

23 A gardener has a strawberry plant that produces large, sweet fruits.

How does the gardener grow more strawberry plants that **all** produce large, sweet fruits?

- A** Use asexual reproduction to produce offspring with no genetic variation.
- B** Use asexual reproduction to produce seeds that will grow into new plants.
- C** Use sexual reproduction and self-pollination as they only have one plant.
- D** Use sexual reproduction to reduce variation in the offspring.

24 Where does fertilisation occur in a plant?

- A** ovule
- B** pollen grain
- C** pollen tube
- D** stigma

28 Which methods can transmit HIV?

- 1 hugging a person infected with HIV
- 2 sharing a needle with a person infected with HIV
- 3 using a plate that a person infected with HIV has used

- A** 1, 2 and 3 **B** 1 only **C** 2 and 3 only **D** 2 only

- 4 Fig. 4.1 is a photograph of a bee on a flower. One of the bee's legs is covered with pollen.



Fig. 4.1

- (a) (i) State **three** features of flowers that attract pollinating insects such as bees.

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3 [3]

- (ii) State **one** way that pollen grains are adapted for pollination by bees.

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..... [1]

- (b) Describe **two** ways the structure of a monocotyledonous plant differs from the structure of a dicotyledonous plant.

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..... [2]

(c) Fig. 4.2 is a diagram of a cross-section of an insect-pollinated flower.

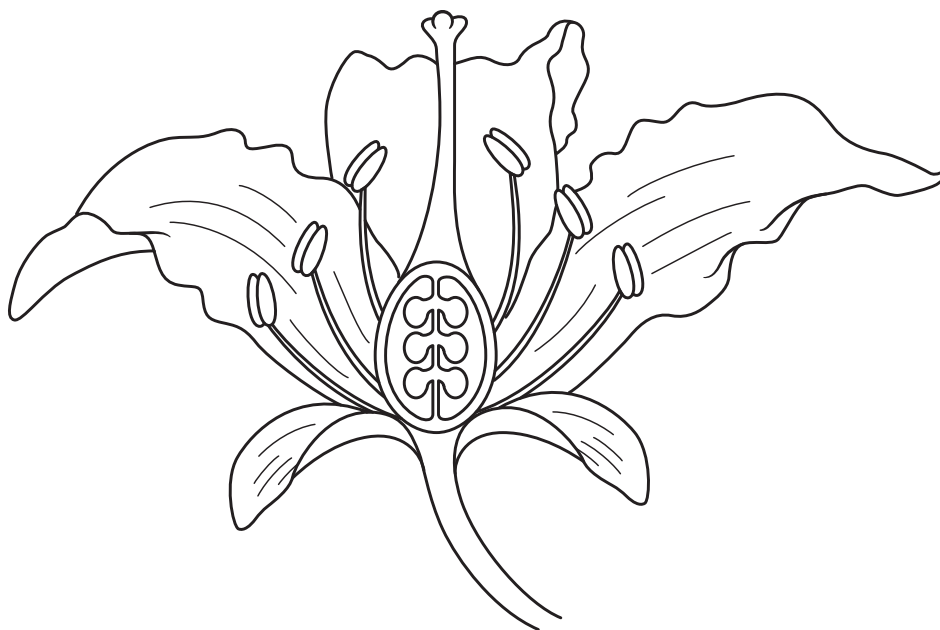


Fig. 4.2

On Fig. 4.2, name and draw label lines to:

- the structure that supports an anther
- a structure that protects the flower bud
- an ovule.

[3]

(d) Describe sexual reproduction in a flower, from the release of pollen to the formation of a zygote.

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(e) Sexual reproduction also occurs in humans.

(i) State the name of the male gamete in a human.

..... [1]

(ii) State where gametes are formed in the human male reproductive system.

..... [1]

(iii) Human male gametes are haploid.

State the name of the process that produces haploid male gametes.

..... [1]

(iv) Describe the function of the prostate gland in the male reproductive system.

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..... [1]

[Total: 18]

4 Steppe ecosystems are large areas of grasslands found in central Asia.

(a) Fig. 4.1 is a food web from a steppe ecosystem.

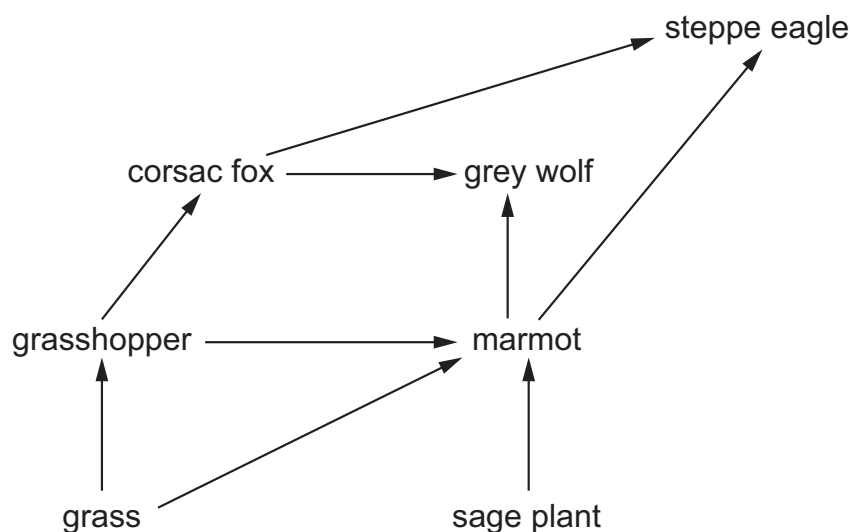


Fig. 4.1

(i) State the name of **one** primary consumer from Fig. 4.1.

..... [1]

(ii) Use the information in Fig. 4.1 to construct **one** food chain with four trophic levels that includes the steppe eagle.

[1]

(iii) There are fewer grey wolves than marmots in this ecosystem.

Explain why the population size of organisms decreases from one trophic level to the next trophic level in this ecosystem.

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..... [2]

- (b) Fig. 4.2 is a photograph of a wild horse. Przewalski's horse is a type of wild horse that nearly became extinct.



Fig. 4.2

After a captive breeding programme, they have been successfully reintroduced to the steppe ecosystem.

The captive breeding programme started with 12 wild horses.

- (i) Explain the risks to a species of a captive breeding programme that uses such a small number of individuals.

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- (ii) Suggest ways of maintaining a population of Przewalski's horse in the wild after their reintroduction to the steppe ecosystem.

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- (c) *In vitro* fertilisation (IVF) can be used in captive breeding programmes.

Fig. 4.3 shows some of the stages involved in IVF.

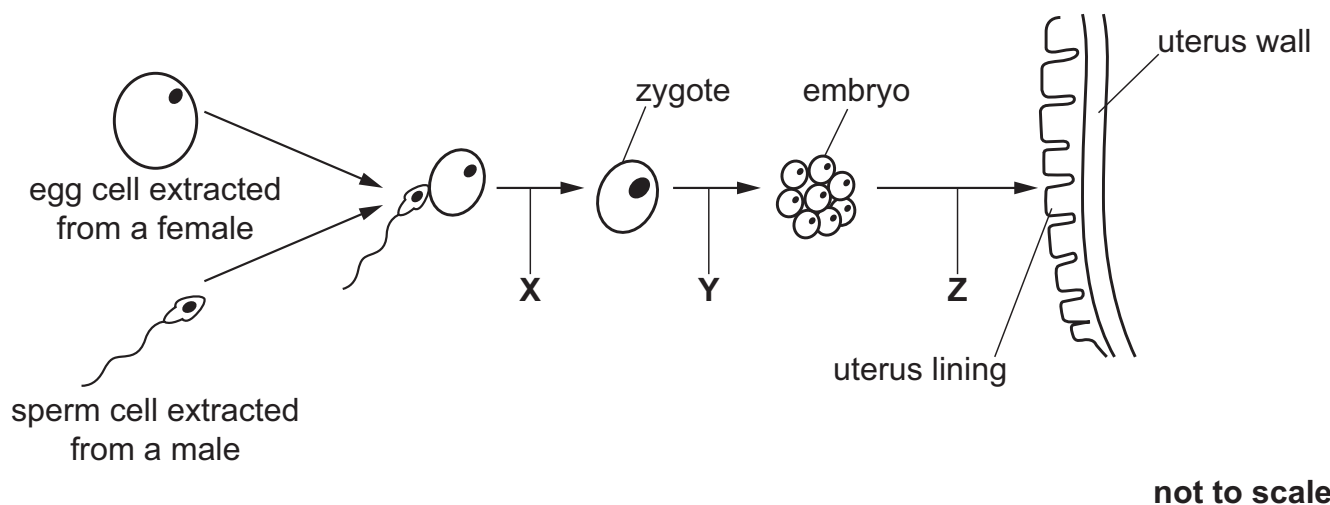


Fig. 4.3

State the names of the processes occurring at X, Y and Z in Fig. 4.3.

X

Y

Z

[3]

[Total: 14]

30 Which row correctly links the named process with its description?

	process	description
A	menstruation	release of an egg
B	menstruation	shedding of the lining of the uterus
C	ovulation	fusion of nuclei
D	ovulation	start of puberty

26 The list shows terms used when describing sexual reproduction.

- 1 male gamete
- 2 female gamete
- 3 ovule
- 4 ovary
- 5 filament
- 6 fertilisation
- 7 haploid

Which terms are used **only** when describing sexual reproduction in plants?

- A** 1 and 7 **B** 2 and 4 **C** 2 and 6 **D** 3 and 5