

32 Which flowchart shows how energy is transferred from the Sun to an organism?

- A chemical energy in carbohydrates → stored in plants → energy trapped by chlorophyll
- B stored in plants → chemical energy in carbohydrates → energy trapped by chlorophyll
- C stored in plants → energy trapped by chlorophyll → chemical energy in carbohydrates
- D energy trapped by chlorophyll → chemical energy in carbohydrates → stored in plants

35 Which unit could be used for the measurements needed to construct a pyramid of energy?

- A kJ per g per m²
- B kJ per kg per year
- C kJ per m² per year
- D kJ per kg

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

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

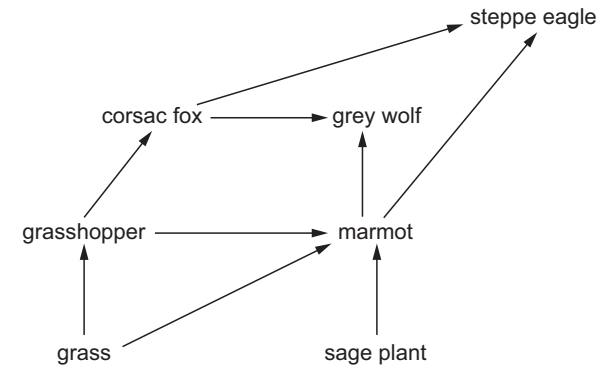


Fig. 4.1

(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]

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



[4]

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

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

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- The diagram illustrates the process of in vitro fertilization (IVF). It begins with an 'egg cell extracted from a female' and a 'sperm cell extracted from a male'. These two cells are shown fusing, a process labeled 'X', to form a 'zygote'. The zygote then undergoes cleavage, labeled 'Y', to become an 'embryo' (represented as a cluster of cells). Finally, the embryo is implanted into the 'uterus lining' (labeled 'Z'), which is shown as a textured surface within the 'uterus wall'.
- not to scale

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

X

Y

Z

[3]

[Total: 14]

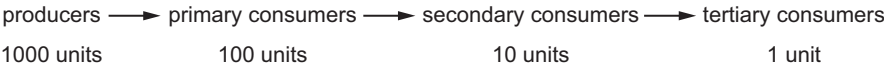
34 Which statement about a pyramid of energy for a food chain is correct?

- A It shows how energy is lost at each trophic level.
- B It shows the energy stored at each trophic level.
- C It shows the input of energy from the principal source.
- D It shows the total energy stored within an ecosystem.

35 Which row describes the energy flow into and through a food chain that starts with a plant?

	energy entering a food chain	energy transferred between organisms in a food chain
A	chemical	chemical
B	chemical	heat
C	light	chemical
D	light	heat

36 The diagram shows the flow of energy, in units of energy, through a food chain.



Which percentage of energy is lost between the producers and secondary consumers?

- A 1%
- B 10%
- C 90%
- D 99%

1 (a) Fig. 1.1 shows a pyramid of energy for an ecosystem.

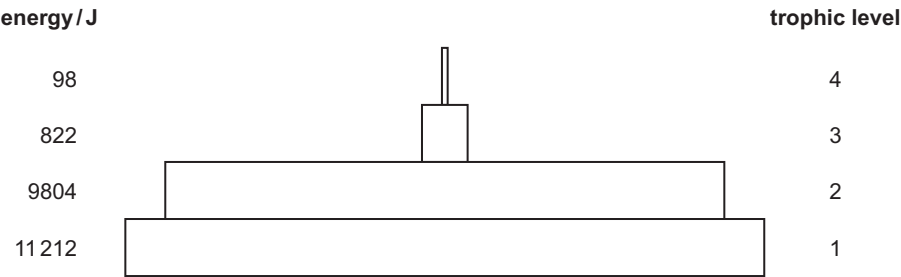


Fig. 1.1

(i) State where the organisms in trophic level 1 in Fig. 1.1 get their energy from.

..... [1]

(ii) Calculate the percentage of energy transferred between trophic levels 2 and 3 in Fig. 1.1.

Give your answer to **one** significant figure.

..... [2]

(iii) State **two** reasons why the energy decreases between trophic levels 1 and 4, as shown in Fig. 1.1.

1

2

[2]

(iv) Describe the advantages of representing food chains using a pyramid of energy compared with a pyramid of biomass.

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..... [2]

Fig. 1.2 shows the changes in the population as the species established itself in the ecosystem.

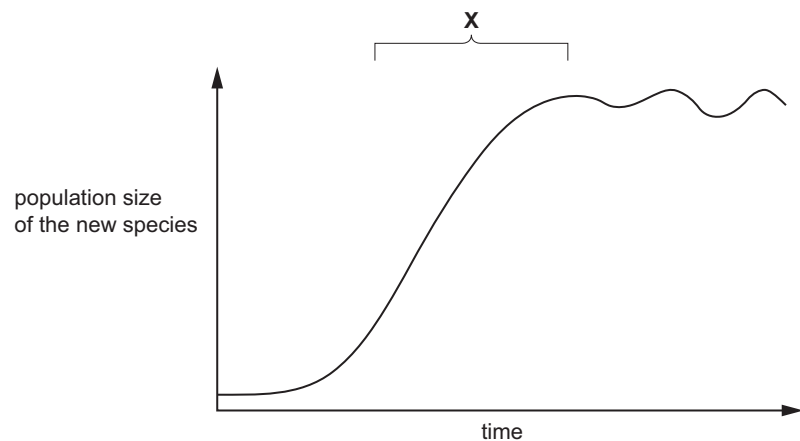


Fig. 1.2

A population is a group of organisms of one species living in the same at the same [1]

[5]

lettuce $\rightarrow$ snails $\rightarrow$ duck $\rightarrow$ human

A snails
B soil
C the Sun
D water