

- 1 Male and female sex hormones control the development of secondary sexual characteristics.

**Table 3.1**

sex hormones		testosterone	oestrogen
site of production		.....	
secondary sexual characteristics	1	.....	
	2	.....	

- (a) Complete Table 3.1.

Write your answers in the boxes in Table 3.1.

[3]

- (b) Some women do not release eggs. The hormone FSH is used in fertility treatment for such women.

Name the organs in the female body responsible for the following:

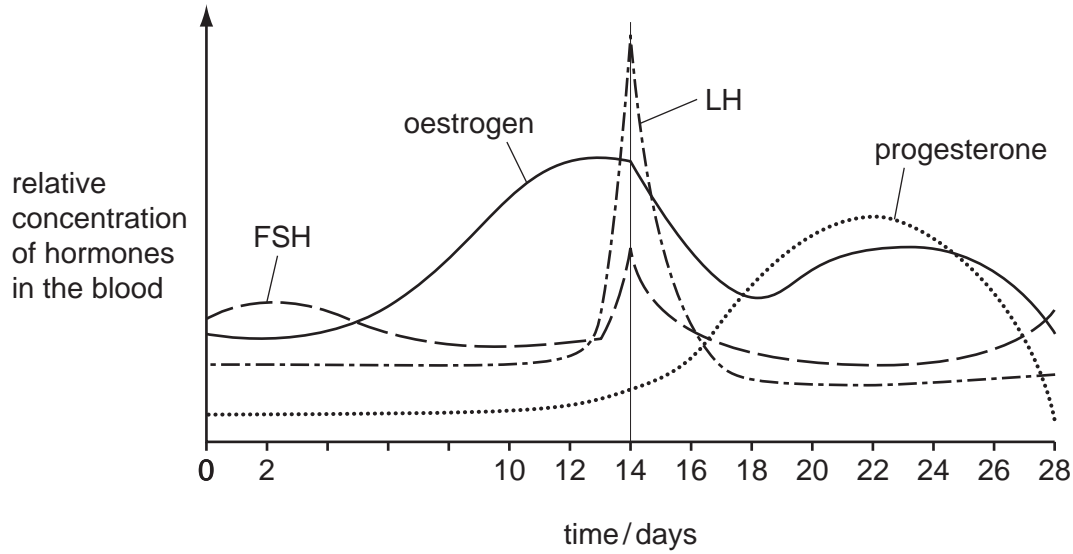
- (i) production of FSH,

..... [1]

- (ii) release of eggs.

..... [1]

(c) Fig. 3.1 shows changes in the concentration of FSH and three other hormones in the blood during one menstrual cycle.



**Fig. 3.1**

(i) Describe the changes in the concentration of FSH during one menstrual cycle.

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.....

.....

.....

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.....

.....

..... [3]

(ii) Explain the role of FSH in the control of the menstrual cycle.

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.....

.....

.....

..... [3]

[Total: 11]

2 Fig. 1.1 shows a flowering shoot of tiger lily, *Lilium tigrinum*.



**Fig. 1.1**

(a) State the name of the genus of the tiger lily.

..... [1]

(b) Name the parts labelled **A** to **D**.

**A** .....

**B** .....

**C** .....

**D** ..... [4]

(c) The tiger lily plant is a monocotyledon.

List two features, **visible in Fig. 1.1**, that show it is a monocotyledon.

- 1 .....  
2 ..... [2]

(d) The tiger lily in Fig. 1.1 reproduces sexually.

Plants reproduce sexually and asexually.

Complete Table 1.1 to show the advantages and disadvantages of asexual and sexual reproduction to a flowering plant species.

**Table 1.1**

type of reproduction in flowering plants	advantages	dis
asexual		
sexual		

[4]

[Total: 11]

- 3 The sweet potato plant, *Ipomoea batatas*, has fibrous roots and storage roots. Fibrous roots absorb water and ions from the soil. Storage roots store insoluble carbohydrates.

Fig. 3.1 shows the growth of these roots on a sweet potato plant.



**Fig. 3.1**

- (a) Explain, using the term **water potential**, how fibrous roots absorb water.

.....

.....

.....

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.....

.....

..... [3]

The membranes of root hair cells contain proteins for the absorption of ions.

(b) Describe how root hair cells are adapted for the absorption of ions.

.....

.....

.....

.....

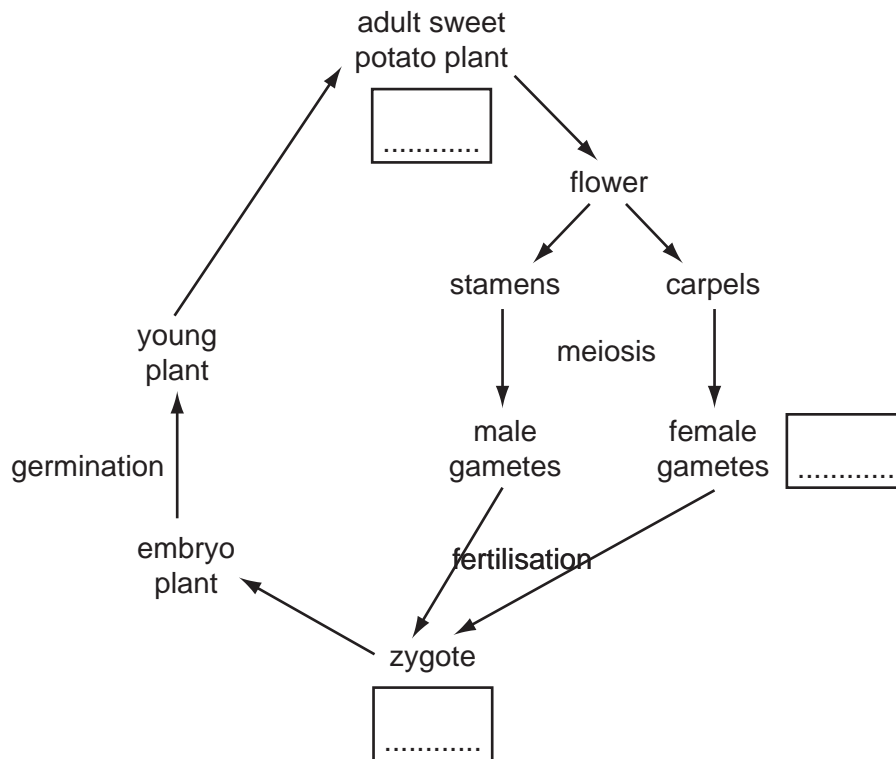
.....

.....

[3]

Sweet potato plants produce flowers to reproduce sexually. Sweet potato plants also reproduce asexually when shoots grow from the storage roots to form new plants.

Fig. 3.2 shows the life cycle of sweet potato. The diploid number of this species is 90.



**Fig. 3.2**

(c) Complete Fig. 3.2 by writing the number of chromosomes in the three boxes. [2]

(d) State **two** advantages and **one** disadvantage of **asexual** reproduction for plants, such as sweet potato.

*advantage 1* .....

.....

*advantage 2* .....

.....

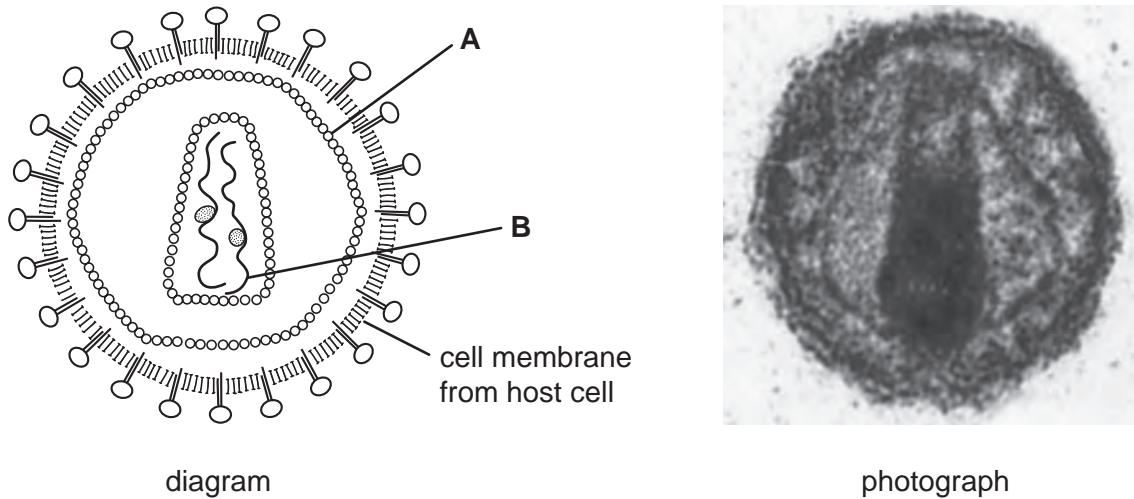
*disadvantage* .....

.....

[3]

[Total: 11]

- 4 Fig. 1.1 shows a diagram and a photograph of the human immunodeficiency virus (HIV) after release from a human cell.



**Fig. 1.1**

- (a) Identify **A** and **B**.

**A** .....

**B** ..... [2]

- (b) HIV infects lymphocytes and may lead to their destruction.

Explain why the destruction of lymphocytes puts people infected with HIV at increased risk of developing many infectious diseases.

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.....

.....

.....

.....

.....

..... [3]

- (c) List three methods of transmission of HIV.

1 .....

2 .....

3 ..... [3]



(d) Describe ways in which the spread of HIV can be reduced.

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.....

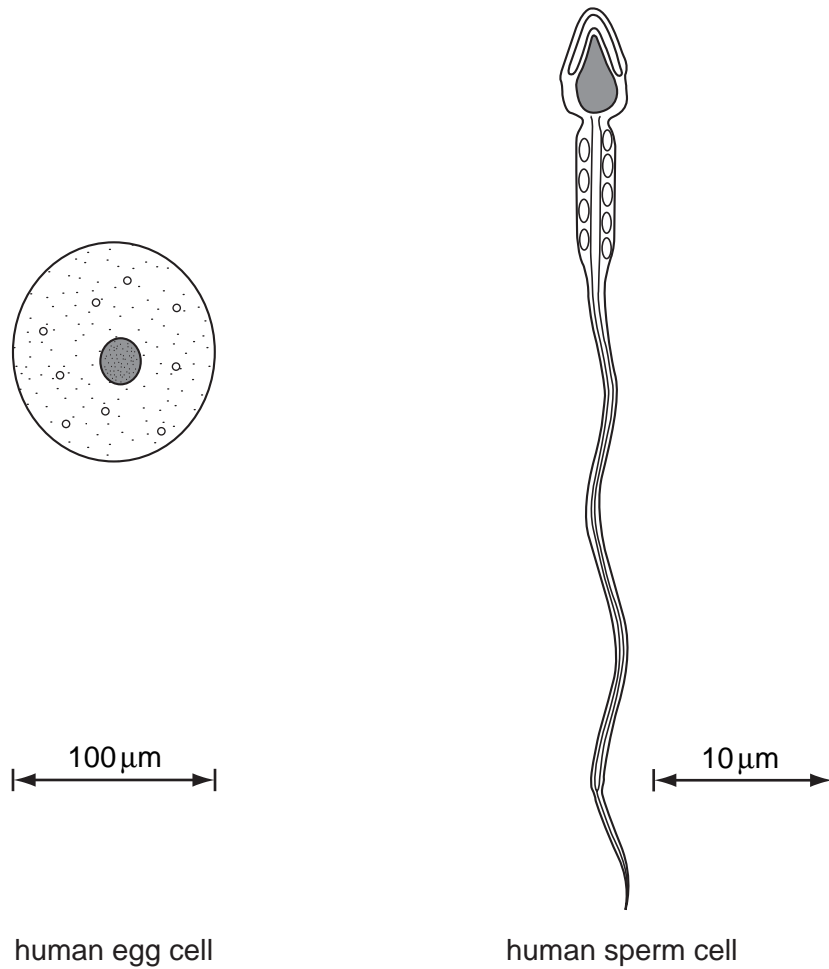
.....

.....

..... [3]

[Total: 11]

5 Fig. 3.1 shows a human egg cell and a human sperm cell.



**Fig. 3.1**

**(a)** What is the name given to the release of eggs from the ovary?

..... [1]

**(ii)** Sperm cells and egg cells are haploid. State the meaning of the term *haploid*.

..... [1]

**(b)** Complete the table to compare egg cells with sperm cells.

feature	egg cells	sperm cells
site of production		
relative size		
numbers produced		
mobility		

[4]

**(c)** Three hormones that control the menstrual cycle are:

- follicle stimulating hormone (FSH)
- luteinising hormone (LH)
- oestrogen.

**(i)** Name the site of production and release of oestrogen.

..... [1]

**(ii)** Describe the role of oestrogen in controlling the menstrual cycle.

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

**(d)** Artificial insemination is sometimes used as a treatment for female infertility.

Outline how artificial insemination is carried out in humans.

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

[Total: 11]