



INDIAN SCHOOL AL WADI AL KABIR



Class: X	DEPARTMENT OF SCIENCE -2022-23 SUBJECT: BIOLOGY	DATE OF COMPLETION: 21/08/22
WORKSHEET NO:3 WITH ANSWERS	TOPIC: OUR ENVIRONMENT	A4 FILE FORMAT (PORTFOLIO)
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

I OBJECTIVE TYPE QUESTIONS

Ia. Fill in the blanks:

1. Chlorofluorocarbon depletes _____.
2. Substances which cannot be decomposed by the action of micro-organisms are called as _____ wastes.
3. Smallest man-made ecosystem is _____.
4. The producers occupy the _____ trophic level in the food chain.
5. The flow of energy in an ecosystem is always _____.

Ib. Multiple choice questions:

6. Only _____ % of energy is transferred from sun to the producers.
a) 1% b) 10% c) 100% d) 1000%
7. The accumulation of non-biodegradable pesticides in different trophic levels:
a) Biological degradation b) Biological magnification
c) Biological decomposition d) Biological concentration
8. Which of the following is the best way for disposal of vegetable and fruit peels?
a) Landfill b) Recycling c) Composting d) Burning
9. Organisms which synthesise carbohydrates from inorganic compounds using radiant energy is called
a) decomposers b) producers c) herbivores d) carnivores
10. In a food chain the third trophic level is occupied by:
a) Carnivores b) Autotrophs c) Herbivores d) Producers

Ic. ASSERTION AND REASONING:

For the questions 11 to 13, two statements are given—one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the options (i), (ii), (iii) and (iv) as given below:

- (i) Both A and R are true and R is the correct explanation of the assertion.
- (ii) Both A and R are true but R is not the correct explanation of the assertion.
- (iii) A is true but R is false.
- (iv) A is false but R is true.

11. **Assertion:** Green plants of the ecosystem are the producers.

Reason: Producers trap the radiant energy of the sun and change it into chemical energy to make glucose.

12. **Assertion:** The flow of energy in an ecosystem is unidirectional

Reason: Energy captured by the autotrophs does not get revert back to the solar input and it passes to the herbivores.

13. **Assertion:** Animals adopt different strategies to survive in hostile environment.

Reason: The chameleon changes its skin colour to camouflage and merge with its surroundings.

14. **Assertion:** Aquariums are manmade ecosystems.

Reason: Aquariums are made and maintained by humans.

15. **Assertion:** The concentration of nonbiodegradable pesticides is in humans.

Reason: Humans are at the apex of the food chain.

16. Id. PASSAGE BASED QUESTIONS:

The effects of biomagnification in top predators, and the following decrease in abundance, came into light during the 1960s, and in the 1970s the white-tailed sea eagle (*Haliaetus albicilla*), otter (*Lutra lutra*), and seals, for example, the gray seal (*Halichoerus grypus*) gave the consequences of toxic pollution a face in the Baltic Sea. To the most important direct causes were effects of DDT on the ability to secrete calcium in the females, which made the egg thin-shelled with risk to break during the incubation (Bernes, 2005). Pollutants from pulp bleaching caused skeletal deformities and disturbances of metabolism, growth, and development of sexual organs in fishes exposed to wastewater of pulp mill industries (Bernes, 2005). DDT was banned in the western European countries in the mid-1970s (Figure 8), but in the old eastern European nations DDT was still in use around the year 2000. Therefore, the concentration of herring has decreased more in the Gulf of Bothnia, Kattegat, and Skagerrak compared to the southern Baltic Sea.

(I). What is Biomagnification?

- (a) Biomagnification takes place as chemicals transfer from lower trophic levels to higher trophic
- (b) excessive richness of nutrients in a lake or other body of water, frequently due to run-off from the land, which causes a dense growth of plant life.
- (c) Biomagnification takes place as chemicals transfer from higher trophic levels to lower trophic
- (d) Biomagnification takes place as chemicals transfer from food chain to the next.

(II). Why has the concentration of herring decreased more in the Gulf of Bothnia, Kattegat, and Skagerrak compared to the southern Baltic Sea?

- a) In the old eastern European nations around Gulf of Bothnia, Kattegat, and Skagerrak DDT was still in use
- b) In the old eastern European nations around Gulf of Bothnia, Kattegat, and Skagerrak DDT was banned
- c) DDT was not banned in the western European countries near southern Baltic Sea.
- d) DDT has nothing to do with the population herrings.

(III). What were effects of DDT on white-tailed sea eagle?

- a) It effects the ability to secrete calcium in the females, which made the egg thick-shelled.
- b) It effects the ability to secrete calcium in the females, which made the egg thin-shelled.
- c) It caused skeletal deformities and disturbances of metabolism, growth, and development of sexual organs.
- d) The DDT has no effect on the white-tailed sea eagle.

(IV). What is the effect of Pollutants on fishes from pulp bleaching in the pulp mill industries?

- a) The ability to secrete calcium in the females, which made the egg thick-shelled.
- b) The ability to secrete calcium in the females, which made the egg thin-shelled.
- c) Caused skeletal deformities and disturbances of metabolism, growth, and development of sexual organs.
- d) Fishes are not affected by the pollutants from pulp bleaching.

(V). The effects of biomagnification in top predators, and the following decrease in abundance, first came into light during –

- a) In the 1970s
- b) In the 2000
- c) In the 2005
- d) In the 1960s

II. VERY SHORT ANSWERS TYPE QUESTIONS CARRYING 1 MARK EACH

- 17. What is a biodegradable substance?
- 18. We often use the word environment. What does it mean?
- 19. Give an example of food chain of three trophic levels that exists in a grassland.
- 20. What is the function of ozone in the upper atmosphere?
- 21. Name two decomposers.

III. SHORT ANSWER TYPE QUESTIONS CARRYING 3 MARKS EACH

- 22. Why do producers always occupy the first trophic level in every food chain?
- 23. “Damage to the ozone layer is a cause of concern.” Justify the statement. Suggest any two steps to limit this damage.
- 24. Give an example to illustrate that indiscriminate use of pesticides may result in the degradation of the environment.

25. Why are bacteria and fungi called decomposers? List any two advantages of decomposers to the environment.

26. "Energy flow in a food chain is unidirectional." Justify this statement. Explain how the pesticides enter a food chain and subsequently get into our body.

IV. LONG ANSWER TYPE QUESTIONS CARRYING 5 MARKS EACH

27 Give reason to justify the following:

- (a) The existence of decomposers is essential in a biosphere.
- (b) Flow of energy in a food chain is unidirectional.

28. A team of Indian researchers went to Antarctica to study the ozone layer. They confirmed the presence of largest ozone hole over Antarctica and was just short of 27 million sq. km. After few days of their return, one of the scientists developed rashes, burning sensation and other skin problems which the doctors have confirmed as skin cancer.

- (a) What may be the cause of cancer just after return from Antarctica?
- (b) What do we learn from this incident?

29. Raju and Lokesh are neighbours in a colony. Raju maintains a compost pit by using bio-degradable household wastes. Lokesh throws the household waste in two separate dustbins.

- (a) Whom do you support? Why?
- (b) How is Raju justified.
- (c) Maintaining two dustbins for bio-degradable and non-biodegradable wastes is a good idea. How is Raju's practice better than that of Lokesh?

V. BOARD BASED QUESTIONS.

30. Why should biodegradable & non-biodegradable wastes be discarded in two different dustbins? (1)

31. What is an ecosystem? (1)

32. What are decomposers? State the role of decomposers in the environment. (2)

33. Kulhads (disposable cups made of clay) and disposable paper cups both are used as an alternative for disposable plastic cups. Which one of these two can be considered as a better alternative to plastic cups and why? (2) 2022

34. Human beings are most adversely affected by the Biological Magnification. State the reason. Why can ordinary washing of edibles (fruits and vegetables) not reduce the effect of biological magnification? (2) 2022

ANSWERS

1.	Ozone layer
2.	Non-biodegradable
3.	Aquarium
4.	First trophic level
5.	Unidirectional
6.	a) 1%
7.	b) Biological magnification
8.	(c) Composting
9.	b) producers
10.	a) Carnivores
11.	(iv)A is false but R is true.
12.	(i)Both A and R are true and R is the correct explanation of the assertion.
13.	(i)Both A and R are true and R is the correct explanation of the assertion.
14.	(i)Both A and R are true and R is the correct explanation of the assertion.
15.	(i)Both A and R are true and R is the correct explanation of the assertion.
16.	<p>(I) (a) Biomagnification takes place as chemicals transfer from lower trophic levels to higher trophic</p> <p>(II) In the old eastern European nations around Gulf of Bothnia, Kattegat, And Skagerrak DDT was still in use</p> <p>(III) (b) It effects the ability to secrete calcium in the females, which made the egg thin-shelled.</p> <p>(IV) Caused skeletal deformities and disturbances of metabolism, growth, and development of sexual organs.</p> <p>(V) d) In the 1960s</p>
17.	Biodegradable substances are the substances that are broken down by biological processes.
18.	The environment is the interaction between the physical, chemical and biological conditions of the region.
19.	Grass -----→ Deer-----→ Tiger
20.	Ozone shields the surface of the earth from the ultraviolet rays of the Sun.

21.	Bacteria and fungi.
22.	Producers are the green plants that can manufacture food using CO ₂ and H ₂ O in the presence of sunlight, i.e., they are autotrophs. They serve as a source of food for all non-producers or consumers directly or indirectly. Hence, producers occupy the first trophic level in a food chain.
23.	<p>Cause of Concern: Ozone layer present in the stratosphere has thinned out by about 8% over the equator and more so over the Antarctica where a big ozone hole appears every year. This has increased the level of UV-B radiations reaching the earth by 15-20%. These radiations are causing increased number of skin cancers, cataracts and reduced immunity in human beings. There is increased incidence of blinding of animals, death of young ones, reduced photosynthesis, higher number of mutations and damage to articles.</p> <p>Steps to Limit Damage -</p> <ol style="list-style-type: none"> 1. Ban on production and use of halons. 2. Ban on production and use of chlorofluorocarbons.
24.	Pesticides are the chemicals used to kill plant and animal pests. They are non-biodegradable and toxicants. For example, excessive use of DDT resulted in reduced population of fish eating birds. DDT accumulated in such birds through the food chain. It interfered with the egg shell formation. The shell being thin broke due to weight of the bird during incubation. Hence, their population declined.
25.	<p>(a) Decomposers: Most of the bacteria and fungi are saprophytes. They obtain their nourishment from organic remains. For this they secrete digestive enzymes over the remains. The remains are converted into soluble absorbable form. This results in decomposition of organic matter. Therefore, bacteria and fungi are called decomposers.</p> <p>(b) Advantages:</p> <ol style="list-style-type: none"> 1. Scavengers: Decomposers function as scavengers by removing organic remains and cleansing the earth. 2. Mineralisation: Decomposers release inorganic nutrients trapped in organic remains. The same are recycled.
26.	<p>“Energy flow in a food chain is unidirectional.” In the ecosystem energy flows from one trophic level to the next trophic level of the food chain. Energy flows from producers i.e., green plants to the consumers. It does not flow from the last consumer to its previous consumer and so on. Thus, the energy does not flow back from consumers to the producers. So, we say that flow of energy in an ecosystem is unidirectional.</p> <p>Entry of pesticides in a food chain: Some harmful chemicals like pesticides, when absorbed by the plants through soil and water, get transferred from first trophic to the last trophic level of the food chain. As these chemicals are non-degradable, their concentration in the bodies of living organisms at each trophic level progressively increases. Their increase in the concentration of harmful chemicals in the body of living organisms at each trophic level of a food chain is called biological magnification. The level of concentration of chemicals is maximum for human beings as they are at the highest trophic level.</p>

27.	<p>(a) Decomposers break down complex organic substances (dead remains and waste products of organisms) into simpler inorganic substances that can be absorbed by the plants. They are essential for the proper functioning of an ecosystem.</p> <ul style="list-style-type: none"> • Decomposers play an important role in the cycling of materials in the biosphere. • By decomposing dead bodies of plants and animals they help in cleaning the environment. • They replenish the soil naturally. <p>(b) In the ecosystem energy flows from one trophic level to the next trophic level of the food chain. Energy flows from producers, i.e., green plants to the consumers. It does not flow from the last consumers to its previous consumers and so on. The energy captured by the autotrophs does not go back to the solar input. Thus, the energy does not flow back from consumers to the producers. Hence the flow of energy in a food chain is unidirectional.</p>
28.	<p>(a) The scientists were exposed to harmful UV-radiations of the sunlight as there was a big hole over Antarctica and this might be the cause of skin cancer. The ozone layer acts as an ozone shield and absorbs the harmful UV-radiations. The UV-radiations have extremely harmful effects on human beings, animals as well as plants.</p> <p>(b) We learn that the ozone layer is very important for the existence and survival of life on earth. Ozone layer absorbs high energy UV-radiations causing a rise in temperature of the stratosphere. The use of chemicals like CFCs has endangered the ozone layer. CFCs used as refrigerator coolants rise to the stratosphere where these molecules are broken down by UV-rays resulting in attack on the ozone molecules damaging the ozone umbrella of earth. Due to ozone layer depletion UV-rays reaching the earth cause skin cancer, cataracts, damage immune system, etc. UV-rays also decreases crop yield and certain fish larvae which are important constituents of aquatic food chains. It may also disturb global rainfall causing ecological disturbance. In this way all on the earth would be destroyed gradually.</p>
29.	<p>(a) Raju. He is sparing the municipal committee of picking up biodegradable waste and transporting the same to disposable sites.</p> <p>(b) Raju is producing her own compost for her home garden. He is not only saving money on purchase of manure and fertilizer but is also practicing organic farming.</p> <p>(c) Lokesh's practice of keeping two separate bins of bio-degradable and non-biodegradable garbage is most suitable but Raju's practice is better as it reduces the bulk of garbage and saves on money.</p>
30.	<p>Biodegradable and non-biodegradable wastes should be discarded in two separate bins because of their effective treatment and disposal. The separation of these wastes must be done at the source only. This will help in preventing environmental pollution.</p>
31.	<p>It is a structural & functional unit of the biosphere consisting of living beings & the physical environment, which interact with each other & maintain a balance in nature.</p>
32.	<p>Refer Answer no. 25</p>
33.	<p>Making Kulhad made of clay on a large scale resulted in the loss of fertile top soil. Now, disposable paper cups are used because the paper can be recycled, it is biodegradable and is eco-friendly material which does not cause harm to the environment.</p>
34	<p>Biomagnification makes humans more prone to cancer, kidney problems, liver failure, birth defects, respiratory disorders, and heart diseases.</p>

Ordinary washing of edibles (fruits and vegetables) does not reduce the effect of biological magnification because there is concentration of harmful chemicals (say pesticides) in them when we sprayed this harmful chemical over the plants to protect them from pests and insects.
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Prepared by Mr. Gerard Thomas	Checked by: HOD -SCIENCE
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