# BIOLOGY

# BOOKS - NAVNEET PUBLICATION

# ENERGY FLOW IN AN ECOSYSTEM

## Examples

**1.** What is ecosystem?

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**2.** Which are the different types of ecosystems?

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**3.** How do the interactions take place in the biotic and abiotic factors of ecosystem?

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**4.** Difference between gaseous cycle and sedimentary cycle.

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## Exercise

**1.** Choose the correct alternative and write it along with its allotted alphabet:

....., a British scientist first proposed the concept of the ecological pyramid.

A. Darwin

B. Whitteker

C. Charles Elton

D. Mendel

**Answer: C**

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**2.** Choose the correct alternative and write it along with its allotted alphabet:

Each level in the food chain is called .....level.

A. trophic

B. transit

C. pyramid

D. primary

**Answer: A**

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**3.** Choose the correct alternative and write it along with its allotted alphabet:

The flow of nutrients is .....

A. Unidirectional

B. cyclic

C. irregular

D. parallel

**Answer: B**

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**4.** Choose the correct alternative and write it along with its allotted alphabet:

Microbes that do not need oxygen are called.....

A. anaerobes

B. oxidizing

C. aerobic

D. oxygenic

**Answer: A**

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**5.** Choose the correct alternative and write it along with its allotted alphabet:

Most organisms do not use free.....

A. carbon dioxide

B. nitrogen

C. sulphides

D. air

**Answer: B**

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**6.** Choose the correct alternative and write it along with its allotted alphabet:

Living organisms of the enviornment are .....component.

A. abiotic

B. biotic

C. oxidizing

D. minimal

**Answer: B**

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**7.** Choose the correct alternative and write it along with its allotted alphabet:

Biotic and abiotic factors along with the interactions occuring in them together consitute an .....

A. food chain

B. food web

C. ecosystem

D. food pyramid

**Answer: C**

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**8.** Choose the correct alternative and write it along with its allotted alphabet:

The.....is the largest and extended ecosystem.

A. river

B. sea

C. earth

D. solar system.

**Answer: C**

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**9.** Choose the correct alternative and write it along with its allotted alphabet:

Only .....of energy obtained from the sun is utilized by the producers.

A. $10\ \%$

B. $20\ \%$

C. $30\ \%$

D. $50\ \%$

**Answer: A**

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**10.** Choose the correct alternative and write it along with its allotted alphabet:

Passage of energy in an ecosystem is referred to as .....transport.

A. cyclic

B. one way

C. multidirectional

D. reverse

**Answer: B**

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**11.** Choose the correct alternative and write it along with its allotted alphabet:

Pattern of energy exchange in an ecosystem is called a.....

A. food chain

B. food web

C. pyramid of energy

D. pyramid of numbers

**Answer: C**

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**12.** Choose the correct alternative and write it along with its allotted alphabet:

Plants convert carbon dioxide into.....by the process of photosynthesis.

A. protein

B. sugars

C. oil

D. none of the above

**Answer: A**

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**13.** Correct and write the following statements and justify your corrections:

Carnivores occupy the second trophic level in the food chain.

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**14.** Correct and write the following statements and justify your corrections:

The flow of nutrients in an ecosystem is considered to be a one way transport.

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**15.** Correct and write the following statements and justify your corrections:

Plants in an ecosystem are called primary consumers.

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**16.** Correct and write the following statements and justify your corrections:

Sedimentary cycle is speedier than gaseous cycle.

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**17.** Correct and write the following statements and justify your corrections:

Oxygen is present in large amount in the atomphere as compared to nitrogen.

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**18.** Match the columns:

| (1) Column 'A' | Column 'B' |
|---|---|
| (1) Plant Plankton | (a) Tertiary consumer |
| (2) Fungus | (b) Primary consumer |
| | (c) Secondary consumer |
| | (d) Decomposer |

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**19.** Match the columns:

| (2) Column 'A' | Column 'B' |
|---|---|
| (1) Inorganic carbon | (a) Conversion of nitrogenous compounds into gaseous nitrogen |
| (2) Sedimentary cycle | (b) $CO_2 \longrightarrow O_2$ |
| | (c) Phosphorus |
| | (d) Granite, diamond and limestone |

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**20.** Find the odd one out and give reason:

Bat, Elephant, Squirrel, Bear.

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**21.** Find the odd one out and give reason:

Deer, Tiger, Eagle, Leopard.

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**22.** Find the odd one out and give reason:

Crow, Pig, Frog, Vulture.

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**23.** Find the odd one out and give reason:

Frog, Owl, Fox, Deer.

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**24.** Find the odd one out and give reason:

Worm, Shellfish, Sparrow, Crab.

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**25.** Note the relationship between the firs two words and suggest suitable word in the fourth place :

Rabbit : Primary consumer : : Hawk: .....

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**26.** Note the relationship between the first two words and suggest suitable word in the fourth place :

Plants : Producers : : Bacteria : ..... .

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**27.** Note the relationship between the first two words and suggest suitable word in the fourth place :

Tundra : Land biome : : Ocean : ..... .

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**28.** Note the relationship between the firs two words and suggest suitable word in the fourth place :

Address of living organism in an ecosystem : Habitat : : Role/Profession of living organism in an ecosystem : .....

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**29.** Note the relationship between the first two words and suggest suitable word in the fourth place :

Producer : Autotroph : : Consumer : .....

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**30.** Distinguish between Energy flow and flow of nutrients in an ecosystem.

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**31.** Distinguish between Producer and Consumer.

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**32.** Define Omnivores.

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**33.** Define the following:

Ecosystem

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**34.** Define Geochemical.

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**35.** Define Energy pyramid or pyramid of energy.

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**36.** Define the following:

Food Chain

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**37.** Define the following:

Food Web

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**38.** Name the following:

Decomposers

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**39.** Name the scientist who studied the food chain and flow of energy through it.

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**40.** Name the scientist who proposed the concept of ecological pyramid.

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**41.** Any two explanations given by pyramid of energy.

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**42.** Two main characteristics of an ecosystem.

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**43.** complete the paragraph by choosing the words given in the bracket :

(apex, biotic, Carnivores, Herbivores, proteins, carbon dioxide)

Plants convert ..... into carbohydrates by the process of photosynthesis. Similarly, they produce carbon compounds like ..... and fats, too. ..... feed upon plants. ..... feed upon herbivores. In this way, ..... carbon is transported from plants to herbivores, from herbivores to carnivores and from carnivores to ..... consumers.

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**44.** Answer the following question:

Explain in detail the interrelationship between the food chain and food webs.

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**45.** Answer the following question:

What type of changes occur in the amount of energy during its transfer from plants to apex consumers?

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**46.** Answer the following question:

What are the differences between flow of matter and of energy in an ecosystem? Why?

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**47.** Answer the following question:

State the different types of bio-geochemical cycles and explain the importance of those cycles.

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**48.** Answer the following question:

What is meant by nitrogen fixation?

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**49.** Answer the following question:

Which microbes bring about the process of nitrogen fixation?

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**50.** Answer the following question:

Why are food chains rarely simple?

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**51.** Answer the following question:

Why are food chains often of complex nature?

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**52.** Answer the following question:

What would you do to help maintain the

equilibrium in the various bio-geochemical cycles? Explain in brief.

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**53.** Draw neat labelled diagram of Food chain.

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**54.** Draw neat labelled diagram of Trophic levels.

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**55.** Draw neat labelled diagram Energy pyramid in aquatic ecosystem.

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**56.** Draw neat labelled diagram Flow of energy through trophic levels.

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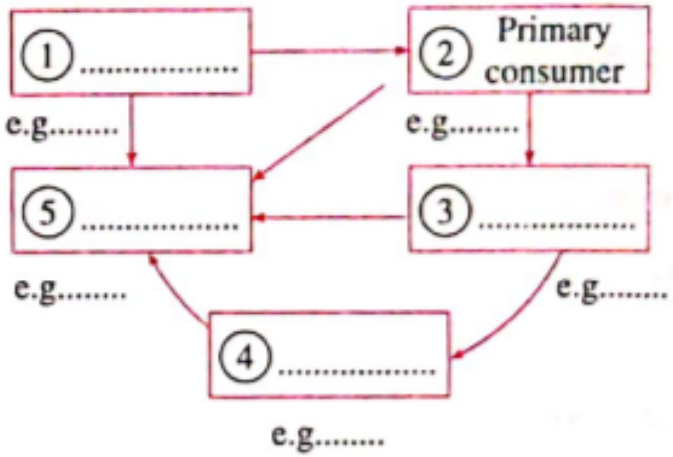
**57.** Complete the food chain

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**58.** Draw a concept diagram following bio-geochemical cycles:

Carbon cycle

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**59.** Draw a concept diagram following bio-geochemical cycles:

oxygen cycle

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**60.** Draw a concept diagram following bio-geochemical cycles:

Nitrogen cycle

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**61.** Give reasons:

Energy flow through an ecosystem is 'one way'

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**62.** Give reasons:

Equilibrium is necessary in the various bio-geochemical cycle.

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**63.** Give reasons:

The flow of nutrients through an ecosystem is cyclic.

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**64.** Give reasons:

Through the atmosphere contains $78\%$ of molecular nitrogen, still the soil is the main source of nitrogen for plants.

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**65.** Give reasons:

Denitrification reduces the fertility of the soil.

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**66.** Give reasons:

Oxygen is necessary for life.

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**67.** Give reasons:

Oxygen cycle can not operate in nature in the absence of green plants.

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**68.** Give reasons:

Plants in an ecosystem are called producers.

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**69.** Give reasons:

Decomposers are crucial biotic factors in an ecosystem.

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**70.** Write short note on

Food Web

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**71.** What is energy pyramid?

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**72.** Describe in brief the bio-chemical cycles in nature.

Carbon cycles.

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**73.** Describe in brief the bio-chemical cycles in nature.

Oxygen cycle.

Watch Video Solution

**74.** Describe in brief the bio-chemical cycles in nature.

Nitrogen cycle.

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**75.** Write whether the following statements are true or false, if false correct the statement.

The number of consumers in a food web is fixed.

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**76.** Use your brain power

What will be the effect on an ecosystem if only one type of organism in it forms the food for several different consumers in that ecosystem?

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**77.** Use your brain power

Why is balance or equilibrium necessary in a food web?

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**78.** Use your brain power

What happens to the energy during its transfer from producers to apex consumers?

Does it remain trapped in the apex consumers? Does it remain in the body of apex consumer till its death?

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**79.** Use your brain power

What would happens if the energy remains trapped in the body of apex consumers even after their death? What will happen if there were no decomposers like microbes and fungi in nature?

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**80.** Use your brain power

Why are the number of tertiary consumers (apex carnivores) always less than those of other consumers?

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**81.** Use your brain power

The carbon cycle is very effective in the temperate region. Why is it so?

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**82.** Use your brain power

Even through the carbon content on earth is constant, why is there a rise in temperature due to carbon dioxide?

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**83.** Use your brain power

Identify the relationship between carbon in

the air and the rise in atmospheric temperature.

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**84.** Paragraph based question

Read the following paragraphs and answer the questions based on it.

After the death of apex consumers, their energy becomes available to the decomposers. Fungi and other micro-organisms decompose the bodies of dead animals. They are called

decomposers. In the process of obtaining food from the remains of organisms, decomposers convert them into simple carbon compounds. These substances easily mix with air, water and soil from where they are again absorbed by plants and incorporated into the food chain.

How is energy supplied to decomposers?

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**85.** Paragraph based question

Read the following paragraphs and answer the

questions based on it.

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Name the decomposers. Where are they found?

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**86.** Paragraph based question

Read the following paragraphs and answer the questions based on it.

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These substances easily mix with air, water and soil from where they are again absorbed by plants and incorporated into the food chain.

Which susbtances are transferred in the food chain?

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**87.** Paragraph based question

Read the following paragraphs and answer the questions based on it.

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energy becomes available to the decomposers. Fungi and other micro-organisms decompose the bodies of dead animals. They are called decomposers. In the process of obtaining food from the remains of organisms, decomposers convert them into simple carbon compounds. These substances easily mix with air, water and soil from where they are again absorbed by plants and incorporated into the food chain.

How is energy and other nutrients circulated in the ecosystem?

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**88.** Paragraph based question

Read the following paragraphs and answer the questions based on it.

After the death of apex consumers, their energy becomes available to the decomposers. Fungi and other micro-organisms decompose the bodies of dead animals. They are called decomposers. In the process of obtaining food from the remains of organisms, decomposers convert them into simple carbon compounds. These substances easily mix with air, water and soil from where they are again absorbed by

plants and incorporated into the food chain.

How does dead remains useful to ecosystem?

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