

CBSE NCERT Solutions for Class 7 science Chapter 9

Exercises

Q.1. In addition to the rock particles, the soil contains Air and waterWater and plantsMinerals, organic matter, air and water

Solution:

In addition to the rock particles, soil also contains substances such as minerals, organic matter, organic component that are may be formed by the decomposition of leaves and other plant material by soil microorganisms known as humus, air, and water.

Water, air and plants

Q.2. 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. The living organism in the soil.

Down

- 1. In the 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. The collective name for layers of soil.



(i) In deserts, wind causes soil erosion because the soil is loosely packed.

(ii) Plants hold the soil. Hence, plantation prevents soil erosion.

(iii) Clay and loam are suitable for growing cereals like wheat and gram. These soils are good at holding (retaining) water.

(iv) Sandy soil is loosely packed. Hence, it can hold (retain) very less water.

(v) (Across) Polythene causes soil pollution and should be banned for its harmful effects. (Bottom) Collective name for layers of soil is profile.

(vi) Clayey soil is best for making pottery because of its ability to hold large amounts of water.

(vii) Earthworm is the living organism which lives in soil.



Q.3. The water holding capacity is the highest in Sandy soilClayey soil

Solution:

Clay particles, being much smaller, and they are packed tightly together, leaving little space for air. Water can be held in the tiny gaps between the particles of clay. Therefore, water holding capacity is the highest in clayey soil.

Loamy soilA mixture of sand and loam

Q.4. Match the items in Column-I with those in column II

Column-I	Column-II
(i) A home for living organisms	(a) Large particles
(ii) Upper layer of the soil	(b) All kinds of soil
(iii) Sandy soil	(c) Dark in colour
(iv) Middle layer of the soil	(d) Small particle and packed tight
(v) Clayey soil	(e) Lesser amount of humus

NCERT Science Grade 7
Solution:



(i) All kinds of soil can provide habitat to organisms.

(ii) The uppermost layer is generally dark in colour as it is rich in humus and minerals.

(iii) Sandy soil is composed of bigger particles. Sandy soils are often known as light soils due to their high proportion of sand and little clay.

(iv) The middle layer of the soil contains less amount of humus.

(v) Clayey soil is composed of tightly packed small particles. Clay Soil is a heavy soil type that benefits from high nutrients. Clay soils remain wet and cold in winter and dry out in summer.

Column-I	Column-II
(i) A home for living organisms	(b) All kinds of soil
(ii) Upper layer of the soil	(c) Dark in colour
(iii) Sandy soil	(a) Large particles
(iv) Middle layer of the soil	(e) Lesser amount of humus
(v) Clayey soil	(d) Small particle and packed tight

Q.5. Explain how soil is formed.

Solution: Soil is formed through the process of weathering. It is a slow process in which physical breakdown and chemical decomposition of rocks and minerals near or at the surface of the earth takes place. This physical and chemical decomposition is primarily carried out by wind, water, and climate. Due to this process, large rock pieces are converted into smaller pieces and eventually to the soil.

Q.6. How is clayey soil useful for crops?

Solution: To grow crops such as wheat, gram, and paddy, the soil that is good at holding water and rich in organic matter (humus) is suitable. Therefore, clayey soils having these characteristics are useful for such kind of crops.

Q.7. List the differences between clayey soil and sandy soil.

Solution:

Chuyey soli	Sandy soil
1. The proportion of fine particles is	1. The proportion of large particles
higher.	higher.
	•
Clayey soil	Sandy soil
2. Particles are tightly packed.	2. Particles are loosely packed.
2. Particles are tightly packed. Clayey soil	2. Particles are loosely packed. Sandy soil

Clayey soil	Sandy soil
4. It is heavy in weight.	4. It is light in weight.

Q.8. Sketch the cross section of soil and label the various layers.



Solution: Diagram of the cross section of soil with its various layers:



The uppermost horizon of soil (A- horizon) is generally dark in colour as it is rich in humus (organic matter) and minerals. It is called the topsoil. The second layer (B-horizon) has a lesser amount of humus than A-horizon but more minerals, this layer is usually harder and more compact than A-horizon. Third layer (C-horizon) is made up of small lumps of rocks with cracks and crevices and fourth layer (bedrock) is hard and contains solid rock beneath the surface such as soil and gravel.

Q.9. 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.

Solution: Given, The amount of water = 200 mLPercolation time = 40Percolation rate in mL/min Percolation rate = Amount of water (mL) / percolation time \Rightarrow 40 = Amount of water (mL) / percolation rate \Rightarrow Percolation rate = 200/40 = 5 mL /min. Q.10. Explain how soil pollution and soil erosion could be prevented. Solution: Soil pollution is the build-up of toxic substances in the soil. Soil pollution can be prevented by taking the following steps: (i) Reduce the use of plastics: They destroy the fertility of the soil. Hence, these should be disposed properly, and if possible, their use should be avoided. (ii) Industrial pollutants: Some waste products from industries are toxic and pollute the soil. These pollutants should be treated chemically to make them non-toxic before they are disposed. (iii) Insecticides: Pollutants of soil include pesticides and insecticides. Therefore, the excessive use of these substances should be avoided. The removal of the upper fertile layer of the soil (top soil) by strong winds and flowing water is known as soil erosion. Following steps can be taken to reduce soil erosion: (i) Mass awareness to reduce deforestation (cutting of trees) for industrial purposes. (ii) Helping local people to regenerate degrading forests. (iii) Planting trees. (iv) Using step farming in the hilly regions.

