

GEOGRAPHY

Chapter 3: Land, Soil, Water, Natural Vegetation and Wildlife Resources



Land, Soil, Water, Natural Vegetation and Wildlife Resources

Land, soil, water, natural vegetation and wildlife are some extremely vital resources for any country.

Land

- Land is one of the most important resources. Land covers only 30% of the total area of the Earth's surface.
- Not all the available land is inhabited by humans.
- Places which are sparsely populated are the hot and cold deserts, mountains, and low-lying areas. These areas are sparsely populated because of extreme climatic conditions, uneven and rugged surface of the Earth.
- Plains and river valleys are thickly or densely populated as the land is suitable for cultivation.

Land Use

- Land use is the use of land for various purposes such as for building houses, roads, forestry, agriculture and mining.
- Some important factors which determine the pattern of land use are topography, climate, soil, availability of water and minerals.
- Population and technology also determine the pattern of land use.
- On the basis of ownership, land can be classified as private land and community land. Land which is owned by any individual is known as private land.
- Land which is owned by a community of people is known as community land. People use community land for common uses such as for collecting fodder, fruits, nuts or medicinal herbs. This is the reason that community lands are also known as common property resources.

Deterioration of Land and its Conservation

- Vast changes in land use patterns have led to the deterioration of the quality of land. Large-scale construction activities and the expansion of agriculture have led to land degradation, landslides, soil erosion and desertification.
- Landslides can damage property and human lives. A mass movement of rocks, debris or earth down a slope is known as a landslide. It generally occurs because of the destruction of natural vegetation. Landslides can be prevented in the following ways:
 - Construction of walls to stop land from slipping
 - Increase vegetation cover to prevent landslides

- Control the surface drainage works to prevent the movement of land during rainfall and spring flows

Soil

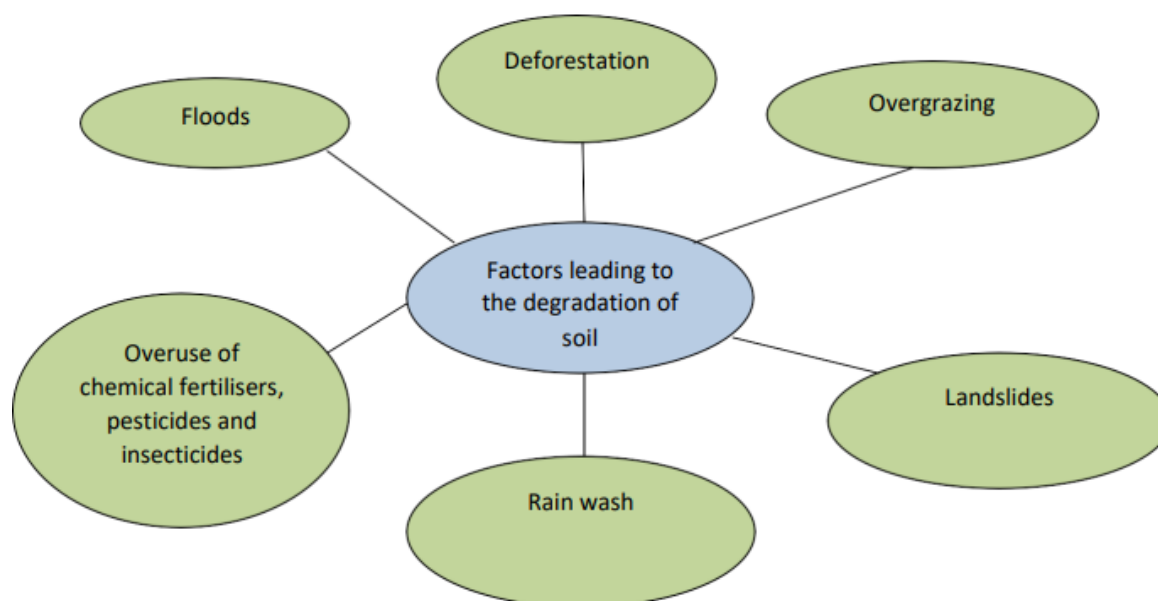
Soil is the thin and top layer of land where all the vegetation grows. Soil is made of minerals, weathered rocks and organic materials.

Factors Affecting Soil Formation

- Climatic factors, nature of parent rock, topography and the role of organic materials affect the formation of soil. These factors affect the soil in the following ways:

Factors which affect soil	Way in which these factors affect soil
Parent rock	The nature of the parent rock determines the colour, texture, mineral content and chemical properties of soil.
Relief or physical features (such as altitude and slope)	It determines the accumulation of soil.
Flora and fauna	It affects the rate of humus formation in soil.
Climate (temperature and weathering)	Climate affects the speed of weathering of rocks and formation of humus.
Time	It determines the thickness of soil.

Degradation of Soil and Methods of Conservation

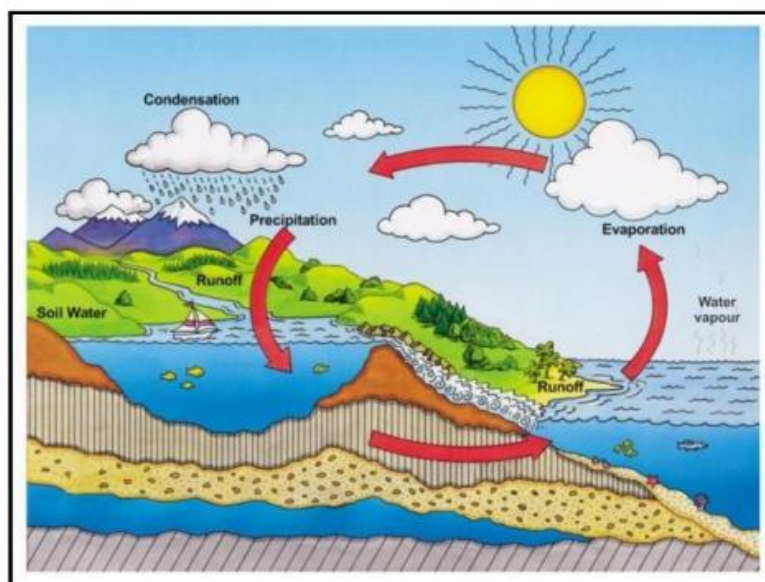


Soil can be conserved by the following methods:

- **Mulching:** An uncovered piece of land is covered with straw or any other layer of organic matter. This method helps the soil to retain moisture.
- **Contour Barriers:** Barriers along the contours are made by growing grass or by putting stones to help in preventing soil erosion.
- **Rock Dam:** Rocks are placed above one another to regulate and slow down the speed of water. This help in preventing gully erosion and soil loss.
- **Terrace Farming:** It is the construction of terraces or flat steps on steep slopes. Terrace farming helps in reducing surface runoff water and prevents soil erosion.
- **Intercropping:** Various crops are grown in alternate rows and sown at different times.
- **Contour Ploughing:** Land is ploughed parallel to the contour of a hillslope. This makes a natural barrier for water to flow down the slope.
- **Shelter Belts:** Trees are planted in straight rows to check the movement of winds. It prevents soil erosion.

Water Resources

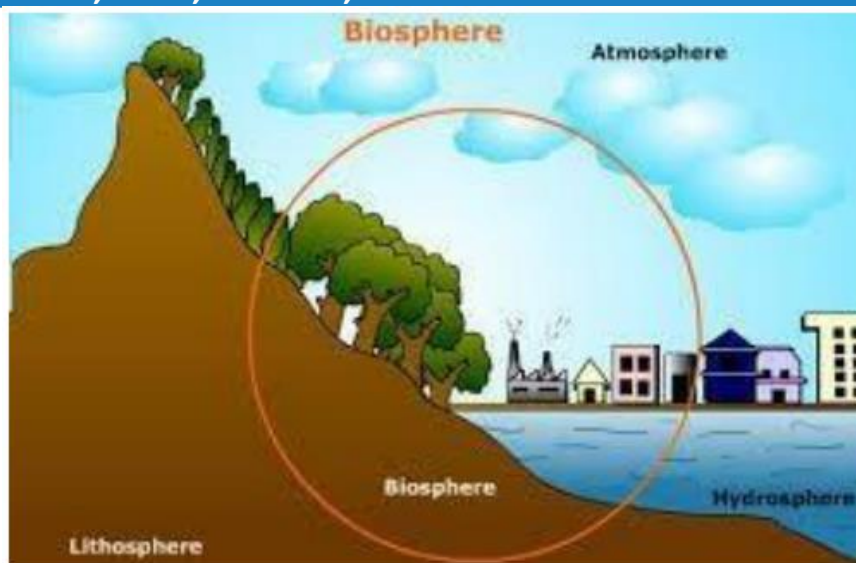
- Water is an important natural resource. About three fourth of the surface of the Earth is covered with water. Thus, our Earth is known as the 'watery planet'.
- Freshwater accounts for only 2.7% of the total water on the Earth. 70% of freshwater occurs as ice sheets and glaciers in Antarctica, Greenland and mountainous regions.
- Only 1% of total freshwater is available to us.
- The water cycle includes the process of evaporation, condensation and precipitation. The heat of the Sun evaporates the water resulting in the formation of water vapour. When the water vapour cools down, it condenses
- and forms clouds.
- It is from clouds that the water precipitates in the form of rainfall, hail and snow. This process through which water keeps on changing its form and circulates between the oceans, atmosphere and land is known as the **water cycle**.
- Water is used not only for drinking and household consumption but also in the process of industrial production.
- The discharge of liquid wastes, untreated sewage, agricultural chemicals and overuse of water has resulted in the deterioration of the quality of water.
- Plantation of trees and water harvesting help in the conservation of water resources. Irrigation of crops through sprinklers and the use of drip or trickle irrigation help in the conservation of water resources.



Water cycle

Natural Vegetation and Wildlife

- The **biosphere** is a narrow zone of contact between the lithosphere, hydrosphere and atmosphere.
- The ecosystem is an interdependent community of living and non-living organisms in the same area.
- The relationships between living organisms and their interactions with their living and non-living surroundings
- Vegetation is an important resource as it provides us with timber, fruits, nuts, fodder, fuel, oil, medicinal plants and paper. It helps in conserving soil and water resources.
- Various animals, birds, insects and all forms of aquatic life are part of wildlife. Animals provide us with meat, milk, hides and
- wool. Insects help in the pollination of flowers. Many birds feed on dead animals and act as scavengers.



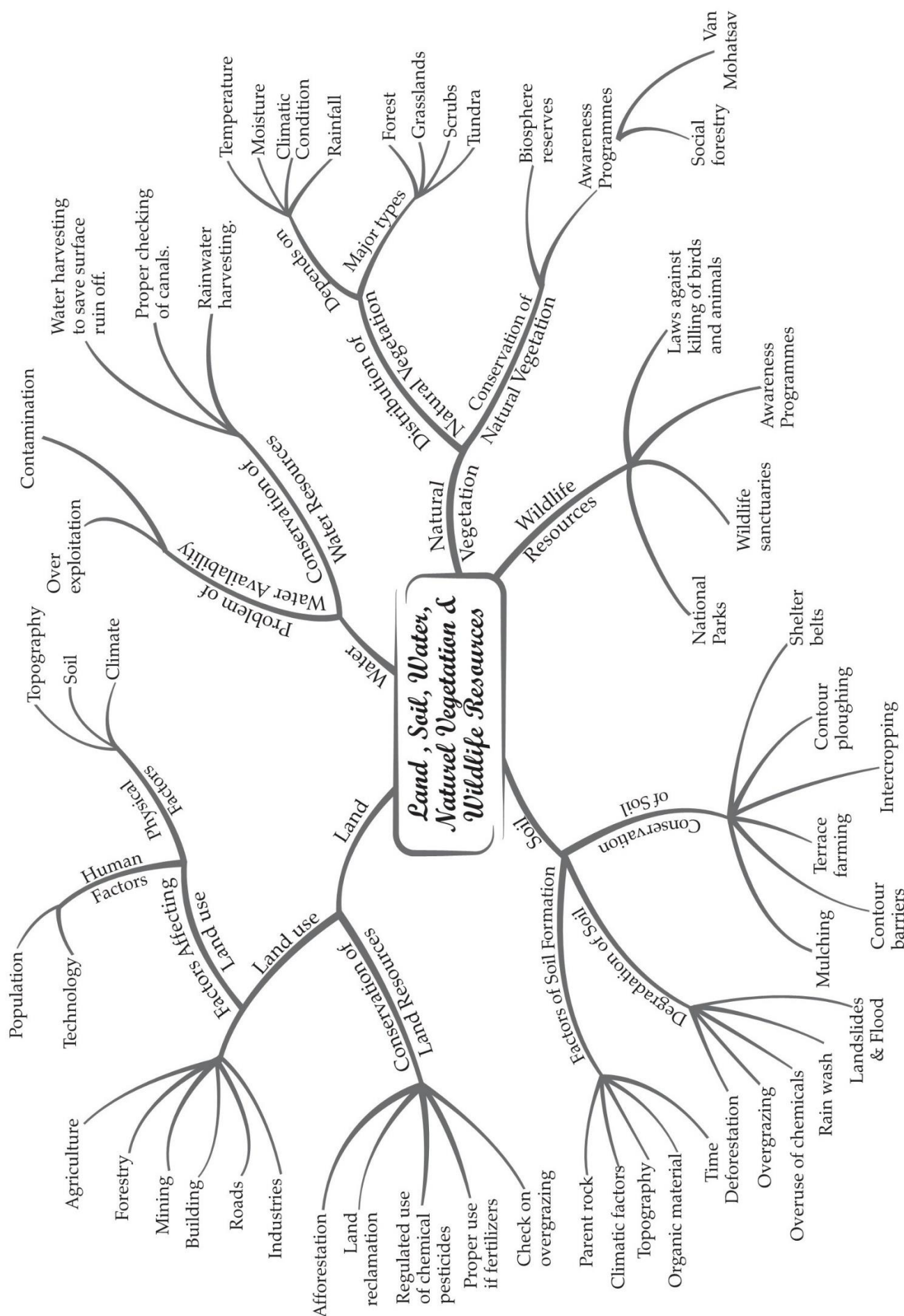
Distribution of Natural Vegetation

- Temperature and rainfall are two important factors which determine the growth and nature of natural vegetation. Forests, grasslands and scrubs are some important types of natural vegetation.
- Dense forests with huge trees thrive in areas of heavy rainfall. As the rainfall decreases, trees become short and are less dense.
- Thorny shrubs and scrubs grow in regions of low rainfall. These plants have long roots which go deep into the Earth in search of water. The leaves are also waxy and thorny to reduce the loss of water.
- There are two broad categories of forests—evergreen and deciduous. Trees in the evergreen forests do not shed their leaves at the same time. Thus, they always appear green. Trees in deciduous forests shed their leaves in a particular season.

Conservation of Natural Vegetation and Wildlife

- It is important to conserve forests. Destruction of forests leads to the loss of wildlife also.
- Deforestation, soil erosion, forest fires and landslides have resulted in the degradation of the environment.
- Poaching of animals for their skin and horns has resulted in a sharp decline in the number of species of animals.
- The Government has established many national parks, wildlife sanctuaries and biosphere reserves to protect our natural vegetation and wildlife.
- Many programmes such as '*Van Mahotsav*' are also encouraged at the school and community level to make people aware of the advantages of planting trees.
- The Indian Government has declared the killing of tigers, lions, deer, Indian bustard and peacocks as illegal.

MIND MAP : LEARNING MADE SIMPLE CHAPTER-14



Important Questions

Multiple Choice Questions-

Question 1. Peter belongs to which country?

- (a) India
- (b) USA
- (c) Germany
- (d) New Zealand

Question 2. About how much in percentage does the total area of land area covered on the earth's surface?

- (a) 30%
- (b) 40%
- (c) 50%
- (d) 60%

Question 3. Use of land for different purpose of development such as agriculture forestry, mining, housing, etc. is termed as

- (a) Land conservation
- (b) Land use
- (c) Common property
- (d) Soil formation

Question 4. The mass movement of rock, debris or earth down a slope is simply known as

- (a) Earthquake
- (b) Avalanches
- (c) Landslides
- (d) Soil erosion

Question 5. What determines the thickness of the soil profile?

- (a) Time
- (b) Climate
- (c) Relief
- (d) Formation

Question 6. What do you mean by Biome?

- (a) Group of plants in areas having similar climatic condition.
- (b) Land covered with grass shrubs on which animals graze freely

(c) Marginal land kept fallow for a certain period to restore their fertility

(d) Breaking up and decaying of exposed rocks due to various factors.

Question 7. What do you mean by shelter belts?

(a) Wind movement to protect soil cover

(b) Wind movement to erosion

(c) Belt for trees

(d) None of these

Question 8. Where is the Kaziranga National Park is situated?

(a) West Bengal

(b) Manipur

(c) Assam

(d) Orissa

Question 9. Which one of the following is not in favor of the conservation of nature?

(a) Switch off the bulb when not in use.

(b) Close the tap immediately after using.

(c) Dispose poly packs after shopping

(d) Constructing Rock Dams

Question 10. Which one of the following is NOT a factor of soil formation?

(a) Time

(b) Soil texture

(c) Organic matter

(d) Mulching

Question 11. What is a biosphere reserve?

(a) Protected area linked through global network

(b) Land use for production

(c) Farmers Land

(d) None of these

Question 12. What do you understand by the term CPR?

(a) Community Property Resources

(b) Common property resources

(c) Common planning resources

(d) None of these

Question 13. Where can we find water market in India?

- (a) Bareilly
- (b) Amreli
- (c) Surat
- (d) None of these

Question 14. What is referred as the breaking up and decaying of exposed rocks by the?

- (a) Weathering
- (b) Formation
- (c) Erosion
- (d) None of these

Question 15. What does 'land use' refer to?

- (a) Use of land for many purposes
- (b) Land for sale
- (c) Mortgage Land
- (d) None of these

Very Short:

1. What are the possible reasons behind the uneven distribution of population around the world?
2. Give three common forms of land use.
3. What human factors determine land use pattern?
4. Define soil.
5. What is required to make soil fertile?
6. What is parent rock?
7. What are the factors threatening soil as a resource?
8. What method of soil conservation may be used in coastal and dry regions?
9. Why is the earth called the "water planet"?
10. In what forms is fresh water found on the earth?
11. What is the name given to the process involved in rain formation?

Short Questions:

1. How is land being degraded? Suggest methods to conserve land resource.
2. What is weathering?
3. How is water an important resource?

4. Write a short note on wildlife.
5. What are the major types of vegetation in the world? Describe vegetation in different rainfall conditions.
6. What is soil and how is soil made fertile?
7. What does the weathering mean and how does the weathering help soil?

Long Questions:

1. Describe methods of soil conservation.
2. What is the threat to vegetation and wildlife? What is the need to conserve them? How can we do this?
3. What is a land and what is the concept of Land use?
4. Describe Landslide and Mitigation mechanism in brief

Answer Key:

MCQ:

1. (d) New Zealand
2. (a) 30%
3. (b) Land use
4. (c) landslides
5. (a) Time
6. (a) Group of plants in areas having similar climatic condition.
7. (a) Wind movement to protect soil cover
8. (c) Assam
9. (c) Dispose poly packs after shopping
- 10.(b) Soil texture
- 11.(a) Protected area linked through global network
- 12.(a) Community Property Resources
- 13.(b) Amreli
- 14.(a) Weathering
- 15.(a) Use of land for many purposes

Very Short Answer:

1. The reasons behind uneven population distribution are mainly the varied conditions of land and climate.
2. Three common land use forms are:

(i) As cropland (ii) Pasture (iii) Forests.

3. Human factors affecting land use pattern are population and technology.

4. The thin layer of grainy substance covering the surface of the earth is called soil.

5. The right mix of minerals and organic matter is needed to make soil fertile.

6. The rock from which soil is derived is called parent rock.

7. Two factors that threaten soil as a resource are soil erosion and its depletion.

8. Shelter belts are used to protect the soil in coastal and dry regions

9. The earth's surface has about three- fourths water, so it is called "water planet".

10. Fresh water is found in the forms of groundwater, water in rivers and lakes and as water vapour.

11. The process involved in the formation of rain is called "water cycle".

Short Answer:

Ans: 1. The ever-growing population has increased demand for living space, due to which forests are being destroyed, thus causing land degradation. The rate of degradation of land resources can be checked by promoting afforestation, land reclamation, regulated use of chemical pesticide and fertilizers and checking overgrazing

Ans: 2. Weathering refers to the breaking up and decay of exposed rocks. This breaking up and decay is caused by temperature fluctuations between too high and too low, frost action, plants, animals and even human activity. Weathering is the major process involved in the formation of soil. It takes millions of years to form soil by this process.

Ans: 3. Water is an indispensable resource of life. Firstly, water serves the most basic purpose of drinking, without which life is impossible. It is helpful in cleaning our bodies, clothes and utensils. Farmers depend on water for irrigation. Water is also used in cooking food. Water is a source of electricity as well. Plants require water for their growth. Water is required for various industrial purposes in factories.

Ans: 4. The animal kingdom, which consists of animals, birds, aquatic creatures and insects, is called wildlife. These creatures provide us various important products such as milk, meat, hides and wool. Bees give us honey and help in pollination. They play the role of decomposers in the environment. Birds like the vulture are scavengers and they help in cleansing the environment. All forms of wildlife are an integral part of our ecosystem.

Ans: 5. The major types of vegetation in the world are grouped as forests, grasslands, scrubs and tundra." In areas of heavy rain, huge trees can be found. Forests are abundant in areas of heavy rainfall. With moisture and rainfall, the density of forests declines. In moderate rainfall areas, grasslands are found. In dry areas we find thorny shrubs and scrubs. Plants here have deep roots and leaves have thorny surface to reduce loss of moisture. The tundra vegetation consists of mosses and lichens.

Ans: 6. The thin layer of grainy substance covering the surface of the earth is called soil. It is closely linked to land. Landforms determine the type of soil. Soil is made up of organic matter,

minerals and weathered rocks found on the earth. This happens through the process of weathering. The right mix of minerals and organic matter make the soil fertile.

Ans: 7. Weathering is the breaking up and decay of exposed rocks by temperature changes, frost action, plants, animals and human activity and soil is made up of organic matter, minerals and weathered rocks found on the earth. This happens through the process of weathering.

Long Answer:

Ans: 1. Some common methods of soil conservation are mentioned below: Mulching.

Mulching is the process of covering the bare ground between plants with a layer of organic matter like straw. It contributes in retaining soil moisture.

Terrace Farming. Terrace farming is the method of farming in which broad flat steps or terraces are made on the steep slopes so that flat surfaces are available to grow crops 4 They reduce run-off and soil erosion.

Intercropping: In intercropping, different crops are grown in alternate rows and are sown at different times to protect the soil from being washed away by rain.

Contour Ploughing: Ploughing parallel to the contours of a hill slope to form a natural barrier for water to flow down a slope is called contour ploughing.

Shelter Belts: Rows of trees that are planted in certain areas to check wind movement are called shelter belts. Contour Barriers. Stones, grass and soil are used to build barriers along contours. Trenches are made in front of the barriers to collect water.

Rock Dams: This prevents gullies and further soil loss since rocks are piled up to slow down the flow of water.

Ans: 2. Forests and wildlife are an important resource. Climate change and human interference in the animal kingdom can cause loss of natural habitat for plants and animals. Certain species have become endangered, and many have become extinct now. Poaching incidents contribute to their extinction. Plants and animals are an important part of the ecosystem. Plants provide food, oxygen and shelter to humans and animals.

Animals provide us important products such as milk, meat, honey, etc. There exists a balance in the environment if we do not disturb the natural number of species living on the earth. A single extinction can affect the ecosystem badly. So animals and plants obviously need to be conserved. The government has introduced national parks, wildlife sanctuaries and biosphere reserves for this purpose. Poaching should be severely dealt with. Indiscriminate killings need to be discouraged. Social awareness must be created about importance of trees, social forestry. Students should be involved in vanmahotsavas at regional and community levels.

Ans: 3. Land is among the most important natural resources. It covers only about thirty per cent of the total area of the earth's surface and all parts of this small percentage are not habitable. Land Life Land is used for different purposes such as agriculture, forestry, mining, building houses, roads and setting up of industries. This is commonly termed as Land use. The

use of land is determined by the physical factors such as topography, soil, climate, minerals and availability of water. Human factors such as population and technology are also important determinants of land use pattern.

Ans: 4. Landslides are simply defined as the mass movement of rock debris or earth down a slope. They often take place in conjunction with earthquakes, floods and volcanoes. A prolonged spell of rainfall can cause heavy landslide that can block the flow of river for quite some time.

The formation of river blocks can cause havoc to the settlements downstream on its bursting. In the hilly terrain landslides have been a major and widely spread natural disaster that often strike life and property and occupy a position of major concern.

Mitigation mechanism is the advancement in scientific techniques which has empowered us to understand what factors cause landslides and how to manage them.