

Tuesday 15 January 2019 – Afternoon

**Level 3 Cambridge Technical in Health and
Social Care**

05831/05832/05833/05871

**Unit 4: Anatomy and physiology for health
and social care**

Duration: 2 hours

Plus your additional time allowance.

**You must have:
no materials required**

Modified Enlarged 36 pt

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| First Name | |
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| Last Name | |
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| Centre Number | | | | | |
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| Candidate Number | | | | |
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| Date of Birth | D | D | M | M | Y | Y | Y | Y |
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INSTRUCTIONS

Use black ink.

Complete the boxes on page 2 with your name, centre number, candidate number and date of birth.

Answer ALL the questions.

Write your answer to each question in the space provided.

If additional answer space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.

INFORMATION

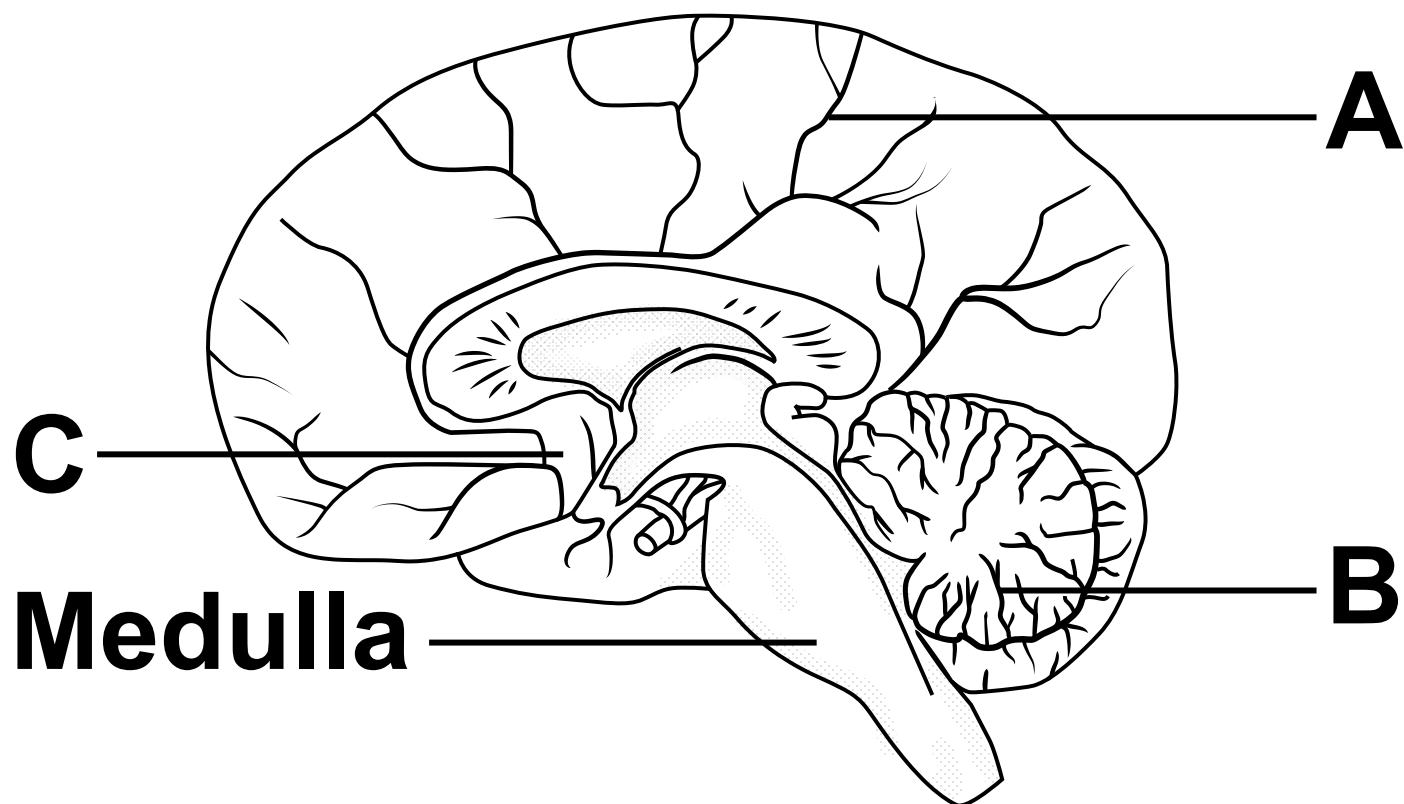
The total mark for this paper is 100.

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

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

Answer ALL the questions.

1 A diagram of the brain is shown below.



(a) (i) Identify the parts of the brain labelled A, B and C in the diagram.

Choose from the following:

Cerebellum

Cerebral cortex

Corpus callosum

Hypothalamus

A _____
B _____
C _____ **[3]**

5

(ii) Which of the following statements about the function of the medulla is correct?

Tick (✓) ONE box. [1]

It controls autonomic functions such as heart rate.

☐

It controls balance and posture.

☐

It coordinates movement of muscles.

☐

It coordinates speech and language.

☐

(b) Simone, aged 45, has been diagnosed with multiple sclerosis (MS). MS is an auto-immune disease which damages neurones in the Central Nervous System.

(i) Which part of the neurone is affected by MS?

[1]

(ii)* Identify possible treatments Simone could receive from health care professionals and explain how they help to manage the symptoms of MS. [8]

7

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 are no margins, text, or other markings on the paper.

(c) The diagram opposite shows the gap between two neurones.

Describe FOUR stages of how a nerve impulse is transmitted across the gap between two neurones.

Use the information in the diagram in your answer.

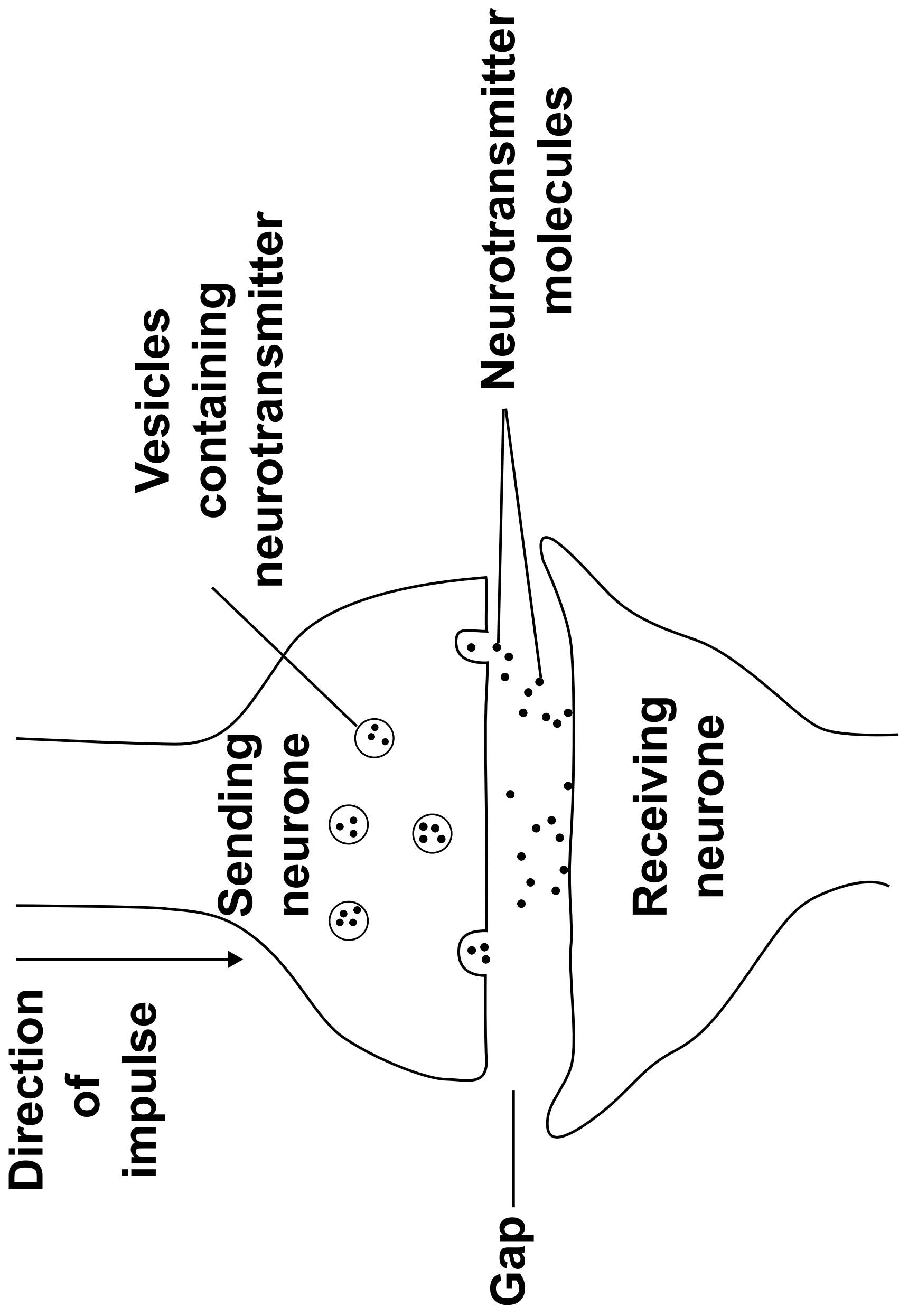
1 _____

2 _____

3 _____

4 _____

[4]



2 (a) Complete this description about the composition and functions of blood.

Use words from the list below: [6]

blood clotting

cytoplasm

erythrocytes

extensions

fragments

lymphocytes

neutrophils

plasma

temperature regulation

The main component of blood is

called _____.

It consists mostly of water and it helps

in the _____

of the body. Red blood cells are also

known as _____

and are responsible for transporting

oxygen and carbon dioxide.

White blood cells help to prevent infection, for example, _____ which engulf microorganisms.

Platelets can be described as cell _____ and are responsible for _____.

(b) Kevin has been suffering from hypertension.

(i) What does the term 'hypertension' mean?

[1]

(ii)* Evaluate the possible lifestyle changes Kevin could make to treat his hypertension. [6]

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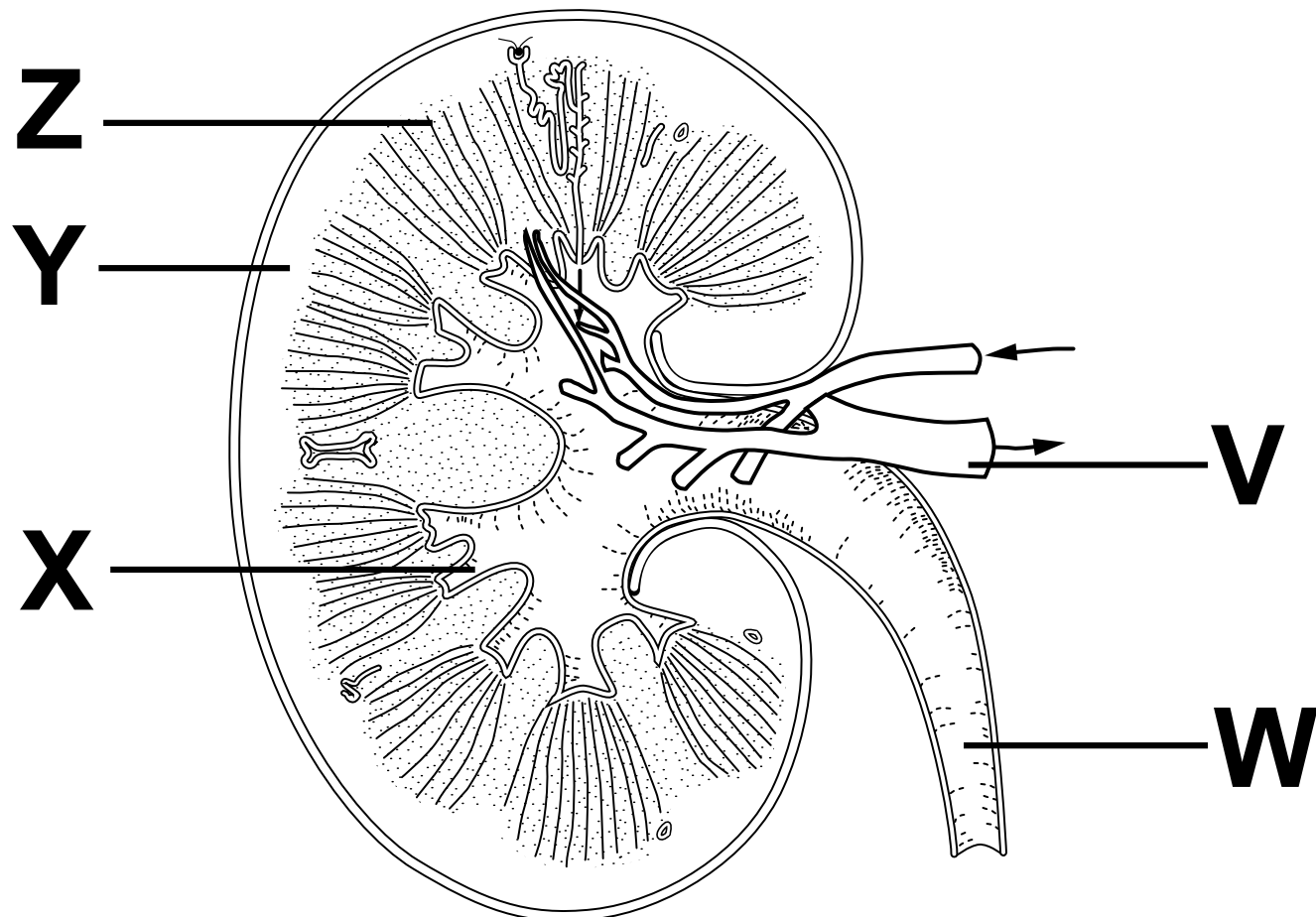
(c) Hypertension can lead to malfunctioning of the kidneys by damaging nephrons.

Name ONE process that occurs in a kidney nephron and the part of the nephron involved in this process.

Process _____

Part of nephron involved _____

(d) The diagram shows a kidney.



Select the correct letter to identify the labelled parts shown on the diagram.

The third one has been done for you.

[3]

| Structure within the kidney | Letter |
|------------------------------------|---------------|
| Cortex | |
| Medulla | |
| Renal vein | V |
| Ureter | |

(e) The liver produces urea which must then be removed by the kidneys.

(i) Which ONE of the following processes in the liver produces urea?

Tick (✓) ONE box. [1]

Assimilation ☐

Deamination ☐

Detoxification ☐

Respiration ☐

(ii)* Candice has just found out that she has cirrhosis of the liver.

Discuss the possible causes for cirrhosis and the effects cirrhosis will have on her liver function. [6]

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3 (a) The knee is an example of a synovial joint.

(i) Complete the table by matching the components of a synovial joint to their function.

Choose from the list of components below: [3]

Cartilage

Ligament

Tendon

Synovial fluid

Synovial membrane

| Function | Component |
|---|------------------|
| Attaches bone to bone | |
| Lubricates and nourishes the joint | |
| Reduces friction during movement | |

(ii) Explain how the action of muscles around synovial joints result in movement.

[4]

(b)* After years of playing rugby, Harry has developed severe arthritis in his knees.

Explain the treatment options that are available to Harry for his arthritis.

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4 The digestive system consists of specialised organs that work together to break down food.

(a) Describe what happens to food in the buccal cavity up to the time it enters the stomach.

[4]

(b) Choose from the list of organs below to answer the following questions.

You can use an organ once, more than once or not at all.

| | |
|---------------------|------------------------|
| Gall bladder | Large intestine |
| Liver | Small intestine |
| Pancreas | Stomach |

(i) Name ONE organ that secretes hydrochloric acid.

[1]

(ii) Name TWO organs that produce enzymes.

[2]

(iii) Name ONE organ that stores bile.

[1]

(iv) Name ONE organ where the products of digestion enter the blood.

[1]

(c)* Karim has Coeliac disease. Explain why he has been advised not to eat foods containing gluten as part of his dietary support plan.

(d) Apart from its role in digestion, the pancreas also functions as an endocrine organ and produces hormones.

(i) Explain what is meant by the term 'hormone'.

[2]

(ii) The table below has statements about the pancreas and its role as an endocrine organ.

Complete the table by deciding whether each statement is TRUE or FALSE. [4]

| Statement | True or False |
|--|----------------------|
| Diabetes is caused when the pancreas produces too much insulin. | |
| The hormone glucagon is produced by the pancreas. | |
| The pancreas produces the hormone insulin. | |
| Type II diabetes is caused when cells in the pancreas are destroyed during childhood. | |

(e)* Uncontrolled diabetes can damage organs in the body, such as the eye, leading to a malfunction.

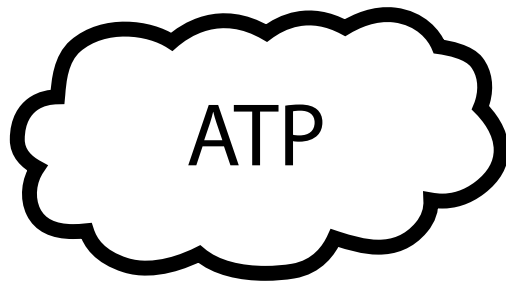
(i) Identify a malfunction of the eye or ear.

[1]

(ii) Explain how the malfunction in 4(e)(i) may impact on an individual's lifestyle.

[7]

- 5 Aerobic and anaerobic respiration are types of cellular respiration that take place inside cells to provide energy. This is the reaction that takes place during AEROBIC respiration.**



**glucose + oxygen → carbon + water
dioxide**

(a) Compare this reaction with the one that takes place during anaerobic respiration.

[3]

(b) Write the name of ONE respiratory malfunction being described by each statement in the table.

Choose from:

Asthma

Cystic fibrosis

Emphysema

You can use each malfunction once, more than once or not at all. [4]

| | |
|--|--|
| Can be triggered by cigarette smoke or dust | |
| Caused by chemicals in cigarette smoke | |
| Caused by a defective gene | |
| Mucus is produced thicker than normal | |

(c)* Micky is a 13 year old boy with cystic fibrosis.

Analyse the treatment and care Micky needs to support him in managing his condition.

[illegible]

(d) Complete the description about the structure of the middle ear.

Choose from the following: [4]

air cochlea

ear drum Eustachian tube

fluid incus

round window

The middle ear is a chamber

filled with _____

between the _____

and the inner ear.

The _____

connects the middle ear to the throat

and ensures that the pressure of the

middle ear is equal to the pressure

outside the ear.

The _____ is one of three small bones that transmit vibrations across the middle ear to the oval window.

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown – for example 1(a) (i) or 4(a).

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