Soil Pollution

Improve your learning

Q. 1. Define soil pollution. (AS1)

Answer : Soil pollution is also known as soil contamination. Soil pollution is defined as the degradation of the land which is caused by the presence of toxic chemicals in the soil.

Soil pollution can be caused by mining acid rain pesticides chemical fertilizers waste disposal.

Effect of soil pollution— affect the human health and cause air pollution.

Q. 2. Why are plastic bags a big environmental nuisance? (AS 6)

Answer : Plastic bags is a type of Non-biodegrable waste.

They (Non-biodegrable waste) take a long time to decay and are harmful to human beings. They adversely affect the quality of soil or its fertility

Non-biodegradable materials directly contribute to land pollution due to the excessive amount and improper waste management.

plastic bags is a big problem for the environment as it can chokes drains, blocks the porosity of the soil and causes problems for groundwater recharge. Plastic disturbs the soil microbe activity, and once ingested, can kill animals. Plastic bags can also contaminate foodstuffs due to leaching of toxic dyes and transfer of pathogens.

Q. 3. Describe an environmental friendly method to profitably dispose of human waste and cattle waste. (AS1)

Answer : The best environmental friendly method to profitably dispose of human waste and cattle waste is "Biogas".

Q. 4. Chemical fertilizers are useful to crops. In which way they cause environmental pollution? (AS1)

Answer : Fertilizers contaminate the soil with impurities, which come from the raw materials used for their manufacture.

Chemical fertilizer also contaminates the groundwater and this is the main issue as ground water is the primary source of water.

Too much use of chemical fertilizers led to eutrophication.

Chemical fertilizers contain harmful gases like carbon dioxide, nitrogen, ammonia which contribute to the release of greenhouse gases.

Q. 5. What steps can be taken to reduce pollution due to particulate matter from industries?

Answer : There are many ways to control soil pollution due to industries which includes, three R's principles: Reduce, Reuse and Recycle.

We can also reduce pollution by proper solid waste management and bioremediation.

Q. 6. What is a medical waste? Why it is called hazardous waste? What is the safe way to dispose medical waste? (AS1)

Answer : Medical waste (Infectious Solid Waste):

These are the wastes that are generated from the hospitals. Any waste that is contaminated with body fulids, blood or any infectious material is called as medical waste.

It is also known as Biomedical or hospital waste.

These wastes are generated during diagnosis treatment etc. which include sharp, chemical wastes, discarded medicines and human excreta etc.

As we all know that medical wastes contain drugs or chemical and same drug is no appropriate for all the human or animals thus they are considered hazardous.

The safe way to dispose the medical waste—

1. Incineration

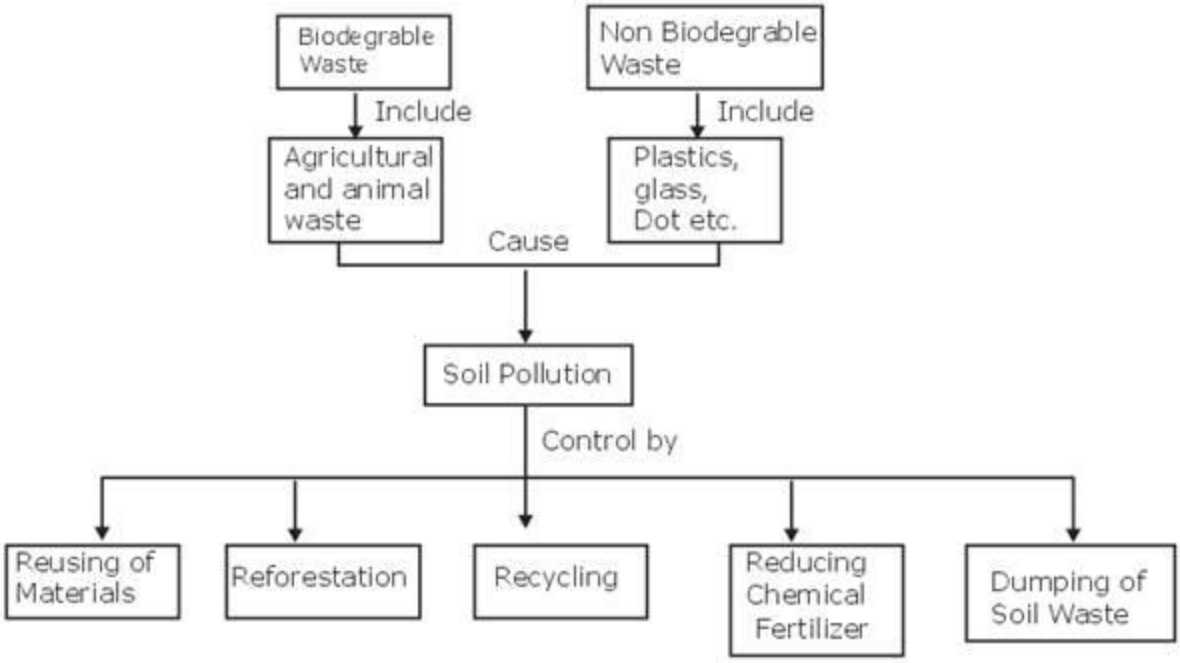
2. Autoclaving

3. Biological methods

4. Chemical methods

Q. 7. Prepare flow chart to describe soil pollution, causes and methods of control. (AS 5)

Answer :



Q. 8. What soil problems do you find in your area? Prepare a list of those problems and suggest a method for each of them to control those problems. (AS 7)

Answer : Soil related problems and methods to control those problems are listed below —

1. Soil is dry (hydrophobic soil)

To overcome this problem, add organic matter in the dry soil. Remove unwanted weeds from the soil. And give a regular dig to your farm.

2. Soil is wet

To overcome this problem do not water the soil for few days. And cover the soil with dry organic matter. We can also dig trenches to drain excess water.

3. Soil is acidic

Addition of Limestone can increase the pH of the soil.

4. Soil is alkalie

Addition of acidic organic matters or aluminum sulphate can decrease pH of the soil.

5. Soil has too much salt content (soil salinity)

Excess of salt can be reduced by leaching soluble salts of soil by doing irrigation.

6. Lack of organic matters in the soil

This can be achieved by adding organic manure to soil.

Q. 9. What farm practices impact soil? Do they impact soil in a positive or a negative way?

Answer : Farm practices and soil health's are interrelated with each other.

Farm practices that impact soil include—

1.) Natural methods

2.) Artificial methods

Natural method impact soil in positive way. Artificial method impact soil in negative way.

The detoriating effects of agricultural practices on soil quality include, erosion, desertification, salinization, compaction, and pollution. The quality of soil impact soil reduce fertile hence productivity also decrease. Ultimately causes land degradation

Q. 10. Rank the negative impact practices in your area in the order in which you think they should be eliminated. (AS1)

Answer : Order must be like air pollution, soil pollution, deforestation, water pollution, excessive use of fertilizers and pesticides.

Q. 11. Rank the positive impact practices in order in which you think they should be used for the most benefit on your farm. (AS1)

Answer : Practices that can have positive impact on farming, order is - using organic or bio fertilizer, using natural pest predators, crop rotation and allowing soil sufficient time to regain it's fertility naturally.

Q. 12. Ravi said soil health is important? How can you support him? (AS 7)

Answer : Soil is one of the three major natural resources, along air and water. It is a natural medium on the surface of the earth in which plants grow.

Soil is made up of minerals and decomposed organic matter, along with air and water.

Healthy soil has microorganism that give nutrients (organic matter and minerals) to the soil.

Healthy soil is fundamental to the quality of food it produces and to the health of those who eat the food produced from it.

Q. 13. How would soil texture affect the nutrients in soil? What would be its impact on crop production? (AS 2)

Answer : Soil texture is the main physical property of the soil. Soil texture tells us about the size of particle. It influences soil structure, nutrient holding capacity, water content and organic matter of content of the soil.

It regulates and affect air and water movement in the soil and thus, soil ability to function.

It tells us about the nutrients which are necessary for plants growth such as nitrogen, phosphorus and potassium. Soils which contain 30% or more organic matter are considered organic soil; all other soils are identified as mineral soils.

Soil texture directly influences the plant growth Thus influence the crop production.

Q. 14. What are the three main physical properties of soil? What effects do this have on the plants? (AS1)

Answer : Three main physical properties of soil are—

1. Colour texture

2. Structure

3. Porosity

These properties regulate and affect air and water movement in the soil and thus, soil ability to function.

Q. 15. What is pH? What is its range? What are the negative impacts if the pH of soil is too low or too high?(AS1)

Answer : pH- pH is the amount of the hydrogen ions present. The term pH is used to indicate the level of acidity or alkalinity of a soil.

The range of pH lies from 5.5 to 7.5. (Good soil).

Below pH 7 the soils are termed as acidic and,

Above pH 7 the soil are termed as alkaline.

If the pH of the soil is too low (decreasing pH) that means soil contain more acid (acidic) and acidic soil results in the removal of the important nutrients or in decreased microbial activity.

If the ph of the soil is too high that means soil contain more bases (alkaine) and basic soil do not promote cultivation.

Q. 16. What is soil fertility? What are the sources of soil fertility? (AS1)

Answer : "Soil fertility is the ability of the soil to sustain plant growth."

Or

"It is defined as the capacity to hold water and nutrients and supply them to plants when they need them, independent of direct application of nutrients."

The source of soil fertility includes various nutrients. The important nutrients are phosphorus, nitrogen and potassium.

Q. 17. Name 10 living things that live in soil. What do these things do to affect the soil? (4)

Answer : 10 living things that live in soil—

1. Bacteria

2. Fungi

3. Protozoa

4. Nematodes

5. Earthworm

6. Larger organisms (rabbit, snakes)

7. Ants

8. Insects

9. Algae

10. Arthopods (mites)

They affect the soil formation by producing humus production. These organism also improve the soil fertility and increase the organic content of the soil.

Q. 18. What is organic matter? Why it is important to plants? (AS1)

Answer : Organic matter

Organic matter is the organic component of soil which includes the residues of dead plants, animals and organisms.

Organic matter in soil improves water infiltration, decreases evaporation, and increases the water holding capacity. Also, where there is organic matter, there will be numerous organisms present helping to convert it back to nutrients and these organisms help to create crumb, ideal for cultivation. Thus, balancing a natural state of soil.

By balancing the natural state of soil plant productive can also be increases as soil is the main source of nutrients for the plants.

Q. 19. What are the factors affecting organic matter levels in soil? How this level of organic matter can be increased? (AS1)

Answer : Factor affecting organic matter level in soil are—

1. Texture

Soil which contain 30% or more organic matter are considered organic soil.

2. Plant nutrients or crop rotation

If crop rotation is done then high organic matter is found.

3. Cropping

Cropped lands have low organic matter. Modern techniques help to achieve high organic matter.

4. Poorly drained soil

Poorly drained soil contains high organic matter due to high moisture content.

5. Vegetation

Soil in the grasslands have more organic matter.

6. Climate

Organic matter increases with increase in rainfall.

7. pH

If Soil has acidic or alkaline pH then it will have poor organic matter content. We can increase organic matter content by maintaining the normal pH of the soil.

Q. 20. What is solid waste? Explain best practices for solid waste management. (AS1)

Answer : "Solid waste may be defined as the organic and inorganic waste produced by various activities of the society which have lost their value to the first user."

Or

"Solid waste is a mixture of plastics, cloth, glass, metal and organic matter, sewage, sewage sludge, building debris, generated from households commercial and industries establishments add to soil pollution."

Methods of solid waste are listed below—

i. Open burning

ii. Sanitary landfills

iii. Natural breakdown

iv. Recycling

Q. 21. What is bioremediation? How it helps in controlling soil pollution? (AS1)

Answer : "It is natural process uses to treat contaminated things (water and soil)"

Or

"It is process in which we use organisms to remove contamination."

Or

"Bioremediation means to use a biological remedy to abate or clean up contamination."

Bioremediation is the biological process of breakdown, degrade and removal of contaminated substances from the soil. It also increases the Soil fertility by providing nutrients to the soil. Thus, decrease the soil pollution.

Q. 22. Why soil conservation is important to us? What will happen if no preventive measures would be taken? (AS 2)

Answer : Soil conservation is the process of preventing soil loss from erosion.

Soil is primary source of nutrients to plants. It is one of the most important natural resources. Soil resource is taken for granted by the humans. We rarely even think of it as a natural resource that needs to be conserved. It is very important to conserve soil as it provide nutrients to the plant and soil also contain important microbes.

If no measures are taken to conserve soil then it will lead to soil erosion this will cause soil loose it's fertility then eventually productivity will also decrease and hence after a period of time land will be degraded.