

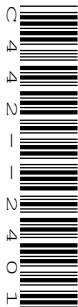


Level 3 Cambridge Technical in Health and Social Care

Time allowed: 2 hours

C442/2401

No extra materials are needed.



Please write clearly in black ink. **Do not write in the barcodes.**

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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- 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.

- 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 (*).
- This document has **20** pages.

- Read each question carefully before you start your answer.

1 The eye is an organ of the sensory system that detects light.

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

cornea humours iris lens
macula retina suspensory ligament tear gland

Statement	Structure
A light-sensitive surface covering the back of the eye where rays of light focus.
A small area at the back of the eye that contains a high concentration of photoreceptors.
Can be adjusted by muscles to control the amount of light that enters the eye.
Can change shape to focus light rays entering the eye.
Watery fluids that keep the eye in shape.

[5]

(b)* Tom has diabetes which has caused cataracts to develop in both eyes.

Discuss the effects of cataracts and the possible impacts on Tom's lifestyle.

[8]

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(c) Diabetes is a malfunction of the control and regulatory system.

Complete the table below by deciding whether each statement about diabetes is True **(T)** or False **(F)**.

Statement	True (T) or False (F)
Diabetes is diagnosed when tests show high concentrations of glucose in the blood.
Insulin injections can be used to treat diabetes.
Obesity is a risk factor for diabetes.
Type 2 diabetes can be caused by damage to cells in the kidney.

[4]

2 The nervous system controls the body by transmitting information to and from the environment.

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

autonomic

central

motor

peripheral

sensory

spinal cord

synapse

The brain is part of the nervous system. It is connected to every area of the body by the which transmits information through a network of nerves. The type of nerve that carries impulses from sense organs to the brain is called a neuron. To travel from one neuron to another within the nervous system the nerve impulses cross a gap known as a

[4]

(b) Charlie is 45 years old and has recently been diagnosed with multiple sclerosis, a malfunction of the control system that affects neurons. The symptoms include numbness and muscle spasms in the legs.

(i) Outline the biological cause of multiple sclerosis.

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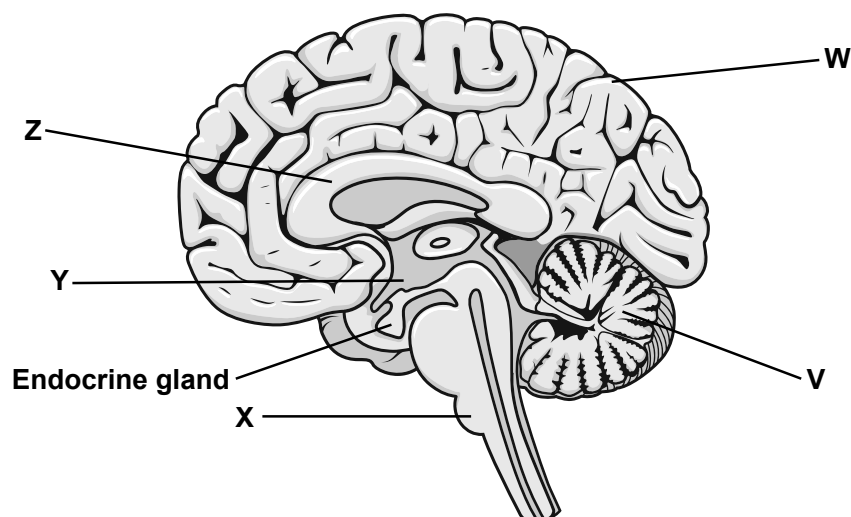
.....

..... **[3]**

(ii)* Explain the impact multiple sclerosis could have on Charlie's lifestyle as the condition progresses.

[8]

(c) The diagram shows the internal structure of the brain.



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

One row has been done for you.

Structure	Letter
Cerebellum
Cerebral cortex
Corpus callosum
Hypothalamus	Y
Medulla (oblongata)

[4]

(ii) Which **one** of the following organs is the endocrine gland (labelled on the diagram)?

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

Organ	Tick (✓) one only
Adrenal	
Pancreas	
Pituitary	
Thyroid	

[1]

(iii)* Describe the role of the following structures in control and coordination of the body:

- cerebellum
- cerebral cortex.

[6]

(d) The brain is protected by the part of the skull called the cranium.

The cranium is formed by bones which are joined by non-movable joints.

Name the type of joint found in the cranium.

..... [1]

- 3** Components of the respiratory system enable the body to take in oxygen and remove carbon dioxide.

- (a)** Choose from the list below to answer the following questions about components of the respiratory system.

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

bronchiole

bronchus

intercostal muscle

larynx

pleural membrane

trachea

- (i)** Which component forms part of a narrow space filled with fluid to prevent friction as the lungs move?

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

- (ii)** Which is an airway that leads **from** the mouth into the thorax where it splits into two branches?

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

- (iii)** Which is a small airway that ends in an alveolus (air sac) within the lung?

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

- (iv)** Which is an organ where the vocal cords are found?

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

- (b)** Alveoli (air sacs) in the lungs are the site of gaseous exchange.

- (i)** Explain **two** ways in which the adaptations of alveoli improve the efficiency of gaseous exchange.

[4]

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(ii)* Damage to alveoli in the lungs results in emphysema, a malfunction of the respiratory system.

Explain the effects of emphysema on the body.

..... [6]

(iii) State **one** possible treatment for emphysema.

..... [1]

- (c) Blood transports oxygen and carbon dioxide to and from body cells.

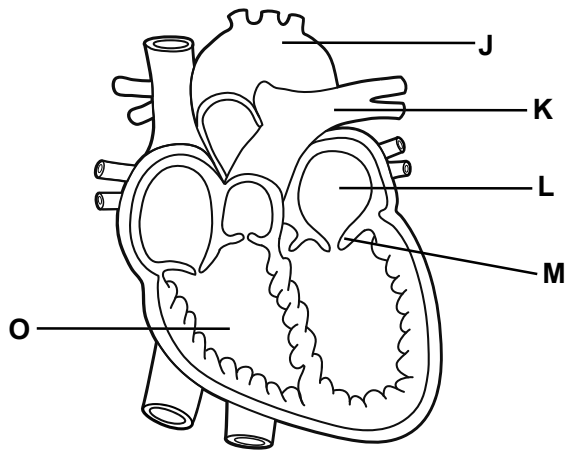
Which **one** of the following blood components transports carbon dioxide from body cells to the lungs?

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

Blood component	Tick (✓) one only
Lymphocytes	
Monocytes	
Plasma	
Platelets	

[1]

- (d) The diagram below shows the internal structure of the heart which is part of the cardiovascular system.



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

One row has been done for you.

Structure	Letter
Aorta
Bicuspid valve
Left atrium
Pulmonary artery	K
Right ventricle

[4]

(ii)* Describe the action of the heart in pumping blood around the body.

Include the terms below in your description:

- double pump
- diastole
- systole.

..... [6]

(e) Beth suffers from angina due to coronary heart disease (CHD). She has regular appointments to monitor her condition and takes appropriate medication.

(i) State **one** appropriate type of medication that can be used to treat Beth's condition.

..... [1]

(ii) Describe **one** way of monitoring Beth's condition.

..... [2]

(iii) State **one** possible risk factor for CHD.

..... [1]

- 4** The liver and the pancreas are organs which have functions as part of the digestive system and also as part of the control and regulatory system.

- (a)** The table below shows some of the functions carried out by the liver or the pancreas.

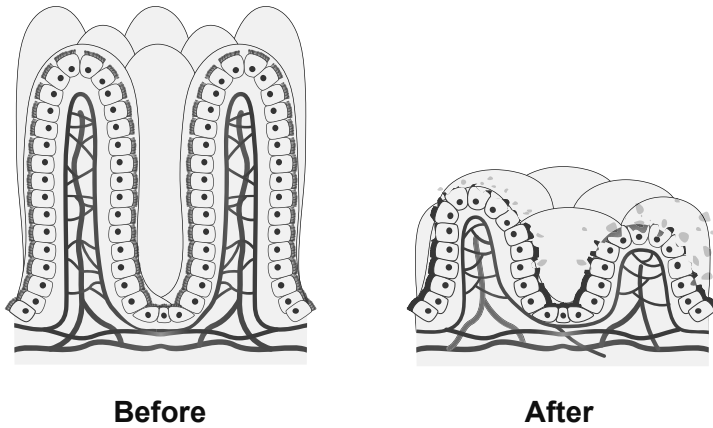
Complete the table to indicate which functions are carried out by the liver and which are carried out by the pancreas.

The last row has been done for you.

Function	Liver OR Pancreas
Assimilating glucose into cells
Deaminating amino acids
Producing bile to emulsify fats
Producing digestive enzymes
Producing hormones to regulate blood glucose	Pancreas

[4]

- (b) The diagrams below show the lining of the small intestine in a patient before and after it has been affected by Coeliac's disease, a malfunction of the digestive system.



- (i) Describe **one** change in the lining of the small intestine that has occurred due to Coeliac's disease.

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..... [2]

- (ii) Explain why changes to the lining of the small intestine can lead to weight loss and malnutrition in Coeliac patients.

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..... [2]

(c)* Azmi has been diagnosed with Coeliac's disease which has impacted on their lifestyle.

Describe the social and dietary impacts of Coeliac's disease on Azmi's lifestyle.

..... [6]

5 Osteoporosis is a malfunction of the musculoskeletal system that affects bone tissue.

(a)

(i)* Explain the causes of osteoporosis and the effects it has on bone tissue.

[6]

[illegible]

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(ii) Possible treatments for osteoporosis include:

- load-bearing exercise
- bone strengthening medication and supplements
- hormone therapy.

Evaluate **one** of these methods used for treating osteoporosis.

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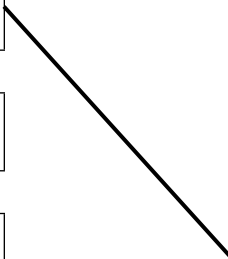
..... [3]

(b) The knee joint is a type of synovial joint.

Match each of the components of a synovial joint with its function by drawing a line between the boxes.

One line has been completed for you.

Component	Function
cartilage	Maintains joint stability
synovial capsule	Attaches muscles to bone
synovial fluid	Reduces friction
tendon	Lubricates the joint



[3]

END OF QUESTION PAPER



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