

Modified Enlarged 18 pt

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Monday 16 January 2023 – Morning

Level 3 Cambridge Technical in Health and Social Care

05831/05832/05833/05871

Unit 4: Anatomy and physiology for health and social care

Time allowed: 2 hours plus your additional time allowance

No extra materials are needed.

Please write clearly in black ink.

**Centre
number**

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**Candidate
number**

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First name(s) _____

Last name _____

**Date of
birth**

D	D	M	M	Y	Y	Y	Y
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READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS

Use black ink.

Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.

Answer ALL the questions.

INFORMATION

The total mark for this paper is 100.

The marks for each question are shown in brackets [].

Quality of extended response will be assessed in questions marked with an asterisk (*).

ADVICE

Read each question carefully before you start your answer.

Answer ALL the questions.

1 The components of the nervous system are responsible for coordinating nerve impulses in the body.

(a) Match each component with its function by drawing a line between the boxes.

One has been completed for you. [3]

Component	Function
Autonomic nervous system	Connected to the brain by nerves. Allows communication between the brain and the body.
Central nervous system	Consists of sensory and motor neurons that transmit nerve impulses to and from the brain and spinal cord.
Peripheral nervous system	Consists of the brain and spinal cord. Takes a main role in control and coordination of most body functions.
Spinal cord	Regulates body functions that are not consciously controlled such as breathing and heart rate.

(b) The brain is part of the nervous system.

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

cerebellum cerebral cortex corpus callosum
frontal lobes hypothalamus medulla

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

(i) State ONE component that has a role in the regulation of body temperature and thirst.

[1]

(ii) State TWO components that have a role in decision-making and processing information.

1 _____

2 _____

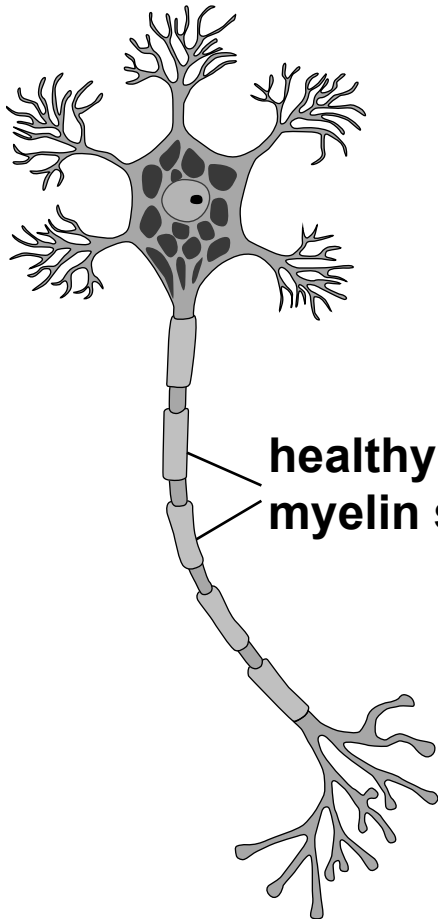
[2]

(iii) State ONE component that has a role in automatic functions such as breathing and swallowing.

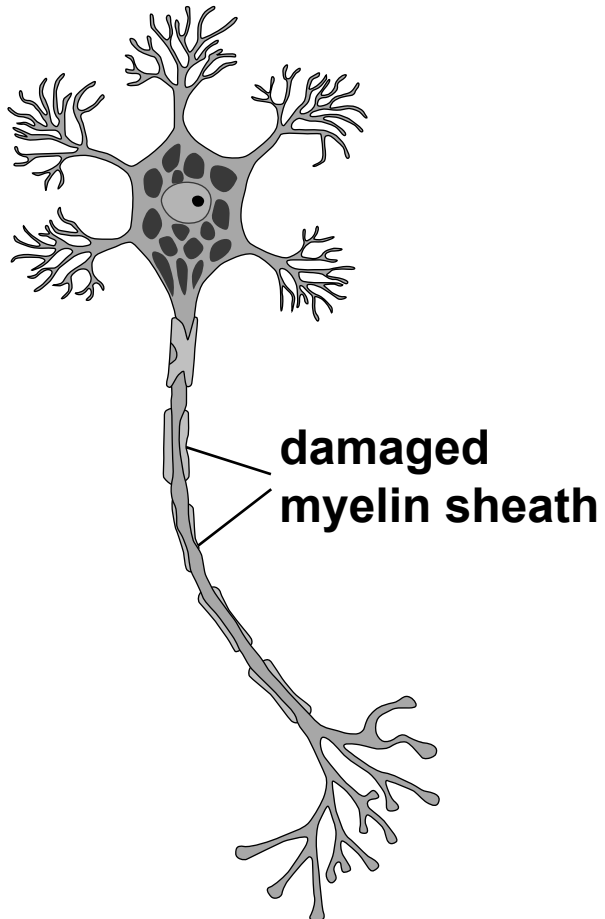
[1]

- (c) The diagram shows a healthy neuron and a neuron from a person suffering from multiple sclerosis (MS).

healthy neuron



neuron of person suffering from MS



- (i) Describe the structure of a healthy myelin sheath.

(ii)* Describe TWO symptoms of MS AND explain why the damage caused to the myelin sheath can lead to these symptoms.

[illegible]

2 (a) The pituitary and the pancreas both have roles as endocrine glands.

(i) The pituitary gland is located beneath the hypothalamus in the brain.

Which ONE of the following is a role of the pituitary gland?

Put a tick (✓) in the box next to the role. [1]

Role of the pituitary gland	Tick (✓) ONE only
produces the hormone, adrenaline	
produces the hormone, thyroxine	
regulates other endocrine organs	
regulates the nervous system	

(ii) The pancreas has a role in controlling the levels of glucose in the blood.

Outline how the pancreas controls blood glucose levels.

(b) Mia is 45 years old and has Type 1 diabetes, a malfunction of the pancreas. She was diagnosed with this condition as a child.

(i) Give TWO symptoms of diabetes.

1 _____

2

[2]

(ii)* Discuss at least TWO impacts of diabetes on Mia's lifestyle. [8]

[illegible]

-
-
-
-
-
-
-
- (c) Mia's diabetes was caused by her body's immune system destroying cells in her pancreas.

Name ONE other type of diabetes and state the cause of this type of diabetes.

Name _____

Cause _____

[2]

- (d) The pancreas also has roles in the digestive system.

Complete the table below by deciding whether each statement about the digestive roles of the pancreas is TRUE (T) OR FALSE (F). [3]

STATEMENT	TRUE (T) OR FALSE (F)
Pancreatic juices are secreted through the pancreatic duct.	
Produces digestive enzymes that are secreted into the stomach.	
Produces hydrochloric acid to kill bacteria.	

- (e) Bile is a fluid that is produced in the digestive system.

- (i) Which ONE of the following organs produces bile?

Put a tick (✓) in the box next to the role. [1]

Organ that produces bile	Tick (✓) ONE only
gall bladder	
liver	
small intestine	
stomach	

(ii) Describe TWO functions of bile.

1 _____

2 _____

[2]

(f) Gallstones are a malfunction of the digestive system involving bile.

(i) Give TWO symptoms of gallstones.

1 _____

2 _____

[2]

(ii)* Explain the possible causes for the formation of gallstones. Include both lifestyle risk factors and biological causes in your response. [6]

3 Blood vessels are components of the circulatory system.

(a) Complete the passage about the structure of blood vessels by choosing the most appropriate word(s) from the list below. [4]

arteries

capillaries

high

low

muscle

thicker

thinner

tissue

veins

Arteries and veins have walls containing smooth _____ and elastic fibres.

Generally, veins have _____ walls and wider lumens than arteries. Blood flowing through veins is under _____ pressure.

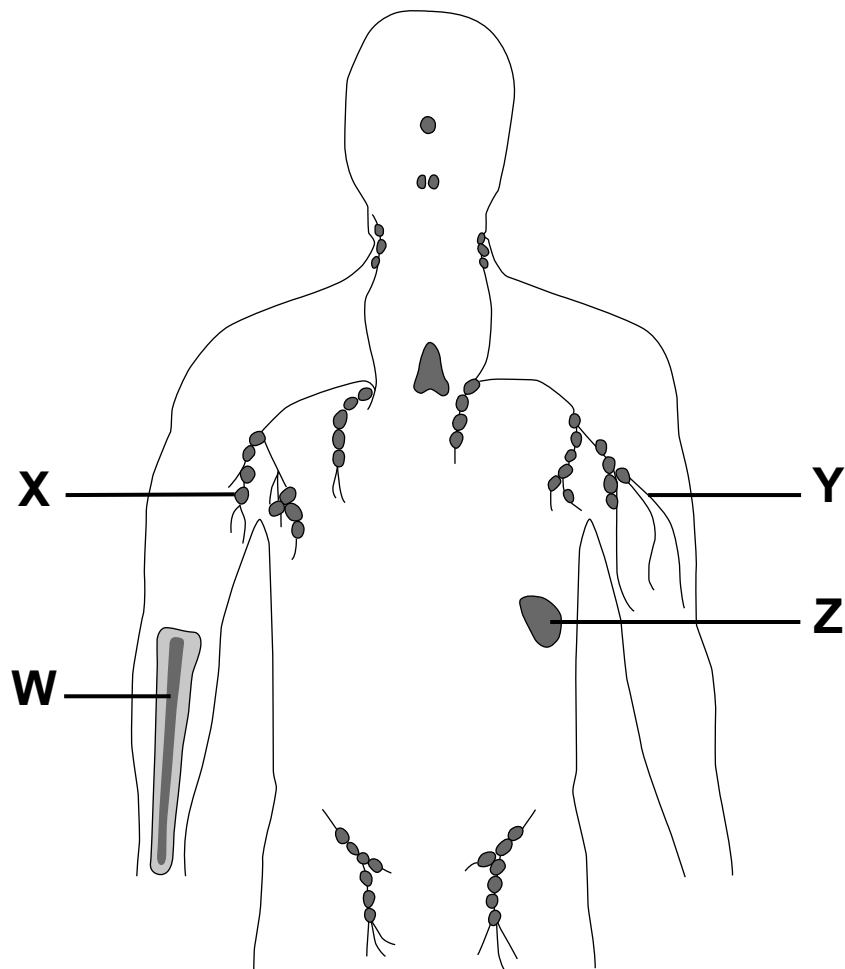
Valves are found in _____ to keep blood flowing in the right direction.

(b)* Ali has high blood pressure (hypertension).

Discuss at least TWO possible impacts of high blood pressure on Ali's health and the lifestyle changes he could make to reduce the effects of hypertension.

[6]

(c) The diagram shows the lymphatic system.



(i) Complete the table below by selecting the correct letter that identifies the structures of the lymphatic system.

One has been done for you. [3]

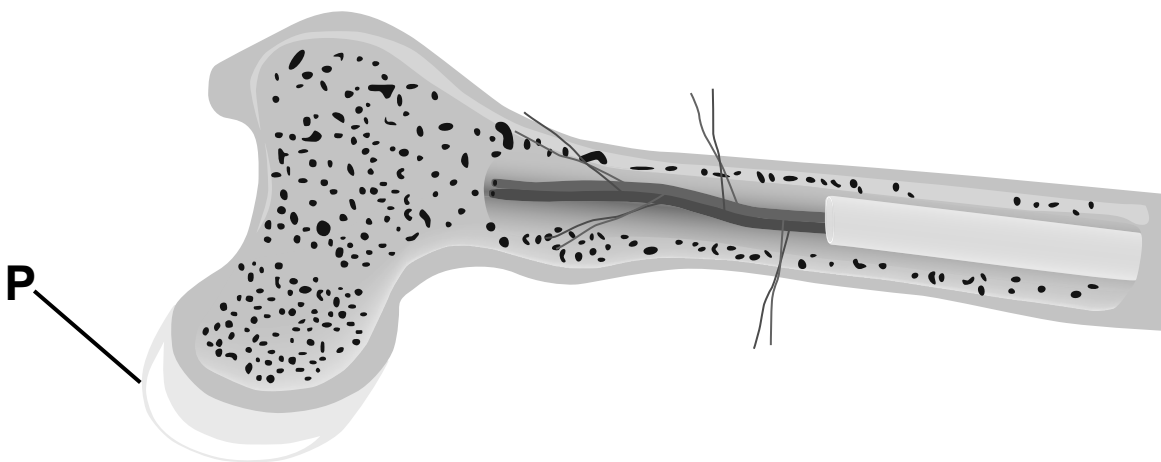
Structure	Letter
bone marrow	W
lymph node	
lymph organ	
lymph vessel	

- (ii) One of the roles of the lymphatic system is to produce blood cells.

State ONE OTHER role of the lymphatic system.

[1]

- (d) The diagram below shows a section of bone from the arm.



- (i) Identify the type of bone SECTION shown in the diagram.

[1]

- (ii) The structure labelled P helps to reduce friction in a joint.

Identify structure P.

[1]

(e) Beth has osteoporosis. Scans have shown changes in her bone tissue.

(i) Identify ONE cause of osteoporosis.

[1]

(ii) Give TWO ways in which her bones could have changed as osteoporosis progressed.

1

2

[2]

(iii)*Analyse the use of TWO possible treatments for managing Beth's osteoporosis. [6]

4 The eye is part of the sensory system.

(a) Choose from the list of structures below to complete the table about the eye.

ciliary muscle

conjunctiva

cornea

iris

suspensory ligament

tear gland

You may use each structure once, more than once or not at all. [4]

Description	Structure
Changes the shape of the lens to enable the eye to focus.	
Produces fluid to clean and lubricate the front of the eye.	
Thin membrane that covers and protects the surface of the eye.	
Transparent front part of the eye.	

(b)* The following structures are also part of the eye:

Retina

Lens

Explain how changes, damage or deterioration occurs in these structures, leading to NAMED eye malfunctions.

[illegible]

(c) Deafness is a malfunction of the ear that can be caused by ageing.

(i) Give ONE OTHER cause of deafness.

[1]

(ii) State TWO effects of deafness on lifestyle.

1

2

[2]

(iii) Give ONE possible treatment for deafness.

[1]

- 5 During gaseous exchange, oxygen moves out of the alveoli into the capillaries. It is then transported in the blood to body tissues for cellular respiration.**

(a) (i) Describe TWO features of the alveoli walls that enable gaseous exchange to be efficient.

1 _____

2 _____

[2]

(ii) Explain how a diffusion gradient enables oxygen to move out of the alveoli and into the capillaries.

_____ **[2]**

(iii) Name the part of the blood that transports the oxygen to body tissues.

_____ **[1]**

(b) Tom has emphysema.

(i)* Analyse at least TWO methods that can be used for monitoring respiratory malfunctions, such as emphysema.

[illegible]

- (ii) Give ONE cause of emphysema and outline the possible effects on Tom's respiratory system.

[3]

END OF QUESTION PAPER

If additional answer space is required, you should use the following lined pages. The question numbers must be clearly shown – for example, 2(c) or 4(b)*.

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