RAVI MATHS TUITION CENTER, CHENNAI - 82. WHATSAPP - 8056206308

10TH CBSE Our Environment

10th Standard CBSE

Science

Exam Time : 01:00:00 Hrs

Total Marks : 50

1) Which of the following groups contain only biodegradable items? **1**

(a) Grass, flowers and leather (b) Grass, wood and plastic

(c) Fruit-peels, cake and lime-juice (d) Cake, wood and grass

2) Which of the following constitute a food-chain? **1**

(a) Grass, wheat and mango **(b) Grass, goat and human**

(c) Goat, cow and elephant (d) Grass, fish and goat

3) Which of the following are environment -friendly practices? **1**

(a) Carrying cloth-bags to put purchases in while shopping

(b) Switching off unnecessary lights and fans

(c) Walking to school instead of getting your mother to drop you on her scooter

(d) All of the above

4) Accumulation of non-biodegradable pesticides in the food chain in increasing amount at each higher trophic level is known as **1**

(a) Eutrophication (b) Pollution **(c) Bio magnification**

(d) Accumulation

5) Organisms which synthesize carbohydrates from inorganic compounds using radiant energy are called **1**

(a) Decomposers **(b) Producers** (c) Herbivors (d) Carnivores

6) Organisms of a higher trophic level which feed on several types of organisms belonging to a lower trophic level constitute the **1**

(a) Food web (b) Ecological pyramid (c) Ecosystem (d) Food chain

7) **Assertion:** The flow of energy in food chain is unidirectional. **1**

Reason: The energy that flows from grass to deer cannot get back to grass.

Codes

(a) If both assertion and reason are true and the reason is correct explanation of assertion.

(b) If both assertion and reason are true but reason is not a correct explanation of assertion.

(c) If assertion is true and reason is false.

(d) If both assertion and reason are false.

Answer : (a) If both assertion and reason are true and the reason is correct explanation of assertion.

8) **Assertion:** Harmful chemicals enter our bodies through the food chain. 1
Reason: The highest member in the food chain has the least amount of chemical.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.
Answer : (c) If assertion is true and reason is false.

9) **Assertion:** Living organisms form biotic component of environment 1
Reason: Non living part of environment are air, water, soil, etc.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.
Answer : (b) If both assertion and reason are true but reason is not a correct explanation of assertion.

10) **Assertion**: A small food chain is better than the longer one. 1
Reason: The producers produce more energy in small food chain.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false
Answer : (c) If assertion is true and reason is false.

11) Why are some substances biodegradable and some non-biodegradable? 2
Answer : Substances which are of organic origin are biodegradable, while those of inorganic origin are non-biodegradable. Organic substances can be utilised by decomposers as food, while other substances cannot be utilised by decomposers as food. Due to this, some substances are biodegradable while some others are non-biodegradable.

12) What is the role of decomposers in the ecosystem? 2

Answer : Decomposers decompose dead remains of plants and animals. By doing so, they serve two purposes, One; they reduce the burden on the environment by clearing dead remains. Two, they channelize the raw materials back to the environment.

13) Will the impact of removing all the organisms in a trophic level be different for different trophic levels? Can the organisms of any trophic level be removed without causing any damage to the ecosystem? 2

Answer : (a) The impact of removing all the organisms in a trophic level shall be similar for different trophic levels; although their manifestations can be different.
(b) Organisms of any trophic level cannot be removed without causing any damage to ecosystem. The examples of lions and deer in the previous answer illustrate this.

14) What are the problems caused by the non-biodegradable wastes that we generate? 2

Answer : Non-biodegradable waste doesn't decompose under the action of bacteria and other microorganisms.
1. When these substances, e.g., polythene, plastics are buried under soil render that area barren and leads to soil pollution.
2. These wastes don't bum completely in presence of oxygen and release toxic gases which causes air pollution.
3. The substances may be harmful on accumulating in food chain like DDT due to biomagnification.

15) Give any two ways in which biodegradable substances would affect environment. 3

Answer : Biodegradable substances can affect the environment in following ways:
(a) They serve breeding ground to flies.
(b) Bio degradable substances in large quantities would contribute to the pollution of the environment.

16) Give any two ways in which non- biodegradable substances would affect the environment. 3

Answer : Non- biodegradable substances would affect the environment in following two ways:
(a) By increasing the burden on the environment because they would accumulate.
(b) By producing harmful polluting gases, if they are burnt.

17) What are trophic levels? Give an example of a food chain and state the different trophic levels in it. 3

Answer : (a) A particular level in a food chain is called trophic level.
(b) The following example shows trophic levels in a food chain:
Grass$\rightarrow$ Grasshopper$\rightarrow$ Frog$\rightarrow$ Snake
(c) The different trophic levels are:Producer$\rightarrow$ 1^{st}trophic level Primary Consumer$\rightarrow$ 2^{nd} trophic level Secondary Consumer$\rightarrow$ 3^{rd} trophic level Tertiary Consumer$\rightarrow$ 4^{th} trophic level.

18) What will happen if we kill all the organisms in one trophic level? 3

Answer : If all the organisms in one trophic level are killed, it will disturb the whole ecosystem. Let us take a hypothetical example to understand this. If all the deer are killed in a jungle, the lions would be left with no food. This would endanger the existence of lions. Once the lions and deer would be finished, it would result in population of deer would increase substantially. This will finish off all the green plants and finally even the deer would be left with no food for deer would be left with no food for them.

19) If all the waste we generate is biodegradable, will this have no impact on the environment? 4

Answer : If all the waste we generate is biodegradable, this would also have an impact on the environment but most of the impacts would be positive. After decomposition, the biodegradable substance produces different raw materials which are sent back to the ecosystem. The solid remains would add to the humus content of soil.

There can be some negative impacts; like obnoxious smell which is created during the process of decomposition. There can also be a possibility of sparking an epidemic if the waste is dumped near a residential area or is allowed to contaminate the water bodies. So, it is not the biodegradable waste which is going to create the problem, rather the way we dispose it.

20) Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage? 4

Answer : Ozone layer works like a protective shield for living beings. The ozone layers wards off harmful ultraviolet radiations from the sun. Damage to the ozone layer can result in increased level of ultraviolet radiations in our atmosphere. This would be very dangerous for all life forms.

In 1987, the UNEP (United Nations Environment Programme) succeeded in forging an agreement among different nations to freeze the CFC production at 1986 level. Later, an agreement was signed among different nations to phase out CFCs. It is important to note that CFC is used in refrigerators and aerosol spray. India is also a signatory of that agreement and thanks tot he efforts by the United Nations and different environmentalists, the CFC emission has been put under some control.

21) (a) What is 'environmental pollution'? 4

(b) Distinguish between biodegradable and non-biodegradable pollutants.

(c) Choose the biodegradable pollutants from the list given below:

Sewage, DDT, radioactive waste, agricultural waste.

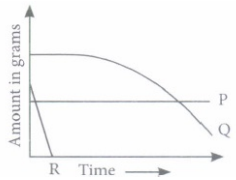
Answer : (a) Environmental pollution is an undesirable change in the physical, chemical or biological characteristics of the natural environment, brought about by man's activities. This pollution may affect the soil, rivers, seas or the atmosphere.

Bio-degradable pollutants	Non-biodegradable pollutants
(i) These pollutants can broken down into non-poisonous substances in nature by the action of microorganisms.	(i) These pollutants cannot be broken down into non-poisonous substances by microorganisms.
(ii) They get recycled thus, do not need any dumping sites.	(ii) They cannot be recycled thus, require dumping sites.
(iii) These are generally obtained from living things.	(iii) These are generally obtained from non-living things.
(iv) They cause minimum environmental pollution.	(iv) They cause environmental pollution.

(c) Biodegradable pollutants are sewage and agricultural waste.

22) Advancement of the technology has resulted in improvement of our lifestyle and has also changed our attitude. When the human population was low and technology was in its infancy, the various kinds of solid wastes generated due to human activities were easily degraded by decomposers present in nature and it did not create any Significant harmful effect on the environment. In the recent times, however human population has increased tremendously and the technology has become greatly advanced. These two factors have contributed Significantly in the deterioration of our environment due to addition of number of wastes. 4

(i) Samaira took three different types of solid wastes P,Q, R and buried them under the soil in a pot, as she wanted to study their rate of decomposition. Her findings are shown in the given graph



Select the option that correctly identifies P, Q and R

	P	Q	R
(a)	**Polythene bag**	**Leather bag**	**Fruit peel**
(b)	**Used syringes**	**Broken glass**	**Leather purse**
(c)	**Cardboard**	**Cow dung**	**Rubber mat**
(d)	**Human excreta**	**Paper cup**	**Cow dung**

(ii) Which of the following statements regarding solid wastes is correct?

(a) Change in the packaging technology has resulted in generation of lot of solid wastes.

(b) Dumping of solid wastes could reduce the fertility of the soil leading to reduction in crop yield.

(c) Accumulation of solid waste could cause increased incidents of disease in a locality.

(d) All of these

(iii) Teacher kept few solid wastes in her class as given

Jute bag (I), Tube light (II), Aluminium (oil (III), Paper cup (IV), Fruits (V), Glass tumbler (VI), Hedge trimming (VII), Plastic bag (VIII), Metal keys (IX), DDT (X)

She asked students to arrange them in group A (Biodegradable) and group B (Non-biodegradable). Select the student that has grouped the items correctly.

(a) Tarun -	**Group A: I, IV, V,VII,**	**Group B : II, III, VI, VIII, IX, X**
(b) Shivani -	**Group A : I, III, V,VII, X**	**Group B : II, IV, VI, VIII, IX**
(c) Neha -	**Group A: II, III, IV, V, IX**	**Group A: II, III, IV, V, IX**
(d) Advait -	**Group A : I, III, IV, V,X**	**Group B : II, VI, VII, VIII, IX**

(iv) Select the option that incorrectly matches the type of solid waste and its correct disposal system

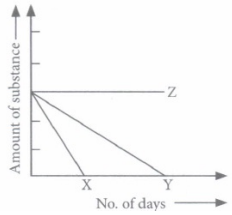
(a) Plastic bottle - Send for recycling

(b) Used tea leaves and kitchen waste - Collect in a pit to form compost

(c) Used syringes and needle - Wash and reused

(d) Municipal solid waste and fecal sludge - Buried in low lying areas to level uneven surface of land

(v) Given graph shows time taken by different types of materials to decompose.



Which of the following substances could be anon-biodegradable material?

(a) X (b) Y (c) Z (d) None of these

Answer : (i) (a) : According to the given graph, P is a waste that is not decomposed with the time. Hence, it can be a non-biodegradable waste such as glass and plastic wastes, synthetic polymers, pesticides, etc. Q took sometime for decomposing, hence it can be a waste made up of biodegradable material such as leather bag. As R starts decomposing in a very short span of time, this means it is a biodegradable waste such as fruit peel, cow dung, human excreta, etc.

(ii) (d): Increased use of plastic material in packaging has resulted in generation of lot of solid wastes. Dumping industrial chemical waste affects the soil fertility and subsequently reduces crop yield. Solid waste can block drains creating pools of water which can become breeding ground for mosquitoes and therefore, could increase the incidents of disease in the locality.

(iii) (a)

(iv) (c) : Used syringes and needles should not be reused as they may be contaminated. They must be burned at high temperature inside a closed chamber to prevent cross contamination.

(v) (c) : Both substances X and Y decompose so they both are biodegradable materials. Substance Z does not decompose at all. Hence, it could be a non-biodegradable material.

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23) Ozone layer is present in the earth's atmosphere. It is in the form of a protective shield. It contains three oxygen atoms (O_3) which are formed as a

consequence of photochemical reactions in the environment. Ozone absorbs harmful ultraviolet radiations of the sun. In this way, it protects all living beings on the earth. The thinning of ozone layer due to various human activities allows more UV radiations to pass through it which leads to harmful effects on man, animals and plants.

(i) Ozone layer is present in which layer of the atmosphere?

(a)	**(b)**	**(c)**	**(d)**
Troposphere	**Mesosphere**	**Stratosphere**	**Thermosphere**

(ii) Enhanced UV-radiations would affect humans and other animals causing

(a) skin cancer

(b) blindness and increased chances of cataract in eyes

(c) malfunctioning of the immune system

(d) all of these

(iii) Read the given statements regarding ozone.

I. Ozone hole was first discovered over Montreal in 1976.

II. Ozone is a result of photochemical reactions in which starting molecule is oxygen.

III. Harmful chemicals produce active chlorine in presence of UV radiations, that destroys ozone layers.

IV. Ozone absorbs UV-radiations in the range of 800 - 1100 A.

Select the option that correctly identifies them as true (T) and false (F).

I	**II**	**III**	**IV**
(a) F	**T**	**T**	**F**
(a) F	**F**	**T**	**T**
(c) T	**T**	**F**	**F**
(d) T	**F**	**T**	**T**

(iv) Which of the following are related to depletion of ozone layer?

(a) Chlorofluorocarbons **(b) Halons**

(c) Carbon tetrachloride **(d) All of these**

(v) Refer to the given events regarding thinning of ozone layer and arrange them in a sequence.

I. Active chlorine is produced in presence of UV radiations.

II. CFCs are released in the air.

III. Ozone layer in the stratosphere become thin.

IV. CFCs enter from troposphere into stratosphere.

V. Use of CFCs in refrigerators and air conditioners as coolants.

VI. Active chlorine destroy ozone by converting it into oxygen.

(a) V → II → I → VI→IV → III **(b) V → II → IV →I →VI → III**

(c) V→ I → II → III→VI → IV **(d) V → IV→ II →I → III → VI**

Answer : (i) (c) : Ozone is present in the stratosphere of the earth's atmosphere between 20 to 26 km above sea level.
(ii) (d)
(iii) (a) : Ozone hole was first discovered over Antarctica in 1985. Ozone absorbs UV-radiations in the range 2000-2900A.
(iv) (d) : The substances that depletes the ozone layer are called ozone depleting substances (ODS). The main ODS are chlorofluorocarbons, halons, methane, nitrous oxide, carbon tetrachloride and chlorine.
(v) (b)