

Energy flow, food chains and food webs: practice questions

7 questions • 19 marks • mark scheme at the back

For Cambridge IGCSE Combined Science 0653. **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 19

1 What is the principal source of energy input to biological systems? [1 mark]

- A. ☐ Chemical energy in glucose
- B. ☐ Heat from the soil
- C. ☐ Light energy from the Sun
- D. ☐ Energy released by decomposers

2 In a food chain, what do the arrows show? [1 mark]

- A. ☐ The direction in which animals move
- B. ☐ The transfer of energy from one organism to the next
- C. ☐ The number of organisms at each level
- D. ☐ The organisms that are harmful to others

3 Describe the flow of energy through living organisms, starting with light energy from the Sun. [3 marks]

4 A food chain is: lettuce → snail → thrush → sparrowhawk (a) State the producer in this food chain. [1] (b) State the organism that is the secondary consumer. [1] (c) Name the organism that gets its energy directly from the thrush. [1] (d) State what the arrow between the lettuce and the snail represents. [1] [4 marks]

- 5** The table shows what each organism in a woodland food web eats. (a) State the number of different organisms that eat caterpillars. [1] (b) Name one organism that is both a primary consumer and a secondary consumer. [1] (c) Define the term food web. [1] (d) Suggest what happens to the number of owls if all the blue tits are killed by disease. [1] **[4 marks]**

Feeding relationships in a woodland food web	
Organism	Eats
Oak leaves	(producer)
Caterpillar	Oak leaves
Mouse	Oak leaves, caterpillar
Blue tit	Caterpillar
Owl	Mouse, blue tit

- 6** Which organism gets its energy from dead or waste organic material? **[1 mark]**
- A. ☐ A producer
- B. ☐ A herbivore
- C. ☐ A decomposer
- D. ☐ A secondary consumer

- 7 Supplement** [5 marks]

Fishing boats catch large numbers of a fish that is eaten by seals and that eats small crustaceans. (a) State the term for catching a species faster than it can replace itself. [1] (b) Describe the effect of this on the seal population and explain your answer. [2] (c) Describe two ways in which introducing a foreign species to a habitat can affect the food web. [2]

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

C C (1)

2. [1]

B B (1)

3. [3]

- light energy is transferred to chemical energy in producers / plants by photosynthesis (1)
- chemical energy passes to consumers / along the food chain when organisms feed (1)
- energy is eventually transferred to the environment / lost as heat (1) allow lost through respiration

4. [4]

- (a) lettuce (1)
- (b) thrush (1)
- (c) sparrowhawk (1)
- (d) transfer of energy (from the lettuce to the snail) (1) ignore 'the snail eats the lettuce' on its own

5. [4]

- (a) 2 / mouse and blue tit (1)
- (b) mouse (1)
- (c) a network of interconnected food chains (1)
- (d) owls decrease because there is less food (1) allow owls stay about the same because they eat more mice instead; ignore 'owls stay the same' without a reason

6. [1]

C C (1)

7. [5] **Supplement**

- (a) overharvesting / overfishing (1)
- (b) seal population decreases / seals die or move away (1)
- (b) because there is less food (fish) for them to eat (1)
- (c) the foreign species may eat native species so their numbers fall (1)
- (c) the foreign species may compete with native species for food so their numbers fall (1) allow it becomes a new food source so its predators increase