

Chapter - 9

Soil

Multiple Choice Questions

1. The microorganisms present in the soil require moisture (water) and nutrients for growth and survival. Choose from the options below the habitat (place) where the soil has plenty of water and nutrients.

- (a) Desert
- (b) Forest
- (c) Open field
- (d) Cricket ground

Soln:

Answer is (b) Forest

Explanation:

In forests there will be lot of trees which hold the soil and prevents soil from erosion. Humus makes the soil fertile and provides nutrients to plants and microorganisms. Trees also absorb lot of water from rain water which keep the soil moist which provides moisture for the growth of microorganisms.

2. Availability of water and minerals in the soil for maximum absorption by roots is in the –

- (a) B-horizon
- (b) C-horizon
- (c) A-horizon
- (d) surface of soil

Soln:

Answer is (c) A-horizon

Explanation:

A Horizon has the top soil which is porous and soft which help in absorption and retaining water.

3. Soil conservation measures are mainly aimed at protecting which of the following?

- (a) Plants
- (b) Top soil
- (c) Sub soil
- (d) Soil organisms

Soln:

Answer is (b) Top soil

Explanation:

Top soil is rich in humus and consists of decaying remains of plants and animals. Humus improves the texture of the soil and provides nutrients for plant growth. So, it is most fertile region and soil conservation measures are mainly aimed at protecting top soil. If top soil is protected or conserved then subsoil is also conserved as it lies below the top soil.

4. Read the following statements with reference to soil.

- (i) Weathering is a very fast process of soil formation.
- (ii) Percolation of water is faster in sandy soils.
- (iii) Loamy soil contains only sand and clay.
- (iv) Top soil contains the maximum amount of humus.

Choose the correct statements from the above.

- (a) (ii) and (iv)
- (b) (i) and (iii)
- (c) (ii) and (iii)
- (d) (i) and (ii)

Soln:

Answer is (a) (ii) and (iv)

Explanation:

Soil formation by withering of rock is a slow process that takes years. Hence option a) is wrong. Loamy soil is a mixture of sand, silt and humus hence option c is wrong.

Very Short Answer Questions

5. Soil has particles of different sizes. Arrange the words given below in increasing order of their particle size.

Rock, Clay, Sand, Gravel, Silt

Soln:

Rock > Gravel > Sand > Silt > Clay

6. The components of loamy soil are _____, _____ and _____.

Soln:

Sand, Silt, Clay

7. Read the following statements and give the appropriate terms for each of them.

- (a) The process of breakdown of rocks by the action of wind, water, sunlight.
- (b) Removal of top soil during heavy rains or strong winds.
- (c) Accumulation of wastes in the soil generated by human activity which alter the features of soil.
- (d) The process of movement of water into deeper layers of soil.

Soln:

- (a) Weathering
- (b) Erosion
- (c) Soil pollution
- (d) Percolation

8. Unscramble the following jumbled words related to soil.

- (a) S U H U M
- (b) I L O S F I P R O L E
- (c) Z O I N O R H
- (d) M O A L
- (e) G I N R H E T W E A
- (f) A T O N I E R P C L

Soln:

- (a) Humus
- (b) Soil Profile
- (c) Horizon
- (d) Loam
- (e) Weathering
- (f) Percolation

Short Answer Questions

9. Which of the following situations – ‘A’ or ‘B’ – is advantageous for absorption of water and minerals? Why?

Situation ‘A’ : Growth and branching of roots in the C-horizon.

Situation ‘B’ : Growth and branching of roots in A and B horizons.

Soln:

Situation 'B' is advantageous to plants because horizon A- and B are rich in water, minerals and humus.

10. How can a farmer convert acidic soil to neutral soil?

Soln:

Farmer can convert acidic soil to neutral soil by adding a small quantity of quick lime or slaked lime solution to the soil.

11. Is it a good practice to remove grass and small plants that are growing in an open, unused field? Give reason to support your answer.

Soln:

No, It is not a good practice because plants cover the soil surface and their roots bind the soil particles to hold them firmly. This prevents wash out of top layer of soil from strong winds and rains.

12. A man digging a pit found that he could dig with ease initially but digging became difficult as he went deeper. He could not dig beyond a depth of 5 feet. Provide a suitable scientific explanation.

Soln:

Top layer of soil is loose and easy to dig, as we go down deep soil consists of weathered rocks or which makes digging difficult.

13. Locate the following zones given as boxed items in Figure 9.1 which shows a diagram of soil profile.

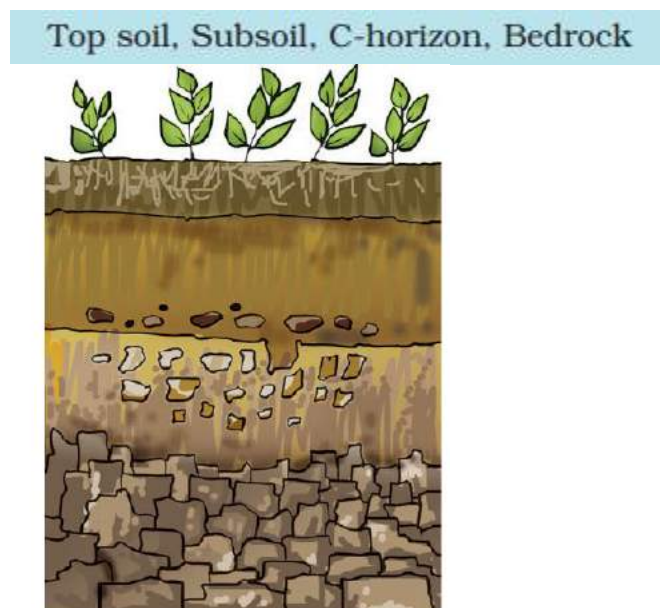
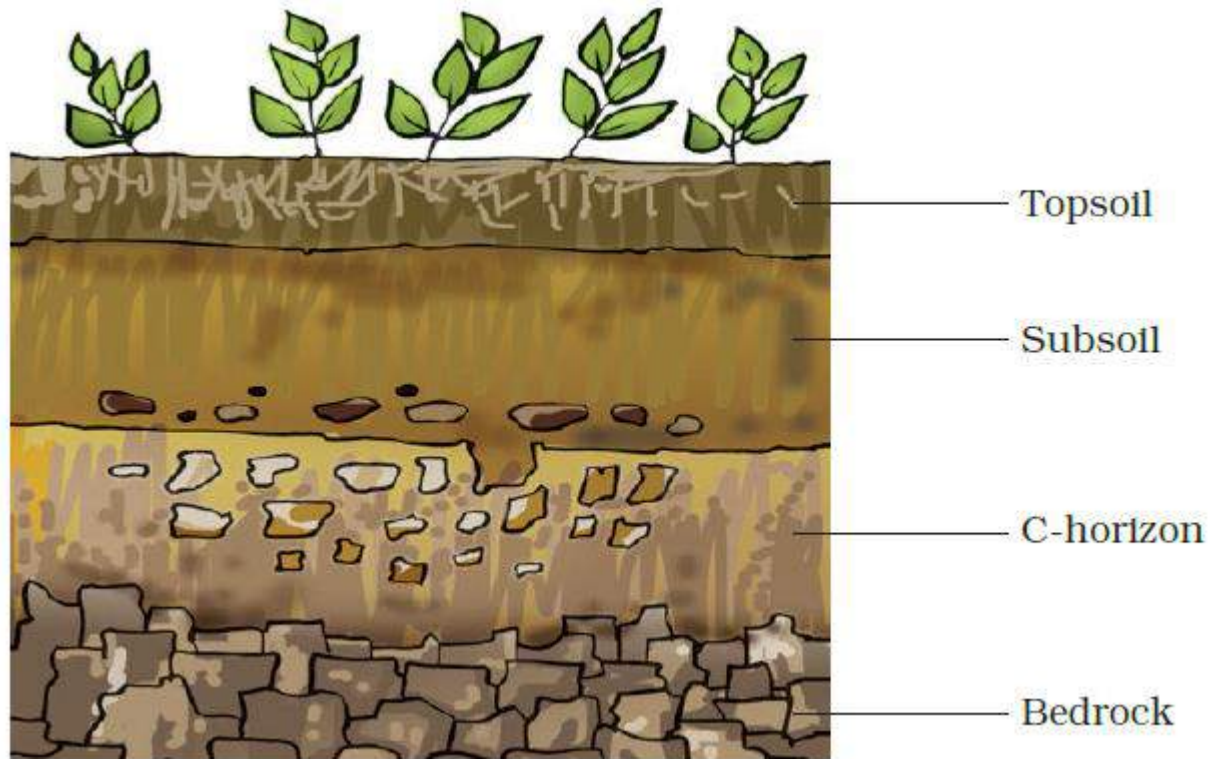


Fig. 9.1

Soln:



14. Rajasthan is a desert state in India. Once while travelling to Rajasthan by train, Boojho observed several streams and rivulets of rain water during the journey but to his surprise he did not see streams of water in the desert region even during rains. Help Boojho find a suitable explanation for this.

Soln:

Deserts are filled with stretches of sand. When rain falls rain water percolates immediately. Hence water streams are not found in deserts.

15. Match the animals in Column I with their natural place of dwelling (habitat) in Column II.

Column-I	Column-II
a) Earthworm	i) Sand and beaches
b) Garden Lizard	ii) Burrows in soil
c) Crab	iii) Deep, narrow holes in dry soils
d) Rodents	iv) Surface of soil
e) Scorpion	v) Surface of shaded moist soils
f) Snails and snugs	vi) A horizon of moist soils

Soln:

Column-I	Column-II
a) Earthworm	vi) A horizon of moist soils
b) Garden Lizard	iv) Surface of soil
c) Crab	i) Sand and beaches
d) Rodents	ii) Burrows in soil
e) Scorpion	iii) Deep, narrow holes in dry soils
f) Snails and snugs	v) Surface of shaded moist soils

Long Answer Questions

16. Continuously water-logged soils are disadvantageous for plant growth. Why?

Soln:

Roots possess living cells that require oxygen for respiration and production of energy. These living cells absorb oxygen that is present in the spaces between soil particles. But in water-logged soils, water occupies the spaces between soil particles and pushes the oxygen out into the atmosphere. Thus, roots are deprived of oxygen and this affects root and plant growth.

17. Why is soil erosion relatively less in dense forests as compared to barren, open fields?

Soln:

In dense forests, the tree cover (canopy) prevents rain water from directly falling on the ground/soil. Also roots of the vegetation bind the soil particles and hold them together. As a result soil erosion is minimised.

But in barren, open fields the soil is exposed to the falling rain. The soil particles become loose due to the impact of raindrops and the flow of water carries them away. The flowing water further erodes the soil surface aggravating erosion.

18. Gardeners gently dig up the soil around the roots of garden herbs (plants) frequently. Give reasons.

Soln:

Gardeners gently dig up the soil around the roots of garden herbs for the following reasons

- (a) For enabling easy root growth;
- (b) For easier percolation of water;
- (c) For aerating the soil/enabling air to get into deeper layers of soil;
- (d) For removing the weeds.

19. In towns and cities, generally, the bore wells have to be dug very deep to get water as compared to bore wells dug in villages. Give suitable reasons.

Soln:

In towns and cities, generally, the bore wells have to be dug very deep to get water as compared to bore wells dug in villages. It is so because of the following reasons :

- (i) Excessive use of water in towns and cities depletes the groundwater.
- (ii) Towns and cities have asphalated roads and vast areas of soil are concreted. As a result, rainwater cannot percolate to recharge groundwater and the groundwater level further decreases. Villages have larger areas of open soil surface and fewer asphalated roads and concrete surfaces. Thus, larger soil surface area is available for rainwater to percolate into the soil easily and recharge the groundwater. As a result, even shallow bore wells yield water in village.

20. Several terms related to soil are hidden in the squares given as Figure 9.2. Spot them and make a list. Two examples are given for you.

G	R	P	E	L	I	F	O	R	P
W	H	U	M	U	S	S	G	M	E
E	A	B	S	R	G	A	I	G	R
A	E	T	C	G	V	N	K	N	C
T	R	H	E	G	E	D	Z	C	O
H	O	E	D	R	O	C	K	S	L
E	S	P	A	A	A	K	P	C	A
R	I	L	D	V	R	S	I	L	T
I	O	A	K	E	G	Q	M	A	I
N	N	N	T	L	S	G	H	Y	O
G	K	T	H	O	R	I	Z	O	N

Fig. 9.2

Soln:

G	R	P	E	L	I	F	O	R	P
W	H	U	M	U	S	S	G	M	E
E	A	B	S	R	G	A	I	G	R
A	E	T	C	G	V	N	K	N	C
T	R	H	E	G	E	D	Z	C	O
H	O	E	D	R	O	C	K	S	L
E	S	P	A	A	A	K	P	C	A
R	I	L	D	V	R	S	I	L	T
I	O	A	K	E	G	Q	M	A	I
N	N	N	T	L	S	G	H	Y	O
G	K	T	H	O	R	I	Z	O	N