in detail the care needs and impact of hearing on lifestyle. However, many candidates gave one-sided responses focusing on the impact on the lifestyle. It is important in questions with more than one aspect that candidates address both.

#### Assessment for learning



Candidates need to develop their ability to address all aspects of a question. Focusing solely on one area will prevent the ability to access the higher mark bands.

### Question 5 (c) (i), (ii), (iii) and (iv)

(c) The brain receives impulses from sensory organs such as the ear.

Choose from the list of terms below to answer the following questions about the brain.

You can use each term once, more than once or not at all.

**cerebellum**

**corpus callosum**

**frontal lobes**

**hypothalamus**

**medulla**

**meninges**

(i) Which is a tough membrane layer around the brain and spinal cord?

..... [1]

(ii) Which is a bridge of nervous tissue that connects the cerebral hemispheres?

..... [1]

(iii) Which structure is positioned beneath the cerebral hemispheres and is responsible for coordinating muscle activity?

..... [1]

(iv) Which acts as a protective barrier against infection?

..... [1]

These 5 (c) questions were well-answered by many candidates, who achieved 4 marks. 5 (c) (iii) and (iv) were the most common correct responses.

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