

Modified Enlarged 18 pt

OXFORD CAMBRIDGE AND RSA EXAMINATIONS

Tuesday 23 May 2023 – Afternoon

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**

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

**Candidate
number**

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

First name(s) _____

Last name _____

**Date of
birth**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| D | D | M | M | Y | Y | Y | Y |
|---|---|---|---|---|---|---|---|

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.

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. [3]

| 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. |

(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]

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

[1]

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

[1]

(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]

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

Describe the actions of the stomach in both mechanical AND chemical digestion.

[illegible]

(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. [1]

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

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

[illegible]

- (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. [4]

effector

fat

feedback

glycogen

homeostasis

osmoregulation

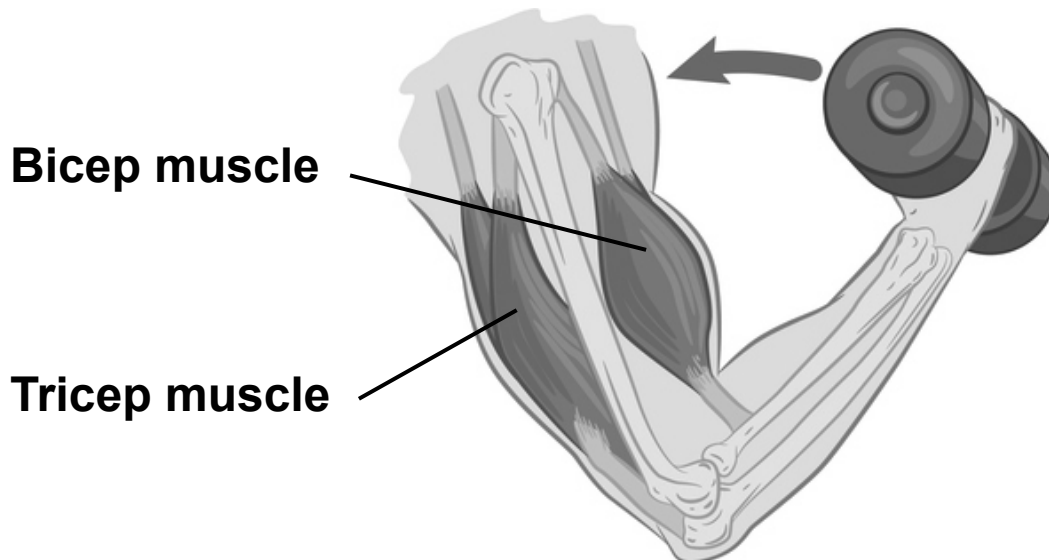
pancreas

pituitary

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.

- 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]

- (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. [1]

| 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. | |

(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]

(ii)* Discuss the impacts of osteoarthritis on Layla's daily life. [8]

(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]

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

(a) (i) Complete the table opposite by choosing words or sentences from the list below. [4]

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. |

- (ii) Temperature regulation is an important function of the blood.

Outline why it is important to regulate body temperature.

[2]

- (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]

(ii) State ONE possible treatment for hypertension.

[1]

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. [4]

alveoli

contract

dome-shaped

flat

pleural membranes

pressure

relax

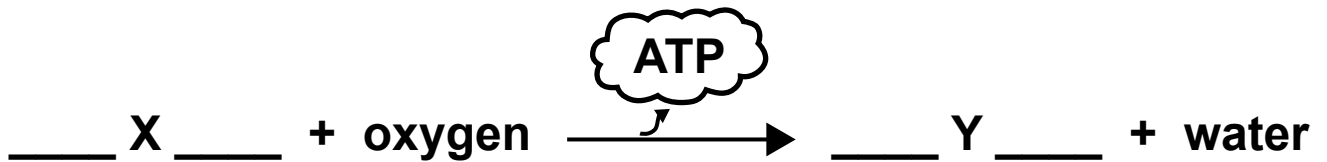
volume

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.

- (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]

- (iii) State the role of ATP.

_____ [1]

- (iv) During intense exercise anaerobic respiration occurs.

State TWO differences between aerobic and anaerobic respiration.

1 _____

2 _____

[2]

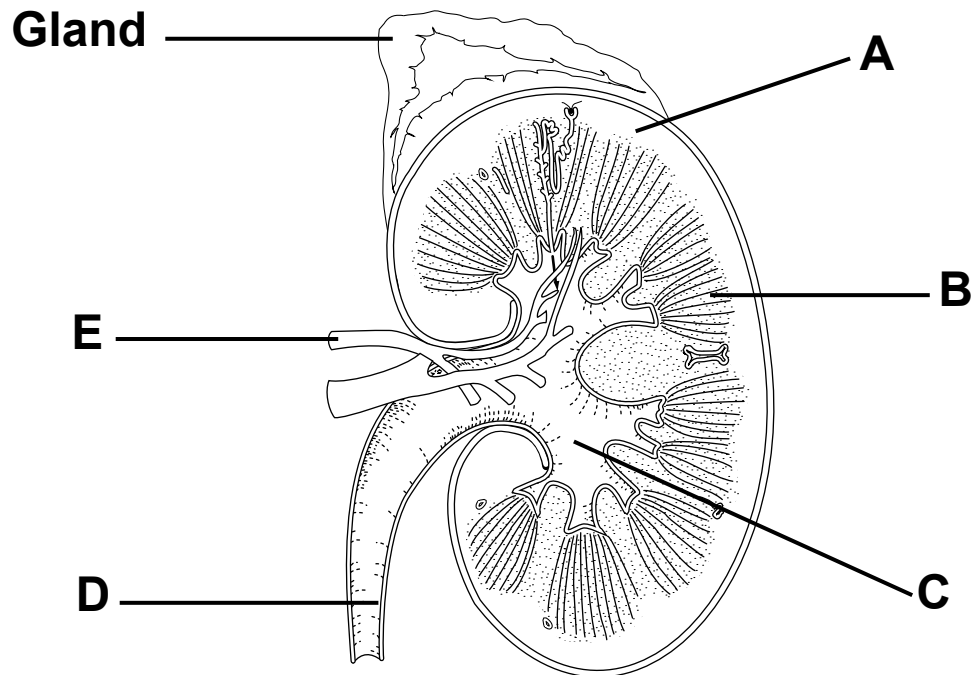
(c)* Hiro was diagnosed with cystic fibrosis when he was three years old.

Explain the causes and effects of cystic fibrosis.

[illegible]

(d) Cystic fibrosis can affect kidney function.

The diagram below shows the structure of the kidney.

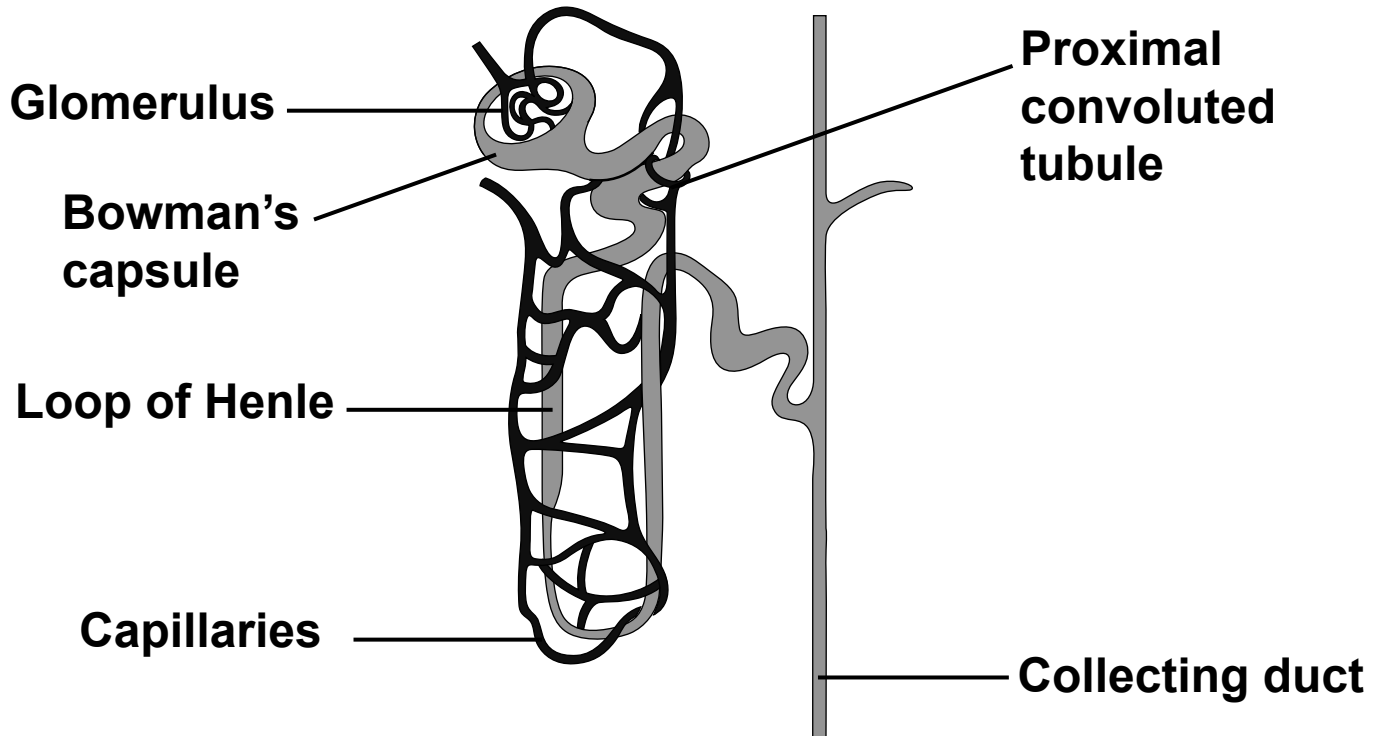


(i) Complete the table below by selecting the correct letter that identifies the structures labelled on the diagram. [4]

| Structure | Letter |
|-----------|--------|
| Calyx | |
| Cortex | |
| Medulla | |
| Ureter | |

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

The structure of a kidney nephron is shown below.



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

1 _____

2 _____

- (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.

[illegible]

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). [4]**

| 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. | |

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

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

[illegible]

- (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]

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional answer space is required, you should use the following lined pages. The question numbers must be clearly shown – for example, 1(c) or 2(a)(i).

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.



Oxford Cambridge and RSA

Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, OCR (Oxford Cambridge and RSA Examinations), The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of Cambridge University Press & Assessment, which is itself a department of the University of Cambridge.

© OCR 2023

Version 3