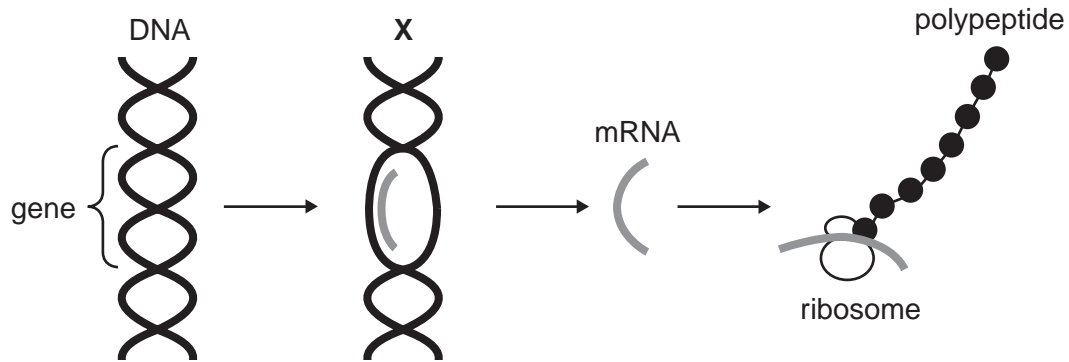




Answer **all** the questions.

- 1 The body makes over 100 000 different proteins from polypeptides. DNA contains the information needed to make the polypeptides that form proteins.

Fig. 1.1 shows how the genetic information in DNA is used to make a polypeptide.



**Fig. 1.1**

- (a) Letters **A** to **E** below show some of the steps in the synthesis of a polypeptide.

Use the information in Fig. 1.1 to put steps **A** to **E** in the correct order.

The first one has been done for you.

- A** The mRNA moves into the cytoplasm.
- B** The ribosome and mRNA cause the amino acids to join together in the correct order to form a polypeptide.
- C** mRNA is made as a copy of the genetic code for a polypeptide.
- D** The mRNA attaches to a ribosome.
- E** Part of the DNA molecule unwinds and unzips.

**E**      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_

(b) (i) Name the stage of protein synthesis shown by **X** in Fig. 1.1.

..... [1]

(ii) Name the part of the cell where **X** takes place.

..... [1]

(iii) Name the bonds that are broken when the DNA molecule unwinds and unzips.

..... [1]

(c) DNA contains the genetic code.

Explain what is meant by the *genetic code*.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [4]

[Total: 10]



1 .....

2 ..... [2]

**(c)** In this question, one mark is available for the quality of spelling, punctuation and grammar.

Discuss the role of specialists in **health promotion** in reducing the incidence of lung cancer in a population.

[6]

Quality of Written Communication [1]

[Total: 13]

**[Turn over**



- (ii) The results in Table 3.1 suggest that babies born to mothers who smoke are more likely to have lower birth weights.

State **one** component of tobacco smoke **and** explain how it would lead to a reduction in a baby's birth weight.

component .....

explanation .....

.....

.....

..... [3]

- (c) (i) State why women who are planning to become pregnant are advised to take folic acid supplement.

..... [1]

- (ii) Suggest why a pregnant woman may have a low level of folic acid in her body.

.....

..... [1]

[Total: 11]

- 4 (a) Fig. 4.1 shows the structure of the human immunodeficiency virus, HIV.

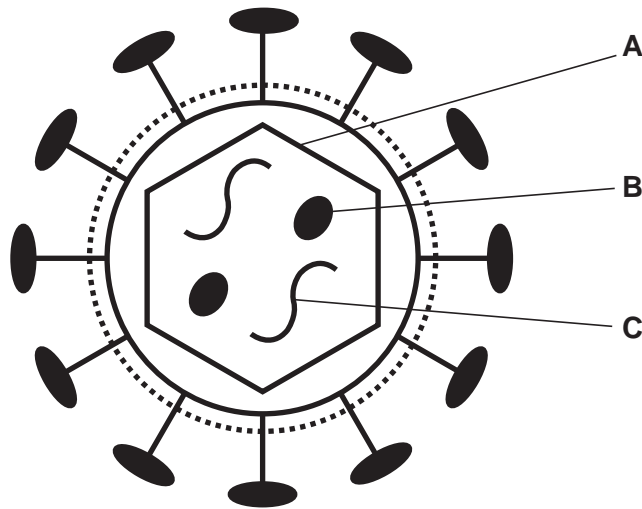


Fig. 4.1

- (i) Name the parts **A** to **C**.

**A** .....

**B** .....

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

- (ii) Explain why people infected with HIV may develop AIDS.

.....

.....

.....

.....

.....

.....

.....

.....

..... [3]



- (b) (i) State two groups of people in the UK who are at a higher risk of being infected with HIV.

For each group, describe **one** precaution that can be taken to reduce the risk of **infection** with HIV.

group 1 .....

precaution .....

.....

group 2 .....

precaution .....

..... [4]

- (ii) Suggest why it is difficult to make an effective vaccine against HIV.

.....

.....

.....

..... [2]

- (c) Severe acute respiratory syndrome (SARS) is caused by a virus.

In 2003, health officials feared that this virus could have given rise to a new, highly infectious disease that might have led to a pandemic.

- (i) State what is meant by the term *pandemic*.

..... [1]

- (ii) Suggest why the **spread** of a newly emerged infectious disease is likely to be difficult to control.

.....

.....

..... [2]

[Total: 15]

- 5 (a) Blood is classified as a tissue.

Explain the meaning of the term *tissue*.

.....

.....

..... [2]

- (b) White blood cells play an important role in fighting disease.

Fig. 5.1 shows photomicrographs of **two** different types of white blood cell in a blood film.

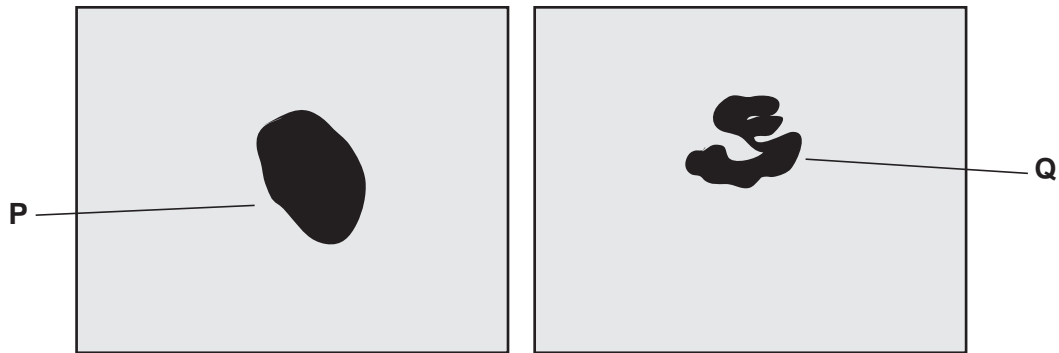


Fig. 5.1

- (i) Name the white blood cells, **P** and **Q** shown in Fig. 5.1.

**P** .....

**Q** ..... [2]

- (ii) White blood cells are produced in the bone marrow.

State **two** places in the body where white blood cells **mature**.

1 .....

2 ..... [2]

- (iii) Describe the role of the white blood cell **Q** in fighting disease.

.....

.....

.....

.....

.....

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.....

.....

.....

.....

.....

.....

..... [5]

[Total: 11]

**END OF QUESTION PAPER**

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*Copyright Acknowledgements:*

Fig. 2.1                      Source: UK Lung Cancer mortality statistics, Cancer Research UK, [www.cancerresearchuk.org](http://www.cancerresearchuk.org)  
Table 3.1                    Source: University College London, Pharmacology Department, [www.ucl.ac.uk/Pharmacology/](http://www.ucl.ac.uk/Pharmacology/)

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