



General Certificate of Secondary Education  
2025

Centre Number

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Candidate Number

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# Biology

Unit 2

Foundation Tier



[GBL21]

\*GBL21\*

**MONDAY 9 JUNE, MORNING**

## TIME

1 hour 30 minutes.

## INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

**You must answer the questions in the spaces provided.**

**Do not write outside the boxed area on each page or on blank pages.**

Complete questions in black ink and use a dark HB pencil for drawings and graphs.

**Do not write with a gel pen.**

Answer **all eleven** questions.

## INFORMATION FOR CANDIDATES

The total mark for this paper is 90.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You may use a scientific calculator.

Quality of written communication will be assessed in Question **9(b)(iii)**.



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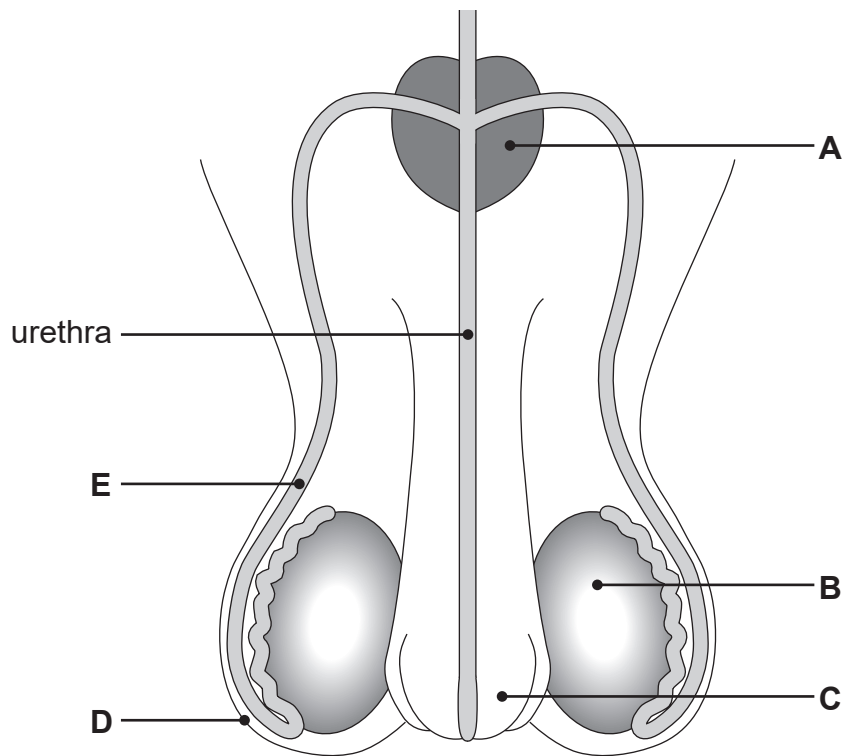
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\*32GBL2102\*



1 The diagram shows some parts of the male reproductive system.



Look at the diagram.

Complete the table to give the name or function of parts labelled A to E.

| Part | Name           | Function                      |
|------|----------------|-------------------------------|
| A    | prostate gland |                               |
| B    |                | produces sperm                |
| C    | penis          |                               |
| D    |                | holds and protects the testes |
| E    | sperm tube     |                               |

[5]

[Turn over



- 2 (a) The smoking habits of people from Northern Ireland were surveyed in 2011 and 2020.

The table shows the percentage of each age group who smoked cigarettes.

| Age group /years | Percentage of people who smoked cigarettes |      |
|------------------|--|------|
|                  | 2011                                       | 2020 |
| 16–24            | 26   | 17   |
| 25–34            | 34   | 22   |
| 35–44            | 24   | 19   |
| 45–54            | 26   | 19   |
| 55–64            | 23   | 18   |
| 65–74            | 15   | 13   |
| 75+              | 7  | 9    |

Look at the table.

- (i) Which age group had the highest percentage of people who smoked cigarettes in 2011 **and** 2020?

\_\_\_\_\_ years

[1]



The table shows that the percentage of people who smoked cigarettes decreased between 2011 and 2020.

(ii) Which age group **did not** follow this trend?

Use **data** to support your answer.

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[3]

(b) Cigarette smoke contains chemicals which have harmful effects in the body.

Describe the harmful effect of

- nicotine.

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- carbon monoxide.

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- tar.

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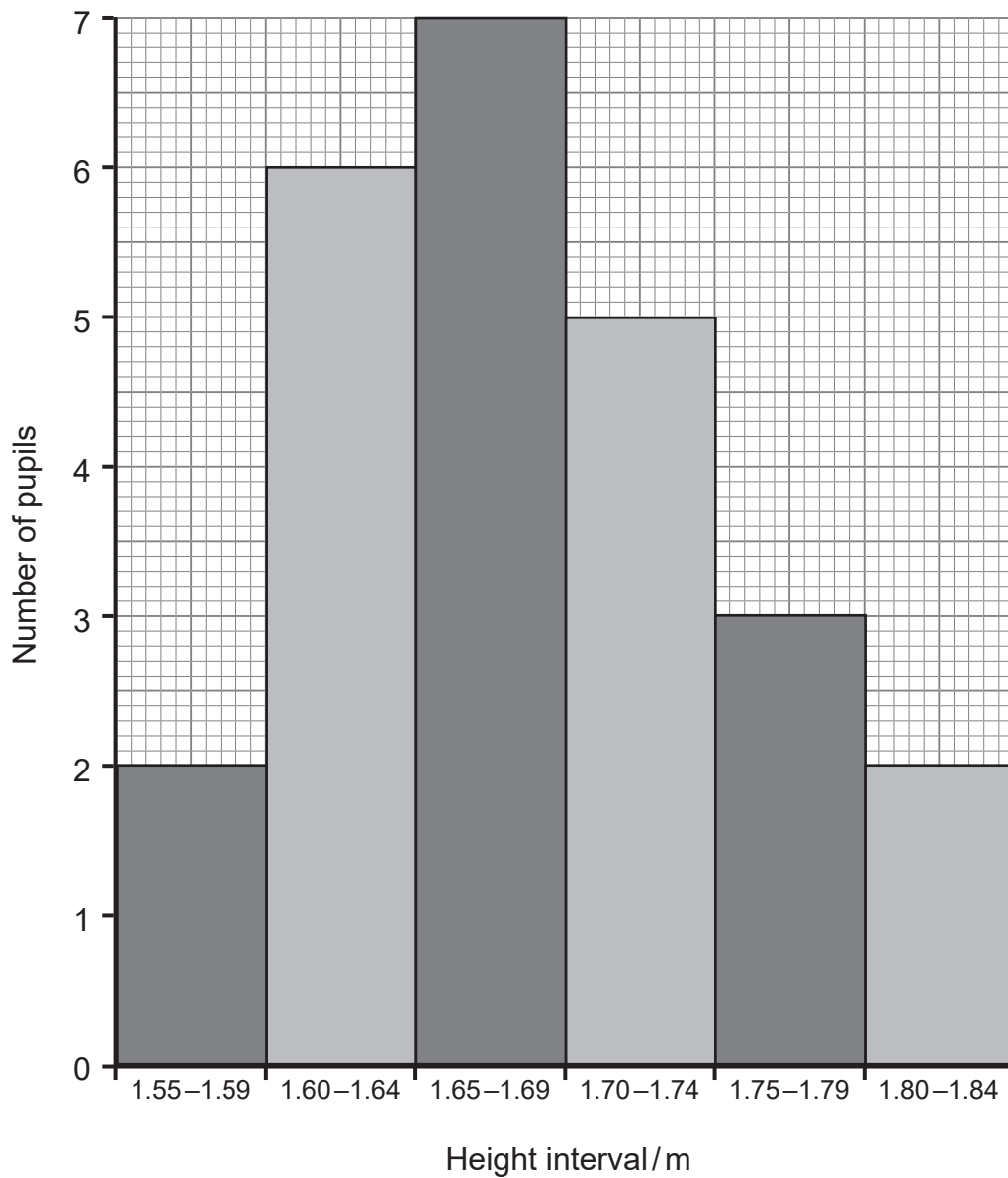
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[3]

[Turn over



3 (a) The graph shows the variation in height of a group of pupils.



Look at the graph.

(i) Name this type of graph.

\_\_\_\_\_

[1]



(ii) Give the most common height interval in this group of pupils.

\_\_\_\_\_ – \_\_\_\_\_ m [1]

(iii) How many pupils have a height between 1.55 m and 1.74 m?

Show your working.

\_\_\_\_\_ pupils [2]

The table gives information about other characteristics of five pupils in this group.

| Pupil | Characteristic |           |                |                     |
|-------|----------------|-----------|----------------|---------------------|
|       | Hand dominance | Mass / kg | Tongue rolling | Length of foot / mm |
| A     | right-handed   | 59        | no             | 259                 |
| B     | left-handed    | 61        | yes            | 267                 |
| C     | right-handed   | 62        | yes            | 241                 |
| D     | right-handed   | 54        | no             | 251                 |
| E     | left-handed    | 56        | no             | 230                 |

Look at the table.

(b) Which **two** characteristics in the table show **continuous** variation?

1. \_\_\_\_\_

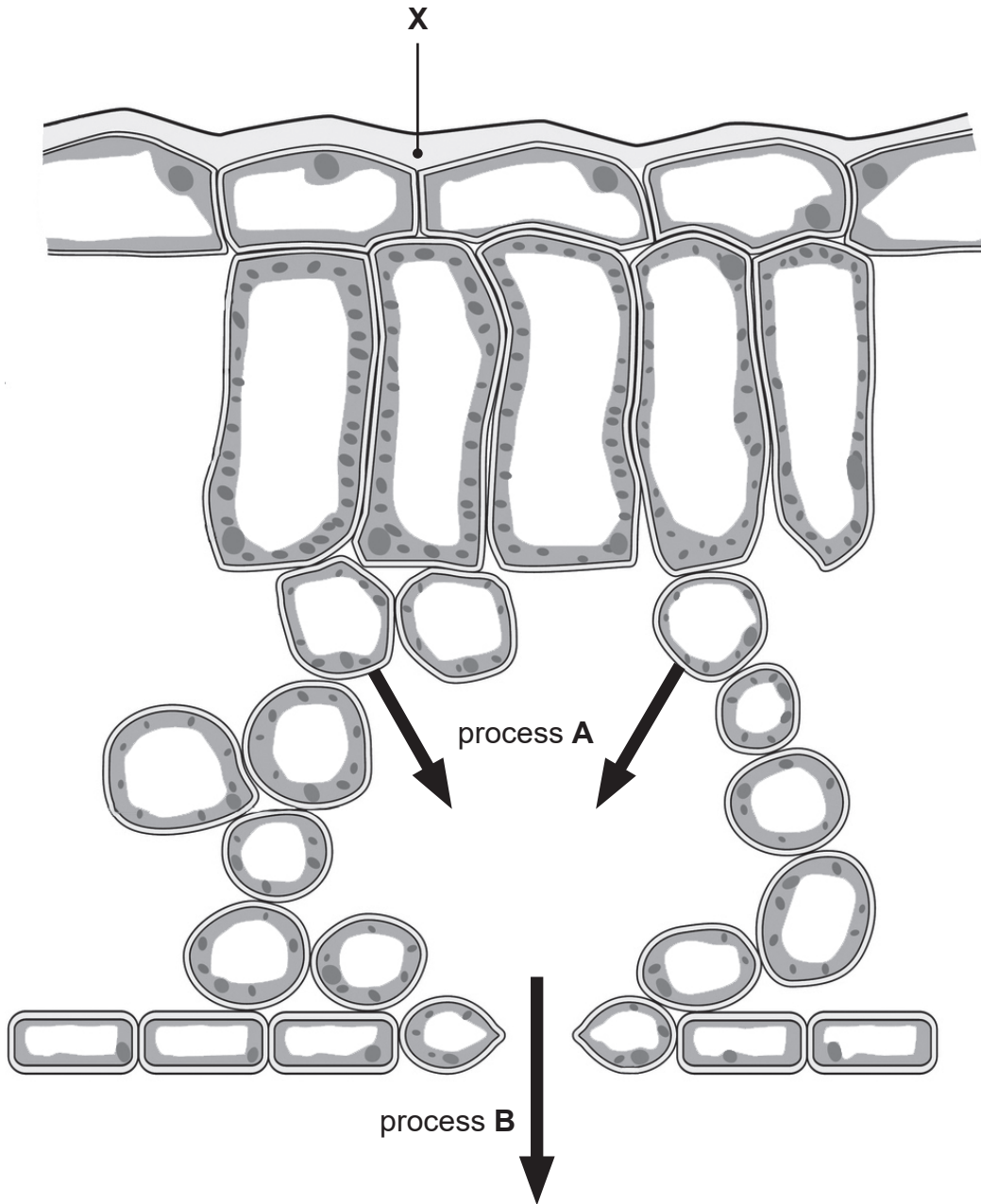
2. \_\_\_\_\_

[2]

[Turn over



4 The diagram shows a cross section through a leaf.



Look at the diagram.

The arrows show two different processes involved in water loss by transpiration.

(a) Name the **processes** shown by arrows **A** and **B**.

A \_\_\_\_\_

B \_\_\_\_\_

[2]

(b) The layer of the leaf, labelled **X**, adapts the leaf to reduce water loss.

Name layer **X** and describe how it adapts the leaf to reduce water loss.

X \_\_\_\_\_

Adaptation \_\_\_\_\_

\_\_\_\_\_ [2]

(c) Temperature is one environmental factor which affects water loss from a leaf.

(i) Suggest how this leaf could reduce water loss as the temperature increases on a hot day.

\_\_\_\_\_

\_\_\_\_\_ [1]

(ii) Give **two other** uses of water in a plant.

1. \_\_\_\_\_

2. \_\_\_\_\_

[2]

[Turn over



- 5 (a) The table shows the percentage of women who became pregnant when using different methods of contraception correctly.

| Method of contraception | Percentage of women who became pregnant |
|-------------------------|---|
| contraceptive pill      | 0.4                                     |
| progesterone implant    | 0.05                                    |
| male condom             | 2.0                                     |
| female condom           | 5.0                                     |

Look at the table.

- (i) Which is the least effective method of contraception?

\_\_\_\_\_

[1]

- (ii) Calculate the number of pregnancies which may occur if 100,000 couples use a male condom correctly.

Show your working.

\_\_\_\_\_ [2]



(b) (i) Describe how the contraceptive pill prevents pregnancy.

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[2]

Sterilisation is another method of contraception.

(ii) Explain how male sterilisation prevents pregnancy.

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[1]

(iii) Give **one** disadvantage of using sterilisation as a method of contraception.

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[1]

[Turn over



6 The table shows some blood components and their functions.

(a) Complete the table.

| Blood component | Function                   |
|-----------------|----------------------------|
| plasma          | transports food molecules  |
|                 | engulf and digest bacteria |
| lymphocytes     |                            |

[2]



The photograph shows red blood cells.



Look at the photograph.

(b) Use evidence from the photograph and your knowledge to describe and explain **two** ways red blood cells are adapted to transport oxygen.

1. Description \_\_\_\_\_

Explanation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Description \_\_\_\_\_

Explanation \_\_\_\_\_

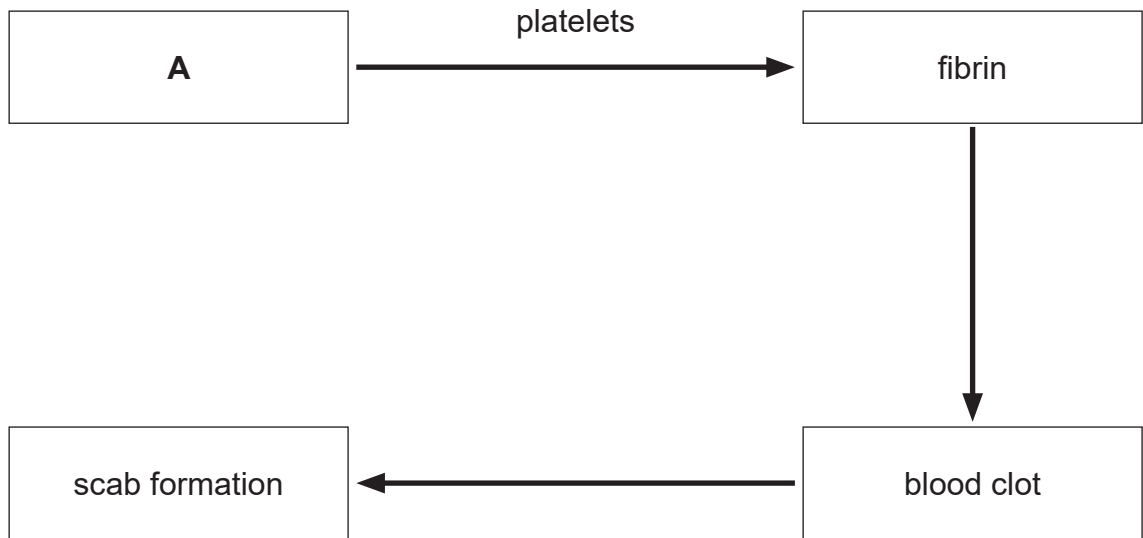
\_\_\_\_\_

\_\_\_\_\_ [4]

[Turn over



(c) The diagram shows how blood clotting occurs.



Look at the diagram.

(i) Name blood protein **A**.

\_\_\_\_\_

[1]

Fibrin is a protein which forms a mesh of fibres at a wound.

(ii) Explain how this mesh of fibres results in the formation of a blood clot.

\_\_\_\_\_  
\_\_\_\_\_

[1]

(iii) Suggest **two** reasons why blood clotting is necessary.

1. \_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_

[2]





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**(Questions continue overleaf)**

**[Turn over**



7 The photograph shows a person who can roll their tongue.



Tongue rolling is determined by a dominant allele.

(a) What is an allele?

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[1]



(b) The Punnett square shows a cross between two parents.

The mother is **heterozygous** for tongue rolling.

The father **cannot** tongue roll.

(i) Complete the Punnett square.

Let **A** represent the dominant allele for tongue rolling.

Let **a** represent the recessive allele for not being able to tongue roll.

|        |          |        |  |
|--------|----------|--------|--|
|        |          | Father |  |
|        |          |        |  |
|        |          |        |  |
| Mother |          |        |  |
|        | <b>a</b> |        |  |

[3]

(ii) What is the percentage probability of these parents having a child who can roll their tongue?

\_\_\_\_\_ % [1]

(iii) Give the genotype of a homozygous dominant child.

\_\_\_\_\_

[1]

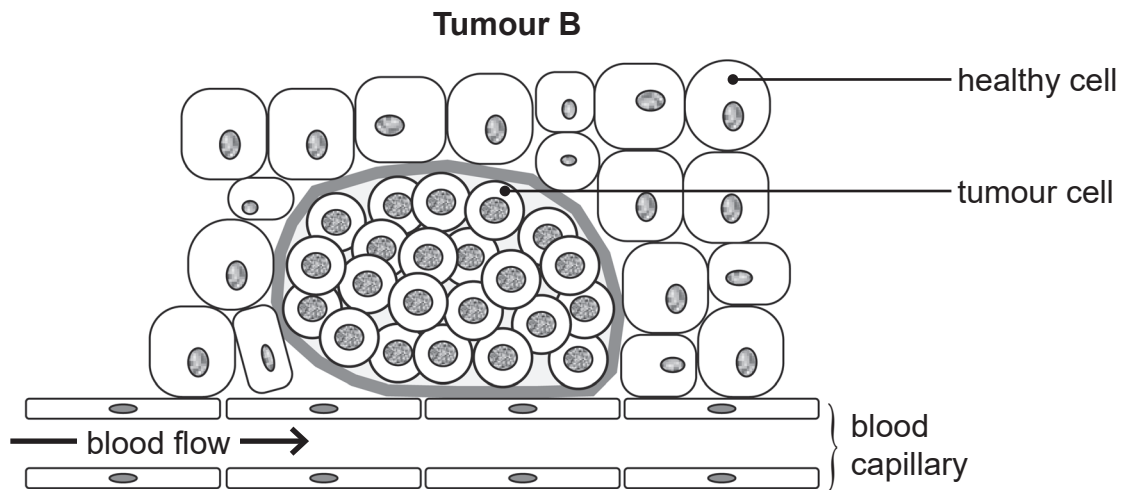
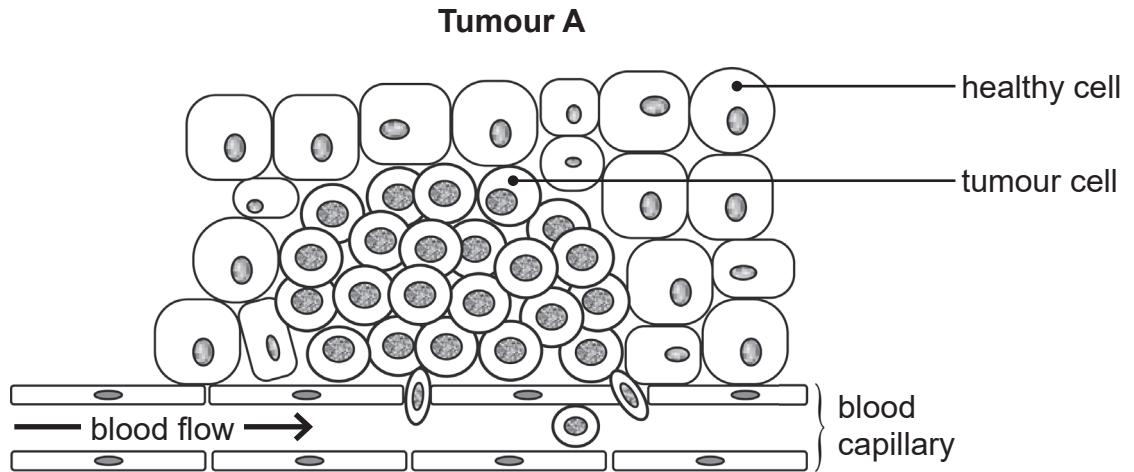
[Turn over



8 (a) Uncontrolled cell division leads to the formation of tumours.

There are two types of tumour.

The diagrams show the two types of tumour.



Look at the diagrams.

- (i) Use evidence from the diagrams to give **two** reasons why tumour **B** is described as benign.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_ [2]

- (ii) What term is used to describe tumour **A**?

\_\_\_\_\_

[1]



- (b) The table shows the percentage of patients who received different types of treatment for cervical cancer over a period of two years.

| Type of treatment | Percentage of patients |
|-------------------|------------------------|
| surgery           | 54                     |
| chemotherapy      | 32                     |
| radiotherapy      | 40                     |

Look at the table.

The total number of cervical cancer patients over this two-year period was 3150.

- (i) Calculate the number of patients who were treated with chemotherapy.

Show your working.

\_\_\_\_\_ patients [3]

Some patients received more than one type of treatment for cervical cancer.

- (ii) Give **evidence** from the table to support this statement.

\_\_\_\_\_  
\_\_\_\_\_ [1]



(c) Explain why screening programmes for cervical cancer are important.

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[3]

[Turn over



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9 (a) Cells divide by mitosis and meiosis.

(i) Give **two** functions of mitosis in living organisms.

1. \_\_\_\_\_

2. \_\_\_\_\_ [2]

(ii) Name the type of cells produced by meiosis.

\_\_\_\_\_ [1]

(iii) In which organ does meiosis take place in a

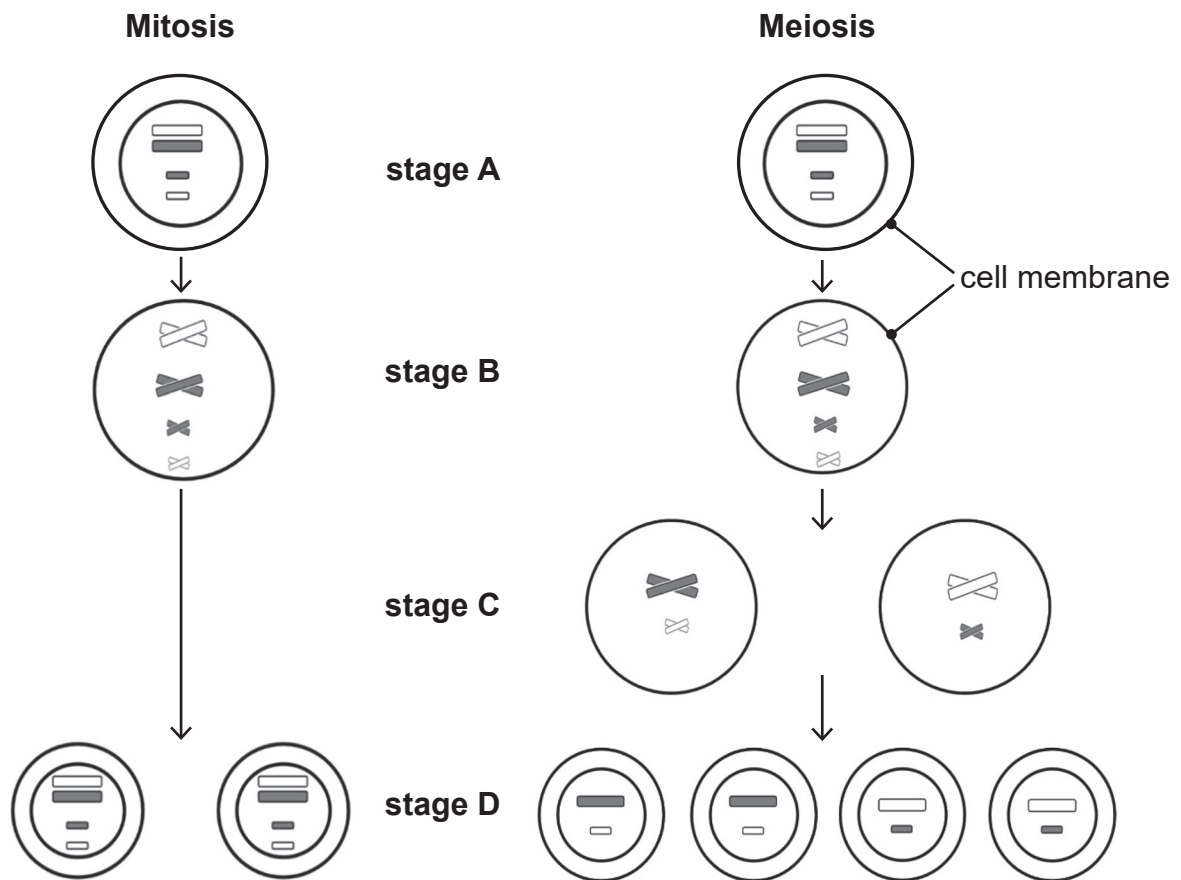
female? \_\_\_\_\_

male? \_\_\_\_\_ [2]



(b) The diagram shows cells dividing by mitosis and meiosis.

Each cell contains two pairs of chromosomes in the nucleus before dividing.



(i) What is the diploid number of chromosomes in each cell before dividing?

\_\_\_\_\_

[1]

(ii) Which stage, **A**, **B**, **C** or **D**, shows

parent cells? \_\_\_\_\_

daughter cells? \_\_\_\_\_

[2]



- (iii) Use information from the diagram and your knowledge to give **two** changes which have occurred between **stage A** and **stage B**, and describe **three** differences between mitosis and meiosis.

**In this question you will be assessed on your written communication skills, including the use of specialist scientific terms.**

Changes that occurred between **stage A** and **stage B**.

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Differences between mitosis and meiosis.

1. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. \_\_\_\_\_

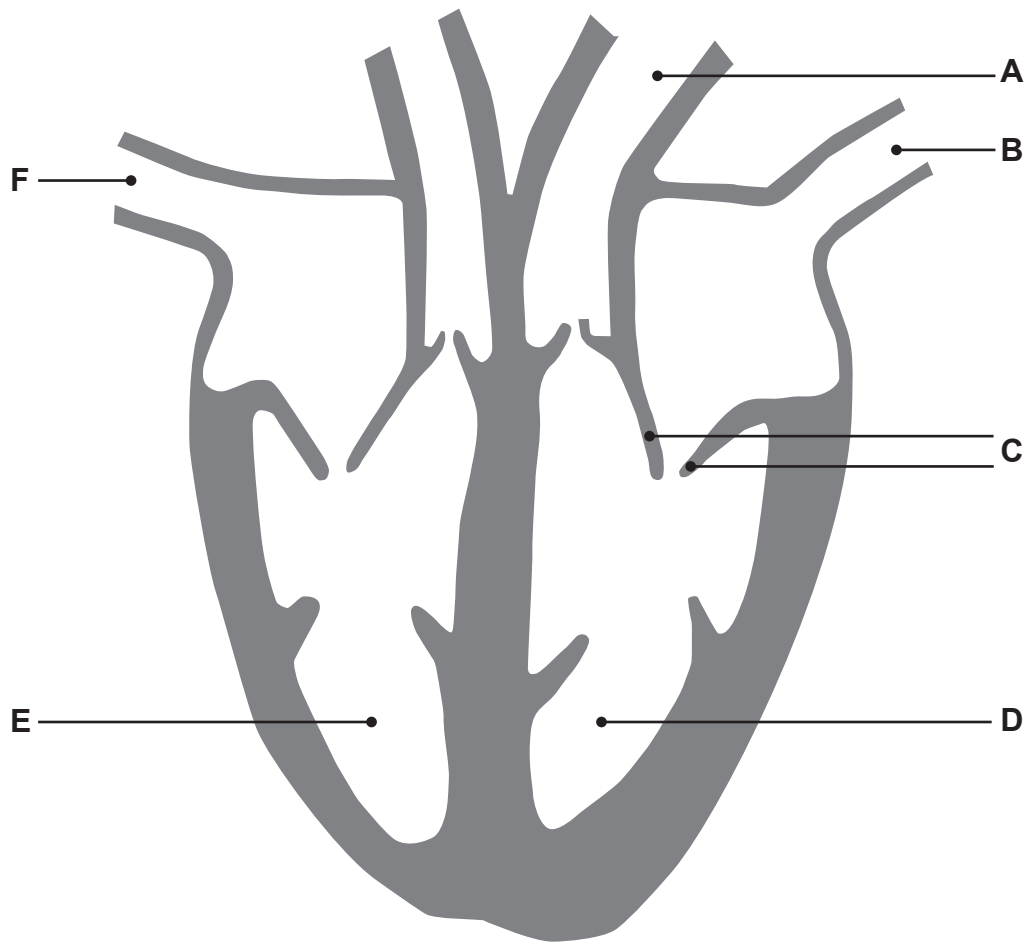
\_\_\_\_\_

\_\_\_\_\_ [6]

[Turn over



10 The diagram shows a section through the heart.



(a) Name blood vessels **A**, **B** and **F**.

**A** \_\_\_\_\_

**B** \_\_\_\_\_

**F** \_\_\_\_\_

[3]



(b) Name the **type** of structure labelled **C**.

Give the function of structure **C**.

Type of structure \_\_\_\_\_

Function \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [3]

(c) (i) Describe how the pressure in chamber **D** differs from the pressure in chamber **E**.

\_\_\_\_\_ [1]

(ii) Give **two** differences between the composition of blood in heart chambers **D** and **E**.

1. \_\_\_\_\_

2. \_\_\_\_\_ [2]

[Turn over



11 Chlamydia is an example of a communicable disease caused by a microorganism.

(a) Give the **type** of microorganism which causes chlamydia.

\_\_\_\_\_

[1]

(b) Describe how chlamydia can spread from one person to another.

\_\_\_\_\_  
\_\_\_\_\_

[1]

(c) The table shows the number of people diagnosed with chlamydia in Northern Ireland between 2017 and 2020.

| Year | Number of people diagnosed with chlamydia |
|------|---|
| 2017 | 1684                                      |
| 2018 | 1787                                      |
| 2019 | 1863                                      |
| 2020 | 775                                       |



- (i) Calculate the percentage increase in the number of people diagnosed with chlamydia between **2017** and **2018**.

Give your answer to **one decimal place**.

Show your working.

\_\_\_\_\_ % [4]

- (ii) Suggest **two** possible reasons why the number of people diagnosed with chlamydia decreased from 2019 to 2020.

1. \_\_\_\_\_

\_\_\_\_\_

2. \_\_\_\_\_

\_\_\_\_\_ [2]

- (d) Give the type of treatment used for chlamydia.

\_\_\_\_\_

[1]

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| Question Number         | Marks |
| 1                       |       |
| 2                       |       |
| 3                       |       |
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| <b>Total Marks</b> |  |
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Examiner Number

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