

Class: 9

Subject: Biology

Topic: Natural Resources

No. of Questions: 20

Q1. State the role of the atmosphere in climate control?

Sol. Atmosphere prevents sudden increase in temperature during the day light hours. It slows down the escape of heat into outer space during the night.

Q2. How following factors contribute in formation of soil ? (a) wind (b) water (c) Sun

Sol. **Wind** : Strong winds erode rocks down. The strong wind carries small rock pieces and sand from one place to other like water.

Water : (1) Fast flowing water carries big and small particles of rock downstream. These rocks rub against other rocks and the resultant abrasion causes rocks to wear into smaller and smaller particles

(2) Water expands and freezing. So when it is deposited in crevices of rocks it cracks rocks into smaller pieces.

Sun : The sun heats up rocks during the day so they expand. At night these rocks cool down and contract. This results in the formation of cracks and ultimately the huge rock breaks into smaller pieces.

Q3. Acid rain and smog are said to be the consequences of air pollution. How are they caused? What are the ill effects of breathing polluted air on human health?

Sol. Oxides of nitrogen and sulphur (air pollutants) dissolve in rain and form HNO_3 and H_2SO_4 making the rain acidic

Suspended unburnt carbon particles (hydrocarbon) cause visibility to be lowered when water condenses during cold weather – Smog.

Ill effects – allergies, respiratory problems cancer, heart disease

Q4. What is Smog?

Sol. Presence of suspended particles like carbon particles or hydrocarbons causes visibility to be lowered, especially in cold weather, when water also condenses out of air. This is called smog.

Q5. What is greenhouse effect? List two greenhouse gases. State the ultimate effect of increase in greenhouse gases in the environment.

Sol. The warming up of the atmosphere due to trapped radiation is called greenhouse effect. Greenhouse gases carbon dioxide methane increase in greenhouse gases will lead to global warming

Q6. What makes the biosphere dynamic but stable system?

Sol. A constant interaction between biotic and abiotic components of biosphere makes it dynamic and stable. Interaction consists of transfer of matter and energy between different components of biosphere.

Q7. The atmosphere acts as a blanket. How?

Sol. Air in the atmosphere is a bad conductor of heat and it keeps the average temperature of the earth fairly steady during the day and the whole year.

Q8. What is soil? How is it formed? State the major factor that decides the structure of a soil. What role does it play?

Sol. Soil: It is a mixture containing small particles rocks and lots of decayed living organism called humus. Formation of soil: Weathering of rocks Major factor – Humus. It makes the soil more porous that water penetrates deep underground.

Q9. “Urbanization and industrialisation is mainly responsible for the increase in environment pollution” Justify this statement and suggest ways and means to check it

Sol. (a) 1. Increased the consumption of fossil fuel – increased the production of pollution like CO, SO₂, NO₂, CO₂ etc.
2. CFC has led to depletion in ozone layer results in one entry of U.V rays in to earth's atmosphere. 3. Acid rain 4. Production of greenhouse gases
(b) Measures : Reduce consumption of fossil fuels
2. Planting more trees
3. Using Isocyanates instead of CFC
4. Usage of non-conventional sources of energy e.g solar, wind, tidal energy

Q10. How is atmosphere on our Earth different from the atmosphere on Venus and Mars? State two ways by which percentage of carbon dioxide is fixed on the earth.

Sol. On the planets Venus and Mars carbon dioxide forms the major component constituting up to 95-97% of the atmosphere. On the contrary the major component of the earth's atmosphere is air which consists of nitrogen, oxygen, carbon dioxide, argon, water vapour and trace components. Moreover, unlike Venus and Mars earth has life on it.
Two ways by which percentage of CO₂ is fixed on earth are :
(i) Green plants convert CO₂ into glucose in the presence of sunlight
(ii) Many marine animals use carbonates dissolved in sea water to make their shells.

Q11. Write a note on how forests influence the quality of air, soil and water resources.

Sol. Air: (1) Minimising level of CO₂. (2) Reduces temperature (3) Trees ability to absorb harmful gases.
Soil : (1) Prevent soil erosion (2) Regulate Biogeochemical cycles. (3) Influence rain hence increase ground water level.

Q12. State various steps and processes involved in the nitrogen cycle in nature. Also show cycling of various nutrients in this cycle.

Sol. (1) Nitrogen fixation Conversion of atmospheric nitrogen into nitrates and nitrites by Rhizobium
(2) Ammonification : Death and decay of plant bodies releases ammonia. Animals give out ammonia, urea etc. These nitrogenous compounds which are converted to ammonia.
(3) Nitrification : Ammonia converted into nitrites and then nitrates by nitrifying bacteria.
(4) Denitrification : Pseudomonas convert nitrates and nitrites into elemental nitrogen.

Q13. List two forms of oxygen found in the atmosphere. Name the process(s) by which (i) oxygen from the atmosphere is used up. (ii) oxygen is returned to the atmosphere

Sol. Diatomic oxygen (O₂) and tri atomic oxygen (O₃) Oxygen is used up by the processes : combustion, respiration and in the formation of oxides of nitrogen. Oxygen is returned to the atmosphere by photosynthesis.

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- Q15. (a) List two activities of man which lead to environmental pollution.
(b) List any two uses of carbon in living organisms.

Sol. (a) Release of harmful gases from vehicles. Excessive use of chemicals in agriculture. Excessive combustion of fossil fuels.
(b) Carbon dioxide is used by plants during photosynthesis to synthesize food. Carbon is present in molecules like protein, carbohydrates and fats needed by organisms for its biochemical cycle.

- Q16. Write the importance of ozone in the atmosphere.

Sol. Ozone layer is present in the stratosphere of the atmosphere. This layer prevents harmful radiations like ultraviolet radiation from reaching the surface of the earth where they may damage many forms of life.

- Q17. List the four zones of the atmosphere.

Sol. Four zones of atmosphere are:

1. Troposphere
2. Stratosphere
3. Mesosphere
4. Thermosphere

- Q18. How is our atmosphere different from the atmosphere on Venus and Mars?

Sol. Earth's atmosphere is quite different from the atmosphere present on Venus and Mars. The atmosphere of the earth consists of Nitrogen(79%), Oxygen(20%), small fraction of carbon dioxide and other gases which make it suitable for living. The atmosphere of Venus or Mars has carbon dioxide as the major component (95-97%)

- Q19. What causes winds?

Sol. Uneven heating of the earth's surface and water surface causes winds. On heating up the air rises up creating a low pressure region. Air travels from high pressure region to low pressure region forming winds. In addition the rotation of the Earth and the presence of mountain ranges in the paths of the wind also influence to winds.

Q20. List any three human activities that you think would lead to air pollution.

Sol. Three human activities leading to air pollution are:

- Rapid urbanization and industrialization.
- Deforestation
- Burning of fuels like coal and petroleum.
- Burning of coal in thermal power plants.

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