

Date: 14/02/2022

Time: 00:20 hrs

1. Which disease is caused by exposure to ultra violet radiation?

- ☐ A. Diarrhea
- ☒ B. Skin cancer
- ☐ C. Malaria
- ☐ D. Influenza

Skin cancer is caused by exposure to ultra violet (UV) radiations. These radiations are present in the sunlight and most of them are filtered by the ozone layer. But if human beings are excessively exposed to UV light it leads to skin cancer.

2. The major constituents of an ecosystem are \_\_\_\_ and \_\_\_\_.

- ☐ A. plants and animals
- ☐ B. sunlight and water
- ☐ C. atmosphere and soil
- ☒ D. abiotic and biotic components

An ecosystem is a community of living organisms constantly interacting with the surrounding non-living components.

Biotic and abiotic components are linked with each other through nutrient cycles and energy flow.

3. Which of the following are the correct terms used for the group of organisms mentioned below?

1. Grass, Fern, Moss

2. Lion, Cow, Rat

3. Bacteria, Fungi

- ☐ A. 1- carnivores, 2-herbivores, 3- saprophytes
- ☐ B. 1- herbivores, 2- decomposers, 3- parasites
- ☒ C. 1- producers, 2- consumers, 3- decomposers
- ☐ D. 1- decomposers, 2- producers, 3- consumers

Organisms which produce food by photosynthesis are known as producers. For example, grass, cyanobacteria, phytoplanktons, etc.

The organisms which consume green plants or other animals are consumers. For example, animals like lions, cows, deer and rats.

Organisms which break down the dead and decaying remains of living organisms are decomposers. E.g. bacteria and fungi.

4. A food web is formed by

- ☐ A. interconnections of different ecosystems
- ☒ B. interconnections of different food chains
- ☐ C. interconnections of different species
- ☐ D. interconnections of nutrient cycles

A food web is formed by interconnections of different food chains. In nature, due to a variety of producers and consumers many food chains become interconnected. Such a complex network of food chains is called as food web.

5. Nowadays, the usage of bioplastics is promoted more than ordinary plastics because:

- ☐ A. All bioplastics are biodegradable or compostable.
- ☐ B. Bioplastics break down under the influence of natural elements.
- ☐ C. Compostable products can be turned into compost within six months.
- ☒ D. All the above options are correct.

Bioplastics are plastics made from natural materials, as opposed to ordinary plastics that are based on petroleum.

All bioplastics we produce are biodegradable or compostable.

- Biodegradable products break down under the influence of natural elements.
- Compostable products can be turned into compost within six months and leave behind no harmful substances.

6. Which of the following is an example of man-made ecosystem?

- ☐ A. Forest
- ☐ B. Pond
- ☐ C. Desert
- ☒ D. Garden

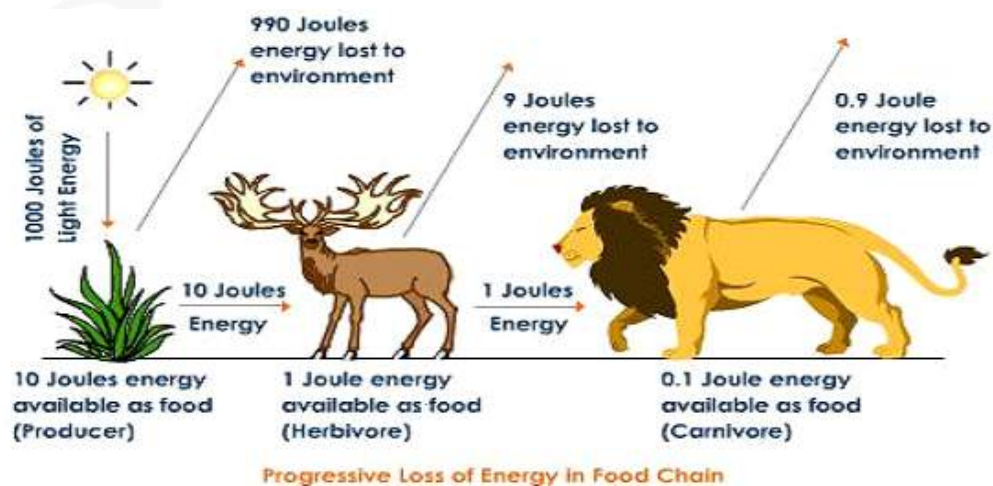
Garden is a man-made or an artificial ecosystem.

Humans have modified some ecosystems for their own benefits. These are artificial ecosystems. They can be terrestrial (crop fields and gardens) or aquatic (aquariums, dams, and manmade ponds).

7. In a particular food chain, if the energy produced by the autotrophs is 1000 Kcal, then the amount of energy which reaches fourth trophic level is:

- ☐ A. 100 kcal
- ☐ B. 0.01 kcal
- ☒ C. 0.1 kcal
- ☐ D. 0.1 cal

Basically, everytime an organism consumes something, 90% of the energy is lost as heat, in digestion, etc. So, if you start with a plant (which is an autotroph, meaning it makes its own food) at 100% energy, the rabbit that eats it will only get 10% of the energy from it. Then the fox that eats the rabbit will only get 1% of the energy from the plant. This continues down the food chain. This is the basis of 10 % law introduced by Raymond Lindeman (1942). According to this law, during the transfer of energy from organic food from one trophic level to the next, only about ten percent of the energy from organic matter is stored as flesh. The remaining is lost during transfer, broken down in respiration, or lost to incomplete digestion by higher trophic levels.



8. Which of the following is a correct reason for the assertion that "pesticides are said to move up the food chain"?

- ☐ A. Pesticides have a greater effect on larger animals than on insects.
- ☒ B. Top predators often accumulate the pesticides contained in the bodies of their prey.
- ☐ C. Birds and predatory mammals are not affected by pesticides.
- ☐ D. Pesticides kill insects and other target pests before they can absorb the poison.

Pesticides and other contaminants enter the food chain via polluted water and soil. Due to the nature of the food chain i.e. **eating and being eaten**, these contaminants accumulate in the bodies of predators. The top predators accumulate the pesticides maximally as they are not being eaten by any other predator. This phenomenon of accumulation of contaminants in the top predators is called as **biomagnification**.

9. The major cause for depletion of ozone layer in stratosphere can be attributed to:

- ☐ A. Increase in the level of greenhouse gases
- ☒ B. Increased release of CFCs
- ☐ C. Decreased release of CFCs
- ☐ D. Increase in sulphur dioxide and carbon monoxide

The ozone depletion process begins when CFCs and other ozone-depleting substances (ODS) are emitted into the atmosphere. CFCs are extremely stable, and they do not dissolve in rain. After a period of time, CFC molecules reach the stratosphere. Due to the action of UV rays, CFCs release chlorine atoms. These chlorine atoms react with ozone molecules and destroy the ozone layer.

It is estimated that one chlorine atom can destroy over 1,00,000 ozone molecules before it is removed from the stratosphere.

10. Which of the following statement(s) is/are correct?

Statement 1: Biodegradable waste consist of plastic materials, metal scraps, aluminum cans and bottles, etc.

Statement 2: Plastic materials decomposes soon and eventually mixes or returns back to the soil.

- ☐ A. Only Statement 1 is true.
- ☐ B. Only Statement 2 is true.
- ☐ C. Both Statement 1 and Statement 2 are true.
- ☒ D. Both Statement 1 and Statement 2 are false

Non-biodegradable waste:

Those materials which cannot be broken down or decomposed into the soil by micro-organisms and natural agents are labeled as non-biodegradable.

- These substances consist of plastic materials, metal scraps, aluminum cans and bottles, etc.