



Oxford Cambridge and RSA

Tuesday 14 January 2020 – 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

**You can use:
no extra materials are
needed**

Modified Enlarged 18 pt

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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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 (*).

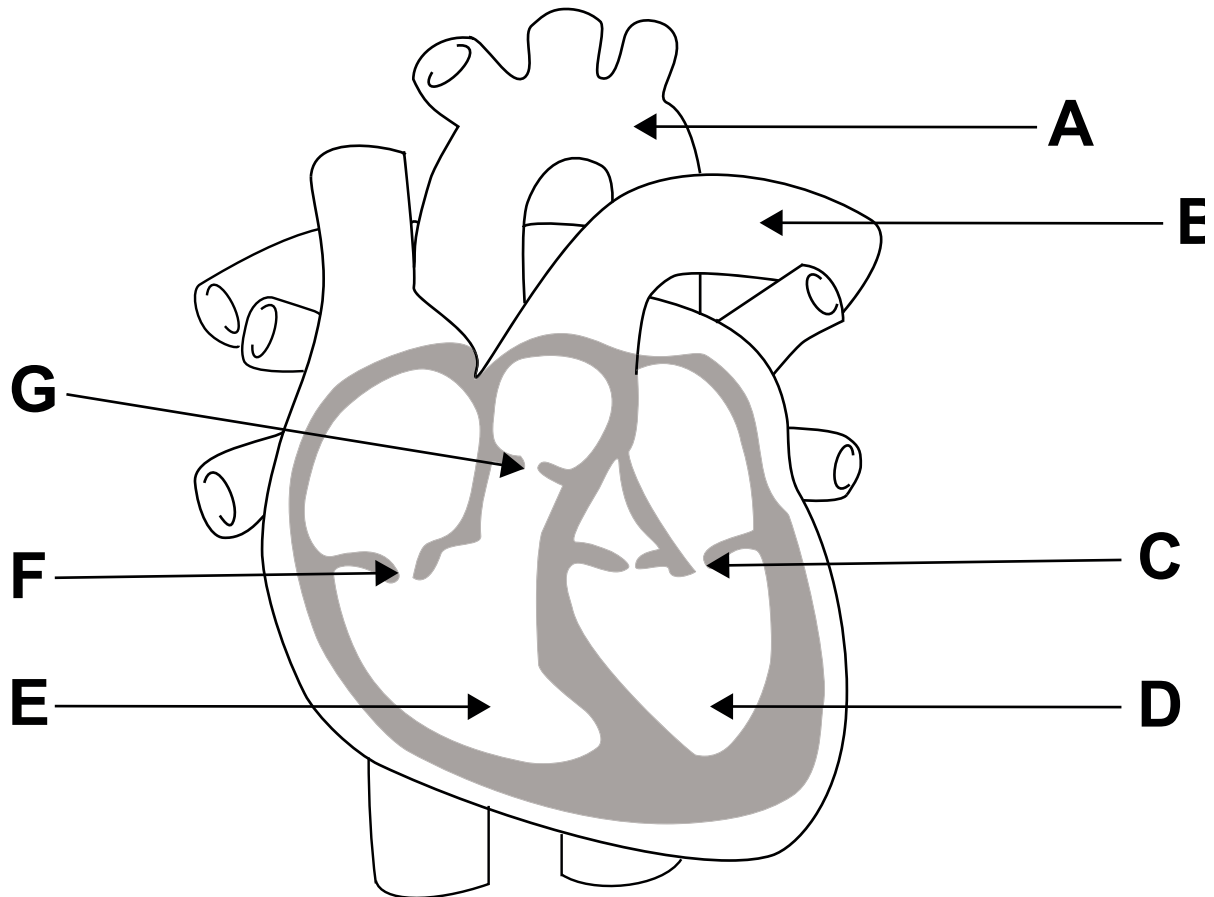
ADVICE

Read each question carefully before you start your answer.

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Answer ALL the questions.

- 1 The diagram below shows the internal structure of the heart.



- (a) Complete the table using letters from the diagram.

The first one has been done for you. [3]

Structure	Letter
bicuspid valve	C
left ventricle	
semilunar valve	
a pulmonary artery	

- (b) Different structures in the heart help to control and regulate the cardiac cycle.**

Answer the following questions about the heart.

Use structures from the list.

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

sinoatrial node (SAN)

atrioventricular node (AVN)

Purkyne Fibres

- (i) Identify which structure is located in the upper wall of the right atrium of the heart.**

[1]

- (ii) Identify which structure is responsible for delaying the transmission of electrical impulses.**

[1]

- (iii) Identify which structure can be described as the 'pacemaker'.**

[1]

- (iv) Identify which structure ensures that impulses are spread rapidly through the ventricles.**

[1]

- (c) The heart is part of the cardiovascular system.
Coronary Heart Disease (CHD) is a common malfunction of the cardiovascular system.**

- (i) Identify ONE other malfunction of the cardiovascular system.**

[1]

- (ii)* Discuss the options available to monitor and treat CHD.**

You should include medical treatments and lifestyle changes in your answer.

[6]

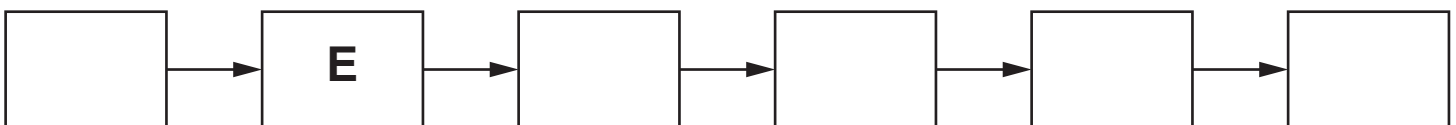
- (d) As we breathe, air travels into and out of the body through the organs of the respiratory system.

Letters A-F represent the organs of the respiratory system.

- A trachea
- B bronchi
- C lungs
- D mouth
- E bronchioles
- F larynx

Write the **LETTERS** in the boxes to give the correct order for the passage of air after **BREATHING OUT** (expiration).

The second one has been done for you. [5]



- (e) **INTERCOSTAL MUSCLES and the DIAPHRAGM** are structures of the respiratory system that have a role in breathing in (inspiration) and out (expiration).

Describe the role of ONE of these structures in BREATHING IN.

[4]

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2 Components of the nervous system work together to form the control and communication centre of the body.

(a) Complete the table using components from the list. [3]

spinal cord

motor neurone

central nervous system

autonomic nervous system

sensory neurone

cerebral cortex

Function	Component
Controls and regulates heart rate	
Allows transmission of information to AND from the brain	
Transmits impulses from the brain to muscles	

(b) Multiple sclerosis (MS) is a malfunction of the nervous system.

(i) Identify ONE symptom of multiple sclerosis.

Tick (✓) ONE box. [1]

High blood pressure

☐

Unexplained weight loss

☐

Problems with balance and co-ordination

☐

Swelling of hands and feet

☐

(c)* Eve has had cystic fibrosis since she was born. It was inherited from her parents due to a faulty gene.

Explain the SYMPTOMS of cystic fibrosis.

[illegible]

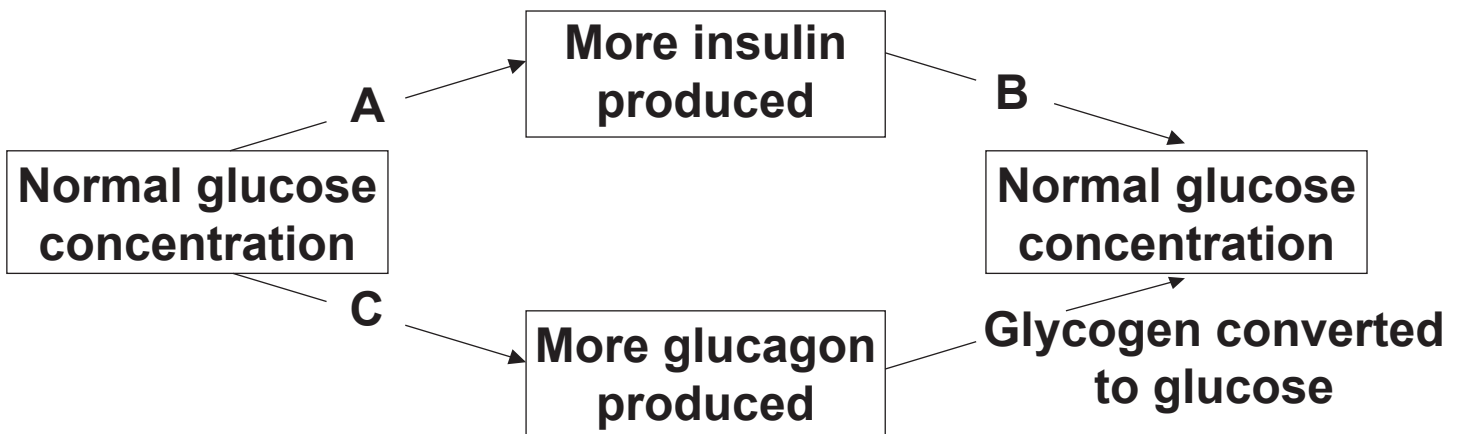
- 3 (a) Control and regulatory systems are responsible for maintaining a constant internal environment in the body.

(i) Name the term that means 'maintaining a constant internal environment'.

[1]

(ii) The concentration of glucose in the blood is maintained by a feedback mechanism.

Identify what is happening with **GLUCOSE** at each of the stages in the diagram.



A

B

C

[3]

(b) The kidney is part of the regulatory system.

Complete the sentences about the structure and function of the kidney.

Use words from the list.

You can use each word once, more than once, or not at all. [5]

osmoregulation

ultrafiltration

detoxification

reabsorption

excretion

urea

ureter

protein

nephron

The kidney has two main functions:

_____ which maintains the concentration of water and ions in the blood, and _____ which removes metabolic waste from the body.

The waste product _____ is formed in the liver and transported in the blood to the kidneys where it forms urine. Urine is carried from each kidney, through a tube called the _____ to the bladder, where it is stored.

The kidneys put substances, such as glucose, back into the blood by the process of _____ .

(c)* Li is five years old and has recently been diagnosed with nephrotic syndrome.

He has the following symptoms:

Frequent need to urinate

Constant infections

Blood clots

Swelling caused by increased fluid in his body tissues

Protein found in his urine

Evaluate TWO possible treatments for these symptoms of nephrotic syndrome. [8]

4 Mia has been diagnosed with osteoarthritis.

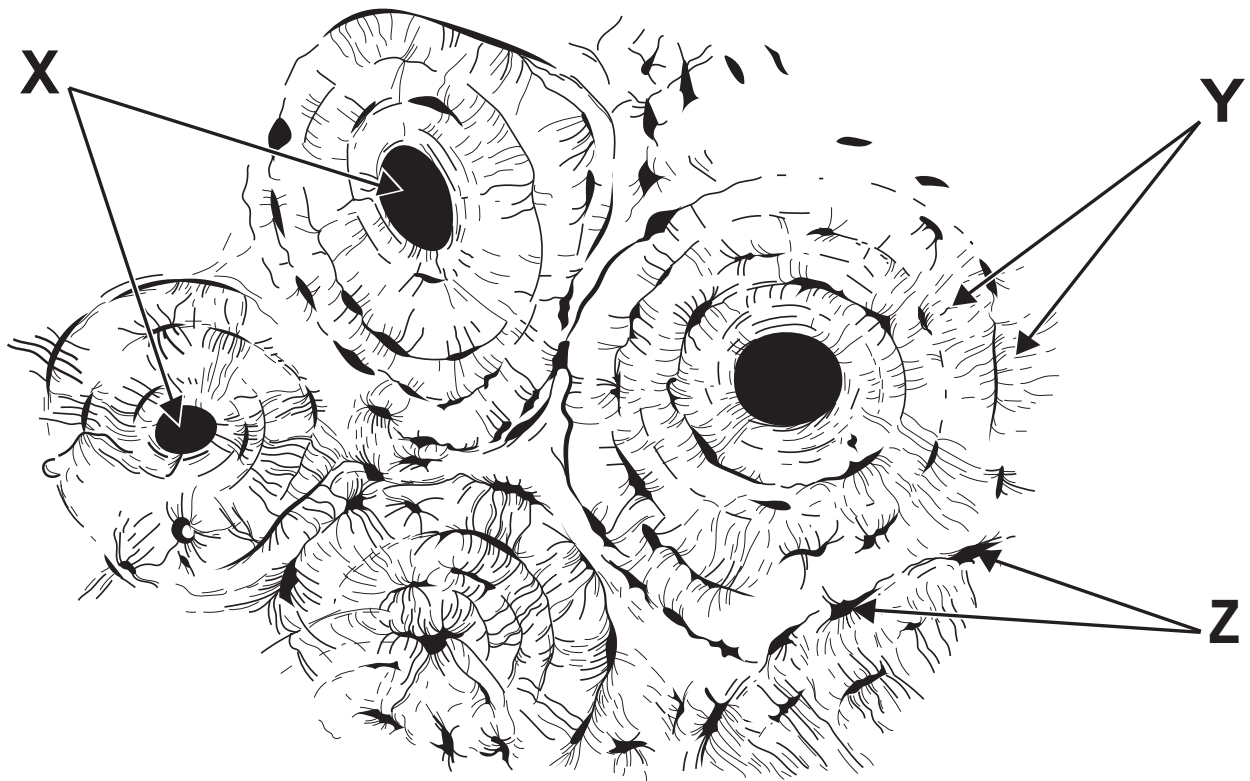
(a)* Explain the possible causes of Mia's osteoarthritis and the effects it is likely to have on her.

[illegible]

- (b) Identify which statements about possible treatments for osteoarthritis are TRUE, and which are FALSE.

Tick (✓) ONE box in each row. [4]

Statement	True	False
Taking vitamin D and calcium supplements.		
Taking steroids to reduce inflammation and swelling.		
Surgery to replace a joint.		
Physiotherapy to strengthen muscles.		



(c) The diagram shows a transverse section of bone.

Complete the table using letters from the diagram. [3]

Structure	Letter
Haversian canals	
Bone cells (osteocytes)	
Canaliculi	

(d) Nutrients are needed for healthy bones.

These nutrients enter the blood from the digestive system by the process of absorption in the small intestine.

Explain how the wall of the small intestine is adapted for the absorption of nutrients.

[4]

(e) Irritable bowel syndrome (IBS) is a malfunction of the digestive system.

(i) Identify TWO symptoms of IBS.

1 _____

2 _____

[2]

(ii) State TWO possible causes of IBS.

1 _____

2 _____

[2]

(f)* Various techniques and treatments are available to monitor and treat malfunctions of the digestive system, including:

Ultrasound

Endoscopy

Lithotripsy

Analyse the various techniques and treatments listed above. [8]

5 The eye is part of the sensory system.

(a) Answer the following questions about the eye.

Use words from the list.

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

cornea

retina

humour

pupil

ciliary

iris

conjunctiva

lens

(i) Identify a type of fluid that fills the eye and helps to keep its shape.

_____ **[1]**

(ii) Identify the inner lining of the eye that contains rod and cone cells.

_____ **[1]**

(iii) Identify a muscle that helps to change the shape of the lens.

_____ **[1]**

(iv) Identify the clear covering at the front of the eye.

_____ **[1]**

(b)* Jack has recently been diagnosed with age-related macular degeneration (AMD).

Describe the possible effects of AMD on Jack's vision, AND also how the AMD could be monitored.

[illegible]

- (c) The brain is responsible for coordinating messages throughout the body.

Complete the sentences about the brain.

Use terms from the list.

You can use each term once, more than once, or not at all. [5]

medulla oblongata

meninges

frontal lobes

thinking

balance

hypothalamus

temperature

corpus callosum

The brain is protected by the skull and tough membranes called _____ .

It is divided into two cerebral hemispheres connected by a bridge called the

_____ .

The outermost layer of the brain is called the cerebral cortex, which is responsible for

_____ and

decision-making.

Important functions, such as breathing and swallowing, are controlled by the _____ which is found at the base of the brain where it meets the spinal cord.

The cerebellum has a role in coordinating muscle activity and in maintaining _____ .

END OF QUESTION PAPER

[illegible]



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