

1 Fig. 5.1 is a diagram of the human immunodeficiency virus (HIV).

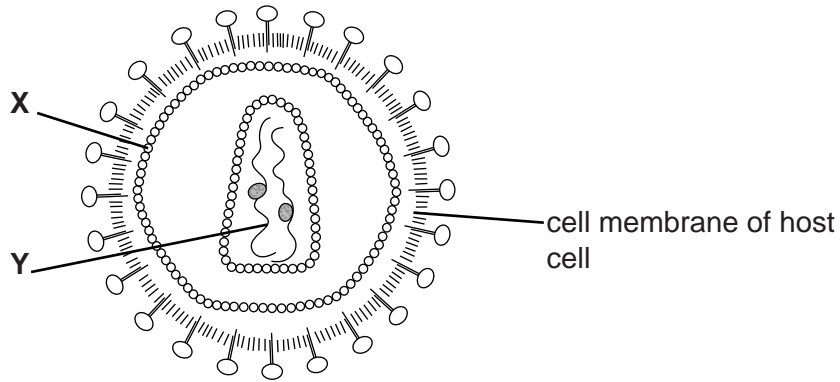


Fig. 5.1

(a) (i) Name the parts of the virus labelled X and Y.

X

Y [2]

(ii) State three ways in which the **structure** of bacteria differs from the structure of viruses.

1

2

3 [3]

- (b) Sub-Saharan Africa has the highest proportion of the population living with HIV in the world. The World Health Organization estimates both the total number of people who live with HIV and the total number of people that are newly infected each year.

Fig. 5.2 shows the estimated numbers for sub-Saharan Africa between 1990 and 2010.

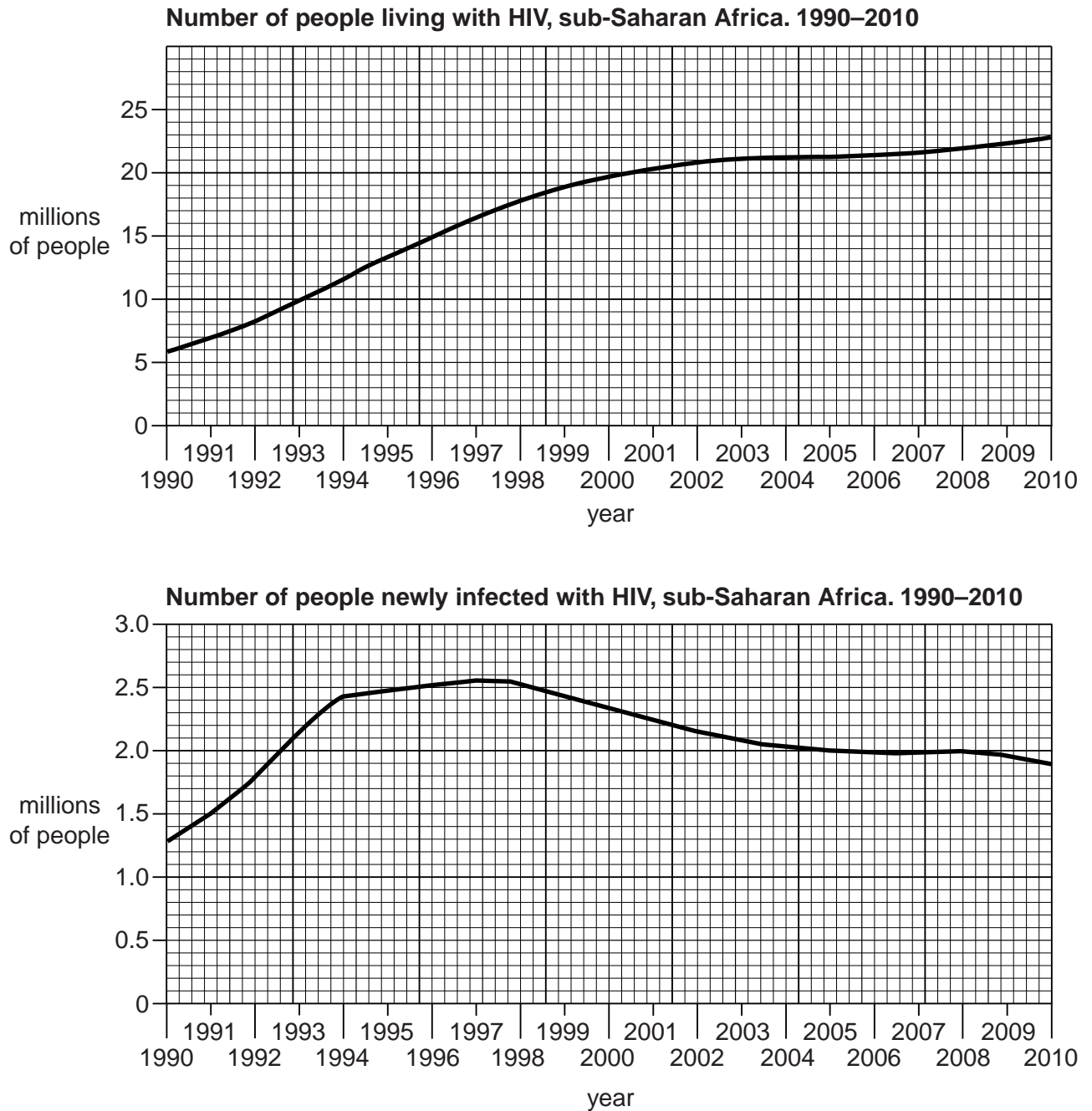


Fig. 5.2

- (i) Summarise the changes between 1990 and 2009 in the number of people living with HIV and the number of people newly infected with HIV.

number of people living with HIV

.....
.....
.....

number of people newly infected with HIV

.....
.....
.....

[4]

- (ii) Suggest why in 2010 the number of people living with HIV increased but the number of newly infected people decreased.

.....
.....
.....
.....
.....
.....

[2]

- (iii) Describe **three** ways in which HIV is transmitted from infected to uninfected people.

1

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.....
.....

2

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.....
.....

3

[3]

(i) Name structures **A**, **B** and **C**.

A

B

C [3]

(ii) State the process that is occurring at **D** and the process that is occurring at **E**.

D

E [2]

(iii) Suggest how the embryo is moved along the oviduct.

.....

.....

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..... [2]

[Total: 10]

3 Fig. 3.1 shows the human female reproductive system.

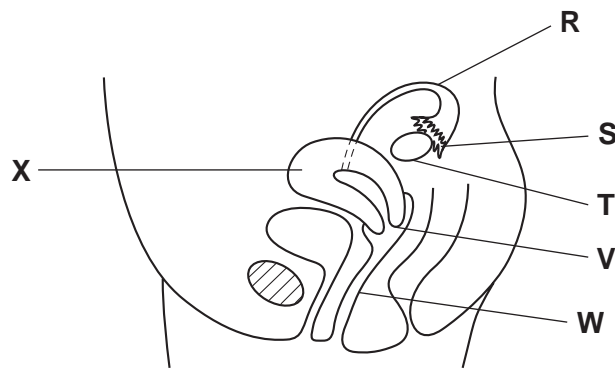


Fig. 3.1

(a) Table 3.1 shows four functions of the female reproductive system.

Complete the table by:

- naming the part of the system that carries out each of the functions;
- using the letters from Fig. 3.1 to identify the part of the system named.

One row has been completed for you.

Table 3.1

function	name of organ	letter from Fig. 3.1
production of gametes		
site of implantation		
site of fertilisation		
dilates during birth	cervix	V

[3]

The hormone FSH is important in regulating the menstrual cycle.

(b) (i) State the target organ of FSH.

..... [1]

(ii) State **one** effect of FSH.

.....
 [1]

- (c) The drug clomiphene is given to women who have difficulty in having children. The drug increases the secretion of FSH.

As part of treatment for infertility, a woman was given clomiphene for five days. The concentration of oestrogen in her blood was measured every day for 27 days.

The results are shown in Fig. 3.2.

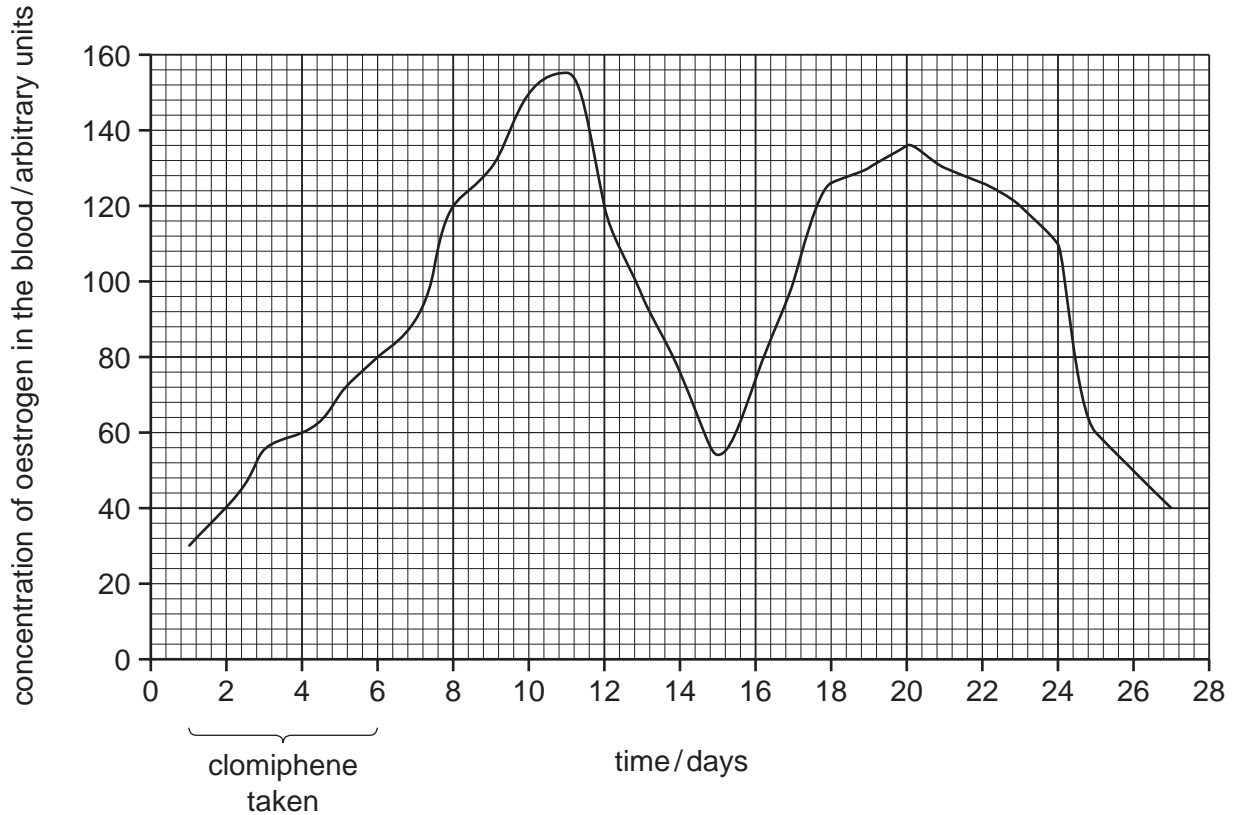


Fig. 3.2

- (i) Describe the changes in oestrogen in the blood over the 27 days.

You will gain credit if you use results from Fig. 3.2 in your answer.

.....

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.....

.....

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.....

.....

.....

[4]

(ii) Doctors thought that ovulation occurred around day 15.

Explain what is meant by the term *ovulation*.

.....
.....
.....
..... [2]

(d) The treatment was not successful on the first occasion.

As an alternative to this treatment, women may be offered *in vitro* fertilisation (IVF) treatment.

In IVF treatment, an egg is fertilised outside the body and the resulting embryo is placed into the uterus.

Describe what happens when an egg is fertilised by a sperm.

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

(e) Some embryos produced by IVF do not develop because there are problems with their chromosomes, such as having the wrong number.

(i) Define the term *chromosome*.

.....
.....
.....
..... [2]

(ii) State the correct number of chromosomes that should be in a cell of a human embryo.

..... [1]

[Total: 17]