

6. Soils

1. Choose the right answer from the four alternatives given below

(i) Which one of the following is the most widespread and most productive category of soil?

- (a) Alluvial Soil**
- (b) Laterite Soil**
- (c) Black Soil**
- (d) Forest Soil**

Answer: (a) Alluvial Soil

(ii) 'Regur Soil' is another name for the.

- (a) Saline Soil**
- (b) Arid Soil**
- (c) Black Soil**
- (d) Laterite Soil**

Answer: (c) Black Soil

(iii) Which one of the following is the main reason for the loss of the top soil in India?

- (a) Wind erosion**
- (b) Water erosion**
- (c) Excessive leaching**
- (d) None of these**

Answer: (b) Water erosion

(iv) Arable land in the irrigated zones of India is turning saline due to which of the following reasons?

- (a) Addition of gypsum**
- (b) Over grazing**
- (c) Over irrigation**
- (d) Use of fertilizers**

Answer: (c) Over irrigation

2. Answer the following questions in about 30 words.

(i) What is soil?

Answer: Soil is the mixture of minerals, organic matter, gases, liquids, and the countless organisms that together support life on Earth.

(ii) What are the main factors responsible for the formation of soil?

Answer: The major factors affecting the formation of soil are relief, parent material, climate, vegetation and other life-forms and time. Besides these, human activities also influence it to a large extent.

(iii) Mention the three horizons of a soil profile.

Answer: There are three horizons of soil profile.

Horizon A is the topmost zone, and contains mineral matter, nutrients and water, which are necessary for the growth of plants.

Horizon B contains matter derived from below as well as from above.

Horizon C is composed of the loose parent material.

(iv) What is soil degradation?

Answer: Soil degradation is the decline in soil quality caused by its improper use, usually for agricultural, grazing, industrial and infrastructural purposes.

(v) What is the difference between Khadar and Bhangar?

Answer: Khadar is the new alluvium and is deposited by river during floods, which enriches the soil by depositing fine silts and good for intensive cultivation. Bhangar represents a system of older alluvium, deposited away from the flood plains and often seen in the structure of terrace. Both the soils contain calcareous concretions, locally known as Kankars.

3. Answer the following questions in not more than 125 words.

(i) What are black soils? Describe their formation and characteristics.

Answer: Black soil is made up of volcanic rocks and lava-flow. It covers most of the Deccan Plateau that includes parts of Maharashtra, Chhattisgarh, Gujarat, Madhya Pradesh, Telangana, Andhra Pradesh and some parts of Tamil Nadu. These soils are also known as the 'Regur Soil' or the 'Black Cotton Soil'. It consists of Lime, Iron, Magnesium and also Potash but lacks in Phosphorus, Nitrogen and Organic matter. These soils are clayey, deep and impermeable. Black soil retains the moisture for a very long time and even during the dry season. The colour of the soil ranges from deep black to grey.

(ii) What is soil conservation? Suggest some measures to conserve soil.

Answer: Soil conservation is a methodology to maintain soil fertility, prevent soil erosion and exhaustion and improve the-degraded condition of the soil.

Following methods can be adopted to check erosion and to conservation of soil:

To check open cultivable lands on slopes from farming
Lands with a slope gradient of 15 - 25 percent should not be used for cultivation
Over-grazing and shifting cultivation should be regulated and controlled
New trees are to be planted in areas of soil erosion and old ones are to be protected.
Shifting agriculture should be completely banned
Contour bunding, Contour terracing, regulated forestry, controlled grazing, cover cropping, mixed farming and crop rotation are some of the remedial measures which are often adopted to reduce soil erosion.

(iii) How do you know that a particular type of soil is fertile or not? Differentiate between naturally determined fertility and culturally induced fertility.

Answer: Soil fertility refers to the ability of a soil to sustain plant growth. Alluvial soils of the Northern India and Black Soils of the Deccan Trap are some of the examples of fertile soils.

A fertile soil has the following properties:

- It is rich in nutrients including nitrogen, phosphorus and potassium
- It contains sufficient minerals like boron, chlorine, cobalt, copper, iron, manganese, etc.
- It contains soil organic matter
- Good soil structure
- A range of microorganisms that support plant growth.

Naturally fertile soils are capable to produce more crops year after year without much help of chemical fertilizer. Culturally induced fertility is that fertility, which has been added to the soil by the farmers. Chemical fertilizers are originated through synthetic means, and contain one or more of the essential growth nutrients such as nitrogen, phosphorus, and potassium and various others. Chemical fertilizers reduce fertility of soil in the long run.