

19. Organisms and their environment

19.1 Energy flow

Paper 1 and 2

Question Paper

Paper 1

Questions are applicable for both core and extended candidates

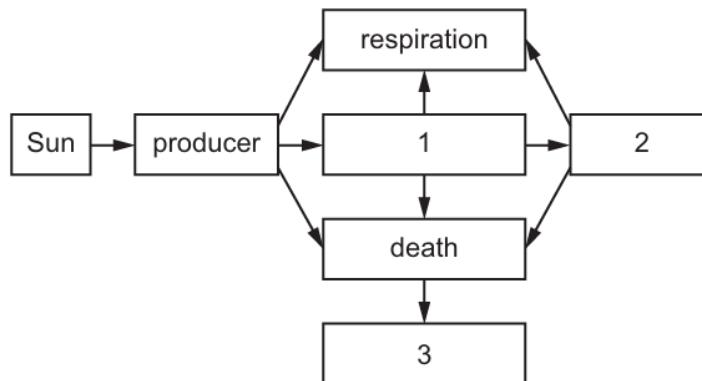
1 It is estimated that 90% of the energy which flows through living organisms in a food chain is lost between one trophic level and the next.

The producers in a food chain contain 1000 units of energy.

How many units will reach the quaternary consumers in the food chain?

- A 0.1 units
- B 1 unit
- C 10 units
- D 100 units

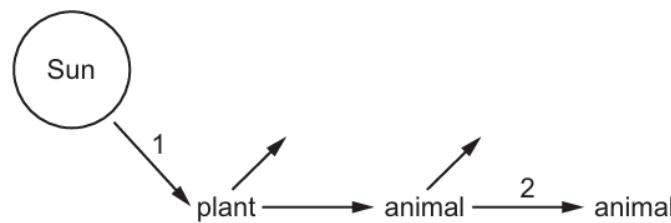
2 The diagram shows the flow of energy in an ecosystem.



Which row correctly completes boxes 1, 2 and 3?

	1	2	3
A	herbivore	carnivore	decomposer
B	carnivore	herbivore	decomposer
C	decomposer	carnivore	herbivore
D	carnivore	decomposer	herbivore

3 The diagram shows energy flow from the Sun, through a food chain and into the environment.



What is the form of energy for each numbered arrow?

	stage 1	stage 2
A	heat	chemical
B	heat	kinetic
C	light	chemical
D	light	kinetic

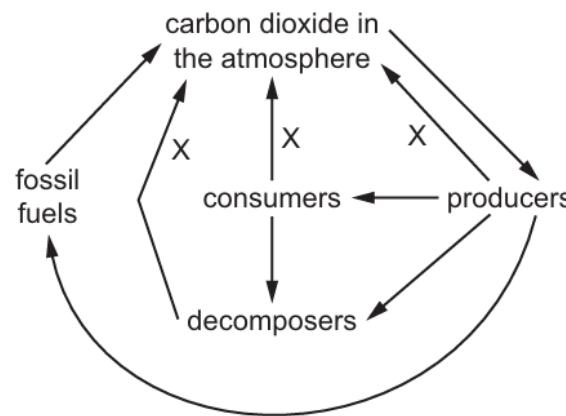
4 What is the principal source of energy for most food chains?

- A** carbon dioxide gas
- B** glucose
- C** oxygen
- D** sunlight

5 Which process uses the principal source of energy input to biological systems?

- A** ingestion
- B** decomposition
- C** photosynthesis
- D** respiration

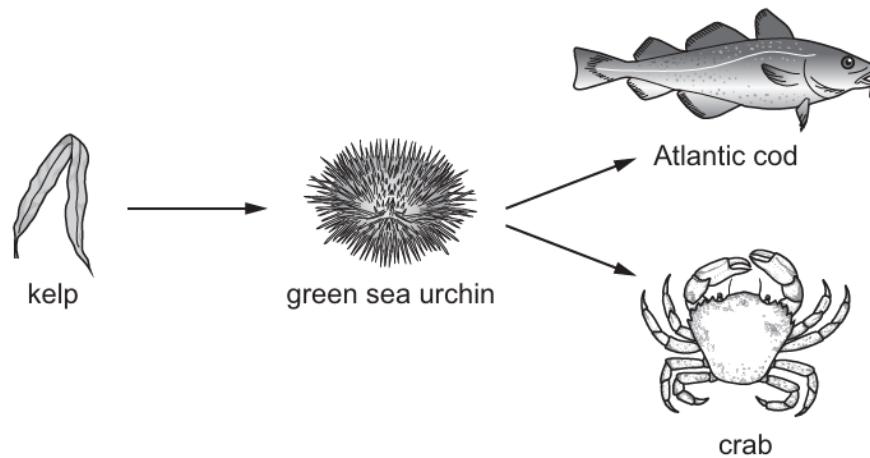
6 The diagram shows part of the carbon cycle.



Which process is shown by the arrows labelled X?

- A** combustion
- B** fossilisation
- C** photosynthesis
- D** respiration

7 The diagram shows a food web.



What is the principal source of energy input into this food web?

- A green sea urchins
- B kelp
- C the sea
- D the Sun

8 The diagram shows a simple food chain.

grass → gazelle → lion

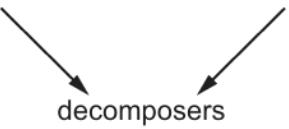
The arrows show the energy flow through the food chain.

Where does the grass obtain its energy?

- A oxygen from air
- B water
- C minerals in soil
- D the Sun

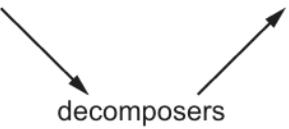
9 Which diagram correctly shows the flow of energy?

A producers → consumers



B consumers → producers → decomposers

C producers ← consumers



D decomposers → consumers → producers

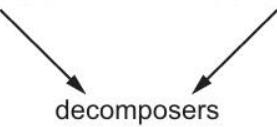
Paper 2

Questions are applicable for both core and extended candidates

10 What is the main source of energy input to biological systems?

- A glucose
- B oxygen
- C plants
- D the Sun

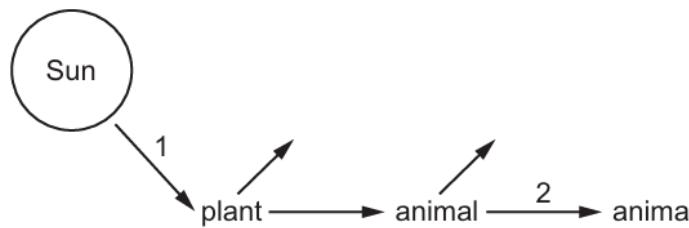
11 Which diagram correctly shows the flow of energy?

- A producers → consumers


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graph TD; P[producers] --> C[consumers]; P --> D[decomposers]; C --> D
```
- B consumers → producers → decomposers
- C producers ← consumers


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graph TD; C[consumers] --> P[producers]; C --> D[decomposers]; P --> D
```
- D decomposers → consumers → producers

12 The diagram shows energy flow from the Sun, through a food chain and into the environment.



What is the form of energy for each numbered arrow?

	stage 1	stage 2
A	heat	chemical
B	heat	kinetic
C	light	chemical
D	light	kinetic

13 The diagram shows the flow of energy.



Which form of energy is transferred at points 1 and 3 in the diagram?

	1	3
A	chemical	chemical
B	heat	light
C	light	chemical
D	light	heat

14 What is defined as 'all of the populations of different species in an ecosystem'?

- A** community
- B** environment
- C** habitat
- D** trophic level