



SHIKSHA CLASSES

Sub. : Science
Std. : Xth - CBSE

Answer Paper
15. Our Environment

Marks : 30

SECTION (A)

(Each 1 marks)

Q.1 : What will happen if deer is missing in the food chain given below?

Grass → Deer → Tiger

Ans : d) The population of tiger decreases and the population of grass increases.

OR

In a food chain the second trophic level is occupied by :

Ans : c) Herbivores

Q.2 : Select the biodegradable wastes : DDT, crop residue, leather, glass.

Ans : Crop residue, leather.

OR

List two man-made ecosystems.

Ans : Cropland, aquarium.

Q.3 : Assertion(A): Accumulation of harmful chemicals is maximum in case of organisms at higher trophic level.

Reason(R): Food chain normally do not go beyond 3 or 4 trophic level.

Ans : b) Both A and R are true, but R is not the correct explanation of the assertion.

Q.4: Assertion(A): Ozone is formed in upper atmosphere by O₂ in presence of UV radiations.

Reason(R): Ozone depletion will lead to UV rays reaching earth which may cause skin cancer.

Ans : b) Both A and R are true, but R is not the correct explanation of the assertion.

Q.5: Assertion(A): Polythene bags and plastic containers are non-biodegradable substances.

Reason(R): They can be broken down by microorganisms in natural simple harmless substances.

Ans : c) A is true, but R is false.

Q.6: Write True or False :

The disposal of wastes by putting it in low-lying areas of ground and covering it with earth is called landfill.

Ans : True

Q.7 : Observe the diagram and answer any Two questions from 5(i) to 5(iii) (2)



i) Snake is which type of consumer?

Ans : c) Tertiary

ii) If the frog is reduced from the food chain which type of consumer are reduced?

Ans : d) Tertiary and Final

iii) Name the final consumer in the diagram.

Ans : b) Eagle

Q.8: Which is incorrect:

Ans : b). green plants get their food from organic compounds

Q.9: The % of solar radiation absorbed by all green plants for photosynthesis is about _____

Ans : a) 1%

Q.10: The flow of energy in ecosystem :

Ans : a) unidirectional

Q.11: In an ecosystem, the 10% of energy available for transfer from one trophic level to next is in the form of ____.

Ans : d) chemical energy

Q.12: In a food chain, the third trophic level is always occupied by ____.

Ans : a) carnivores

Q.13: An ecosystem includes ____.

Ans : c) both living and non living components

Q.14: The number of atoms of oxygen in ozone ____.

Ans : b) 3

Section B

(Each 2 Marks)

Q.15 : Define the term biomagnification.

Ans : Biomagnification is the increase in the level of a non-biodegradable substance with each successive rise in the trophic level of a food chain.

OR

What is ecosystem ?

Ans : Ecosystem is self sustained ecological system which consists of a distinct biotic community and the physical environment both interacting and exchanging materials between them.

**Q.16: “The maximum concentration of harmful chemicals accumulates in human beings “
State the phenomenon involved and justify this statement.**

Ans : Human beings are omnivorous and lie at the tip of almost every food chain. They are also long lived. Harmful chemicals reach in higher concentration through biomagnification and continue to accumulate in their bodies. Therefore, non-biodegradable chemicals occur in maximum concentration in human beings.

Section C

(Each 3 Marks)

Q.17 : Distinguish between biodegradable and non-biodegradable substances. List two effects of non-biodegradable substances in our environment.

Ans : a) Differences between Biodegradable and Non-biodegradable Substances:

Biodegradable Wastes	Non-biodegradable Wastes
1. Origin. They are biological in origin.	They are commonly man-made.
2. Degradability. The wastes are degraded by microorganisms.	They are not degraded by microorganisms.
3. Accumulation. They do not accumulate in nature.	They pile up and accumulate in nature.
4. Biomagnification. The biodegradable wastes do not show biomagnification.	The soluble non-degradable wastes enter food chains and undergo biomagnification.
5. Resource. The wastes can be converted into resource. Examples : Garbage, livestock wastes, sewage.	Some wastes can be recycled. Examples : Plastic, polythene, glass, nickel, cadmium, several pesticides.

b) Effects of Non-biodegradable Substances:

Ans : Effects of Non-biodegradable Substances:

1. Dumping Area: Dumping of non-biodegradable substances on a piece of land converts the same into barren land. It is also called landscape pollution.

2. Biological Magnification: Pesticides, heavy metals and other chemicals enter water and food chains. They accumulate in toxic proportions and harm all kinds of living organisms. Their concentration also increases with rise in trophic level. Human beings are harmed the most because man lies at the top of every food chain.

OR

i) Give any two ways in which biodegradable substances would affect the environment.

ii) What will happen if we kill all the organisms in one trophic level?

Ans : i) 1. Biodegradable substances are decomposed by the action of microorganism and decomposed materials are recycled through geo-chemical cycle.

2. These substances keep the environment clean.

ii) If we kill all the organisms in one trophic level, then transfer of energy as well as matter to next higher level will stop. It will lead to over-population at one particular level causing amongst the individuals. This would seriously disturb the food chain and can cause the collapse of an ecosystem even.

Q.18 : Write the cause of each of the following:

i) Acid Rain

ii) Depletion of ozone layer in the atmosphere

iii) Greenhouse effect in air.

Ans : i) **Acid Rain:-** SO₂ and NO₂ released mainly from automobile exhausts (which in turn oxidised to H₂SO₄ and HNO₃.)

ii) **Depletion of Ozone Layer:-** CFCs (ChloroFluoro Carbons) used in refrigerator, aerosol.

iii) **Green house effect:-** CO₂ and methane which is produced by burning of fossil fuel, agricultural activity etc. trap the heat radiated from earth causing greenhouse effect on earth (increasing the temperature of earth).

SECTION (D)

(5 Mark)

Q.19 : Name any five pollutants that cause diseases. Which diseases do they cause? Give details.

Ans : i) **Carbon Mono- oxide :-** reacts the quickest with Hb forming a stable compound called carboxy haemoglobin which is a very potent respiratory poison causing suffocation and death.

ii) **Silicon- dioxide :-** released in ceramic and glass industries cause silica tuberculosis. The workers of these industries often suffer from cough and chest pain.

iii) **Asbestos:-** released from asbestos making industries can cause asbestosis. Asbestosis is considered to be a cancer causing agent.

iv) **Cotton dust:-** released out of fabric/ carpet making industries can cause lung lesions which is a dissolving lung disorder.

v) **Coal dust:-** released from coal mines cause pneumoconiosis which results in lung disorders.

OR

i) Energy flow in a food chain is unidirectional. Justify this statement.

ii) Explain how the pesticides enter a food chain and subsequently get into our body?

Ans : i) The producers convert solar energy into chemical energy in the form of organic compounds. The primary consumers (herbivores) derive their nutrition from the producers. According to the energy transfer law, only 10% of energy is transferred from one trophic level to the other. So, the energy that is captured by the producers does not reverse back to the Sun and the energy transferred to the herbivores does not come back to the producers. It just keeps on moving to the next trophic level in one direction. That is why the flow of energy in the food chain is always unidirectional.

ii) A large number of pesticides and chemicals are used to protect our crops from pests and diseases. Some of these chemicals are washed down from the soil, while some enter the waterbodies. From the soil, they are absorbed by plants along with water and minerals, and from the waterbodies, they are taken up by aquatic plants and animals. This is how these chemicals enter the food chain.

As these chemicals cannot decompose, they accumulate progressively at each trophic level. This increase in the concentration of harmful chemicals with each step of the food chain is called biomagnification. As human beings occupy the top level in any food chain, these chemicals get accumulated in our bodies in maximum amount.

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