

Science

(Chapter – 9) (Soil)
(Class – VII)

Exercises

Question 1:

In addition to the rock particles, the soil contains

- (i) air and water
- (ii) water and plants
- (iii) minerals, organic matter, air and water
- (iv) water, air and plants

Answer 1:

- (iii) minerals, organic matter, air and water.

Question 2:

The water holding capacity is the highest in

- (i) sandy soil
- (ii) clayey soil
- (iii) loamy soil
- (iv) mixture of sand and loam

Answer 2:

- (ii) clayey soil

Question 3:

Match the items in Column I with those in Column II:

Column I

- (i) A home for living organisms
- (ii) Upper layer of the soil
- (iii) Sandy soil
- (iv) Middle layer of the soil
- (v) Clayey soil

Column II

- (a) Large particles
- (b) All kinds of soil
- (c) Dark in colour
- (d) Small particles and packed tight
- (e) Lesser amount of humus

Answer 3:

Column I

- (i) A home for living organisms
- (ii) Upper layer of the soil
- (iii) Sandy soil
- (iv) Middle layer of the soil
- (v) Clayey soil

Column II

- (b) All kinds of soil
- (c) Dark in colour
- (a) Large particles
- (e) Lesser amount of humus
- (d) Small particles and packed tight

Question 4:

Explain how soil is formed.

Answer 4:

Soil is formed by weathering of rocks. Weathering is the breakdown of rocks by the action of air, wind and water. Soil formation is a slow process. It occurs all the time. Soil formation is a two-step process:

- Weathering of rocks takes place. Rock is broken down into small particles.
- These small particles mix with humus (organic matter) and form soil.

Question 5:

How is clayey soil useful for crops?

Answer 5:

Clayey soil is rich in humus and are very fertile, so it is suitable for growing cereals like wheat and gram. Such soil is good at retaining water.

For paddy, soils rich in clay and organic matter and having a good capacity to retain water are ideal. For lentils (masoor) and other pulses, loamy soils, which drain water easily, are required.

Question 6:

List the differences between clayey soil and sandy soil.

Answer 6:

S. No.	Clayey soil	Sandy soil
1.	Ratio of fine particles is higher.	Ratio of large particles is higher.
2.	Soil retains water and becomes sticky and wet.	Loose particles, air permeate through the soil.
3.	Suitable for crops like paddy, wheat and gram.	Suitable for vegetables, peanuts and cotton cultivation.
4.	Difficult to plough when wet.	Dries up easily. Cannot retain water.

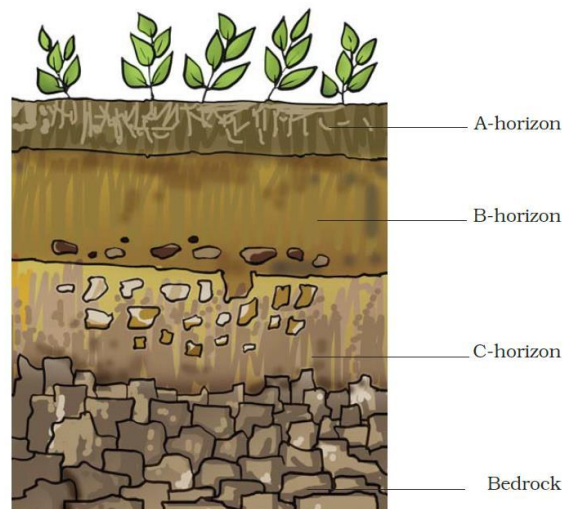
Question 7:

Sketch the cross section of soil and label the various layers.

Answer 7:

A vertical section through different layers of the soil is called the soil profile. Each layer differs in feel (texture), colour, depth and chemical composition. These layers are referred to as horizons.

- The uppermost horizon is generally dark in colour as it is rich in humus and minerals. The humus makes the soil fertile and provides nutrients to growing plants. This layer is generally soft, porous and can retain more water. It is called the topsoil or the *A-horizon*.
- The next layer has a lesser amount of humus but more of minerals. This layer is generally harder and more compact and is called the *B-horizon* or the middle layer.
- The third layer is the *C-horizon*, which is made up of small lumps of rocks with cracks and crevices.
- Below this layer is the *bedrock*, which is hard and difficult to dig with a spade.



Soil profile

Question 8:

Razia conducted an experiment in the field related to the rate of percolation. She observed that it took 40 min for 200 mL of water to percolate through the soil sample. Calculate the rate of percolation.

Answer 8:

$$\text{Rate of percolation} = \frac{\text{Amount of water (ml)}}{\text{Percolation time (minutes)}} = \frac{200 \text{ ml}}{40 \text{ min}} = 5 \text{ ml/min}$$

Question 9:

Explain how soil pollution and soil erosion could be prevented.

Answer 9:

Prevention of Soil Pollution:

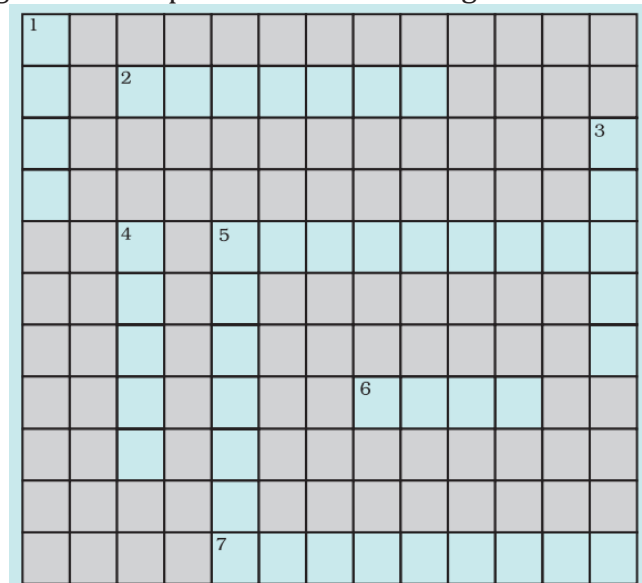
- Use manures instead of chemical fertilizers.
- Industrial waste should be treated before release.
- Avoid use of polythene and plastic or they should not get mixed in soil.

Prevention of Soil Erosion:

- Afforestation: large scale planting in place of cut down forests.
- Avoiding over-grazing of grass lands.
- Use of step-farming in hill regions.

Question 10:

Solve the following crossword puzzle with the clues given:



Across

2. Plantation prevents it.
5. Use should be banned to avoid soil pollution.
6. Type of soil used for making pottery.
7. Living organism in the soil.

Down

1. In desert soil erosion occurs through.
3. Clay and loam are suitable for cereals like.
4. This type of soil can hold very little water.
5. Collective name for layers of soil.

Answer 10:

¹ <i>W</i>												
<i>I</i>		² <i>E</i>	<i>R</i>	<i>O</i>	<i>S</i>	<i>I</i>	<i>O</i>	<i>N</i>				
<i>N</i>												³ <i>W</i>
<i>D</i>												<i>H</i>
		⁴ <i>S</i>		⁵ <i>P</i>	<i>O</i>	<i>L</i>	<i>Y</i>	<i>T</i>	<i>H</i>	<i>E</i>	<i>N</i>	<i>E</i>
		<i>A</i>		<i>R</i>								<i>A</i>
		<i>N</i>		<i>O</i>								<i>T</i>
		<i>D</i>		<i>F</i>			⁶ <i>C</i>	<i>L</i>	<i>A</i>	<i>Y</i>		
		<i>Y</i>		<i>I</i>								
				<i>L</i>								
				⁷ <i>E</i>	<i>A</i>	<i>R</i>	<i>T</i>	<i>H</i>	<i>W</i>	<i>O</i>	<i>R</i>	<i>M</i>