

Past-paper walk-through

Food chains and food webs ■ 19.2

eXercise

Questions in this set

- 0610/21 N25 Q33 ■ 1 mark
- 0610/23 N25 Q38 ■ 1 mark
- 0610/42 N25 Q4 ■ 14 marks
- 0610/21 J25 Q35 ■ 1 mark
- 0610/22 J25 Q36 ■ 1 mark
- 0610/22 M25 Q36 ■ 1 mark

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 33

0610/21 N25 ■ Q33 ■ 1 mark

33 Which statements about a food chain are correct?

- 1 Between trophic level 1 and trophic level 2, energy is passed from a herbivore to a carnivore.
- 2 Between trophic level 2 and trophic level 3, energy is passed from a primary consumer to a secondary consumer.
- 3 Between trophic level 3 and trophic level 4, energy is passed from a secondary consumer to a tertiary consumer.

A 1 and 3

B 1 only

C 2 and 3

D 2 only

Solution 33

Answer: **C**

Why

- Trophic level 1 is the producer, level 2 the herbivore, level 3 the carnivore.
- So the transfer from level 1 to level 2 is plant to herbivore, not herbivore to carnivore.
- The herbivore-to-carnivore step is between levels 2 and 3.

Question 38

0610/23 N25 ■ Q38 ■ 1 mark

38 In which trophic level are herbivores found?

- A** primary consumers
- B** quaternary consumers
- C** secondary consumers

D tertiary consumers

Solution 38

Answer: **A**

Why

- A herbivore eats the producer – the plant.
- The producer is trophic level 1, so the herbivore is level 2.
- The organism that eats the producer is the primary consumer.

Question 4

0610/42 N25 ■ Q4 ■ 14 marks

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

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



Question 4



Question 4



Fig. 4.1

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

Question 4

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

Question 4

[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.

Question 4

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



Question 4



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.

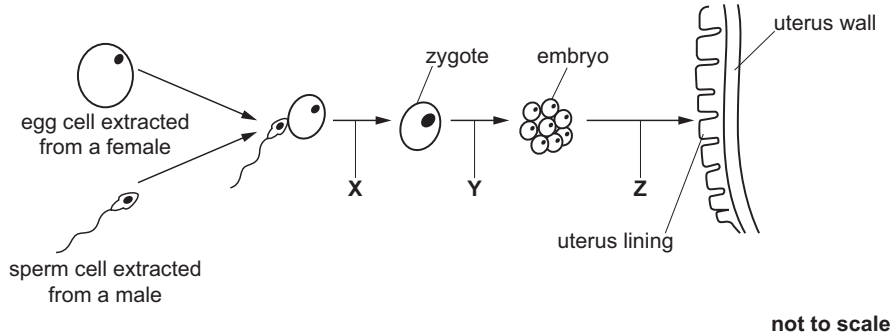
Question 4

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

Question 4

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

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



Question 4

Question 4

Fig. 4.3

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

Question 4

Question 4

Question 4

[3]

[Total: 14]

Solution 4

(a)(i)

Mark scheme

- grasshopper / marmot ;
- 1

Solution 4

(a)(ii)

Mark scheme

- grass → grasshopper → marmots / (corsac) fox → (steppe) eagle ;
- 1
- 0610/42
- October/November 2025
- Guidance

Solution 4

(a)(iii)

Mark scheme

- any two from:
- idea that energy is lost between each trophic level ;
- named example of energy loss ;
- if less energy available then less biomass can be supported ;
- 2

Solution 4

(b)(i) Mark scheme

- any three from:
- 1
- little genetic variation ;
- 2
- increased risk of, genetic / inherited, disease ;
- 3
- inbreeding / inbred ;
- 4

Solution 4

- decreased heterozygosity / greater chance that an organism may be
- homozygous (recessive) ;
- 5
- less likely to adapt to changes in the, environment /
- AW ;
- 6
- increased susceptibility to (transmissible) disease ;
- 7
- AVP ;
- 3

Solution 4

(b)(ii) Mark scheme

- any four from:
- 1
- (named) protection of habitat ;
- 2
- ref to legislation protecting species / banning hunting ;
- 3
- monitoring / tracking / named example of monitoring ;
- 4

Solution 4

- education / awareness campaigns ;
- 5
- provision of (named), food / nutrients / veterinary care ;
- 6
- removal of predators ;
- 7
- removal of invasive species ;
- 4

Solution 4

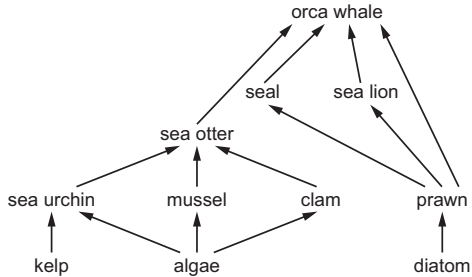
(c) Mark scheme

- X – fertilisation ;
- Y – mitosis / cell division ;
- Z – implantation ;
- 3
- 0610/42
- October/November 2025
- Guidance

Question 35

0610/21 J25 ■ Q35 ■ 1 mark

35 The food web shows part of an ocean ecosystem.



Which row shows the number of secondary consumers and the number of tertiary consumers in the food web?

Question 35

the food web:

	number of secondary consumers	number of tertiary consumers
A	three	one
B	four	one
C	three	two
D	four	two

Solution 35

Answer: **B**

Why

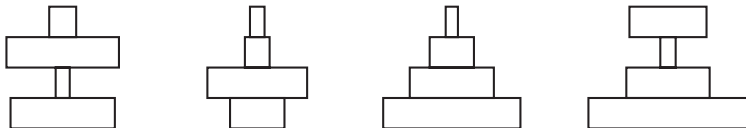
- A primary consumer eats the producers; a secondary consumer eats the primary consumers.
- So find the producers first – the kelp, algae and diatom.
- Then count how many species eat the animals that eat those producers.

Question 36

0610/22 J25 ■ Q36 ■ 1 mark

- 36** In a food chain, zebras are large mammals that eat grass. The zebras have many insects living on them which suck their blood. Birds eat the insects.

The diagrams show some biological pyramids.



Question 36

1

2

3

4

Which row identifies the types of pyramids for this food chain?

	pyramid of energy	pyramid of numbers
A	4	2
B	3	2
C	3	1
D	4	1

Solution 36

Answer: **C**

Why

- The zebra is much larger than the insects, and the insects far outnumber the zebra.
- So a pyramid of *numbers* is inverted at the bottom – one zebra supporting many insects.
- A pyramid of *biomass* is the right way up, because the single zebra has far more mass than all the insects.

Question 36

0610/22 M25 ■ Q36 ■ 1 mark

36 Which organisms can be sources of energy for decomposers?

	producers	herbivores	carnivores
A	✓	✓	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✗	✗

key

✓ = yes

✗ = no

Solution 36

Answer: **A**

Why

- Decomposers feed on dead material and waste from any organism.
- That includes dead producers, dead herbivores and dead carnivores.
- So all three trophic levels can supply energy to decomposers.