

3. ROCK AND SOIL

TEACHING TASK

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Multiple Choice Questions

1. How is soil defined?
- A) A layer of rocks on Earth's surface
 - B) A layer of material covering Earth's surface composed of various components
 - C) A layer of water covering Earth's surface
 - D) A layer of air surrounding Earth

Key: B

Solution: Soil is the upper layer of material covering Earth's surface made of minerals, organic matter, air, and water—not just rocks, water, or air.

2. Which of the following is an example of chemical weathering?
- A) Wind erosion
 - B) Ice erosion
 - C) Rainwater combining with gases in the air to form acids
 - D) River erosion

Key: C

Solution: Chemical weathering occurs when rainwater reacts with gases (like CO₂, SO₂) to form acids that break rocks.

3. How are rocks broken into smaller pieces by physical forces?
- A) Water
 - B) Wind
 - C) Ice
 - D) All of the above

Key: D

Solution: Physical weathering is caused by natural forces like water, wind, and ice, all breaking rocks into smaller pieces.

4. Which type of weathering involves the combination of rainwater with gases in the air
- A) Physical
 - B) Chemical
 - C) Biological
 - D) None of the above

Key: B

Solution: This is chemical weathering, as acids form from gases in rainwater.

5. What process adds organic matter to the soil?
- A) Weathering
 - B) Erosion
 - C) Deposition
 - D) Decomposition

Key: D

Solution: Decomposition of plants and animals adds humus (organic matter) to soil.

6. What factors influence the type of soil that forms?
- A) Time
 - B) Climate
 - C) Rocks
 - D) All of the above

Key: D

Solution: Soil type depends on time, climate, and parent rock material—all of these together.

LEARNERS TASK

Multiple Choice Questions

1. What is the first step in soil formation?

- A) Erosion B) Deposition C) Weathering D) Decomposition

Key: C

Solution: Soil begins with weathering of rocks into smaller particles.

2. What is the movement of smaller rock pieces by natural forces called?

- A) Weathering B) Erosion C) Deposition D) Decomposition

Key: B

Solution: The movement of weathered material by wind, water, or ice is called erosion.

3. Which of the following is NOT a component of soil?

- A) Organic matter B) Minerals
C) Gases D) Rocks

Key: D

Solution: Soil contains minerals, gases, and organic matter, but not solid rocks in bulk.

4. What is the settling of eroded material in a new place called?

- A) Weathering B) Erosion C) Deposition D) Decomposition

Key: C

Solution: The deposition (settling) of eroded material in new locations is called deposition.

5. How does the settling of eroded material in a new place contribute to soil formation?

- A) Adds minerals B) Adds organic matter
C) Adds gases D) All of the above

Key: A

Solution: Deposition adds minerals to the soil, enriching it for soil formation.

TEACHING TASK

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Multiple Choice Questions

1. Which layer of soil consists mainly of fallen leaves and twigs?

- A) Topsoil B) Subsoil C) Organic Layer D) Parent Material

Key: C

Solution: The organic layer (humus) is rich in decomposed leaves and twigs.

2. What layer of soil is primarily responsible for providing nutrients to plants as it decomposes?

- A) Topsoil B) Bedrock C) Organic Layer D) Subsoil

Key: C

Solution: The organic layer releases nutrients when organic matter decomposes.

3. Which layer of soil is described as being like the bottom slice of bread in a sandwich?

- A) Parent Material B) Subsoil
C) Organic Layer D) Topsoil

Key: A

Solution: Parent material is the lowest soil layer, like the bottom slice in a sandwich.

4. What layer of soil serves as the base from which soil forms over time?

- A) Bedrock B) Organic Layer C) Topsoil D) Parent Material

Key: A or D (Both correct, often called Parent Material/Bedrock)

Solution: Soil develops from parent material, which rests on bedrock.

5. What layer of soil is described as not very useful for plants because it's too hard?

- A) Topsoil B) Bedrock C) Subsoil D) Parent Material

Key: B

Solution: Bedrock is too hard and cannot support plant roots.

6. What layer of soil is composed of solid rock?

- A) Topsoil B) Bedrock C) Subsoil D) Organic Layer

Key: B

Solution: Bedrock is the solid rock layer beneath all soil.

7. What is soil compared to for its importance in supporting plant growth?

- A) Water B) Air C) Home D) Sunlight

Key: C

Solution: Soil is compared to a home because it provides shelter and support for plants.

8. How does soil help in purifying water?

- A) It acts like a sponge B) It reflects sunlight
C) It releases oxygen D) It creates waves

Key: A

Solution: Soil acts like a sponge, absorbing and filtering rainwater.

9. What creatures live in the soil and help in maintaining its health?

- A) Fish B) Birds C) Insects D) Reptiles

Key: C

Solution: Insects (like ants, termites, earthworms) maintain soil fertility and aeration.

ADVANCED LEVEL

(i) More than One Answer Type:

10. From which layers can plant roots access water and minerals?

- A) Topsoil B) Subsoil C) Organic Layer D) Bedrock

Key: A, B

Solution: Roots spread in topsoil and subsoil to absorb water and minerals.

11. What creatures live in soil? (Select all that apply)

- A) Birds B) Worms C) Insects D) Fish

Key: B, C

Solution: Worms and insects live in soil, birds and fish do not.

12. What can clay and loam be used for? (Select all that apply)

- A) Cooking B) Building materials
C) Pottery D) Fuel

Key: B, C

Solution: Clay and loam are used for building materials and pottery, not cooking or fuel.

(ii) Fill In the Blanks:

13. The _____ layer of soil is primarily composed of fallen leaves and twigs.

Solution: organic

14. Soil acts like a _____, absorbing rainwater and filtering it as it moves through.

Solution: sponge

(iv) Matching Type:

15.

s.no	Column I	Column II
1.	Growing Plants	A. Offers a habitat for worms, insects, and small mammals, aiding in soil health.
2.	Filtering Water	B. Provides nutrients, water, and support for plant roots to grow.
3.	Supporting Animals	C. Can be used to make bricks, pottery, and earthen structures
4.	Building Materials	D. Acts like a sponge, absorbing rainwater and filtering it to provide clean drinking water.

Key: B, D, A, C

(v) Answer the Following Questions:

16. What is soil ? Explain about the different layers of soil

Answer: Soil is the thin layer of natural material on the Earth's surface that supports plant life. It is formed from the weathering of rocks and the decomposition of organic matter. Soil contains minerals, water, air, and organic matter, which together make it essential for plants, animals, and humans.

Different layers of soil:

Organic Layer (O Horizon): Contains decomposing plants/ animals.

Topsoil (A Horizon): Fertile, dark, rich in nutrients.

Subsoil (B Horizon): Harder, with fewer nutrients, collects minerals.

Parent Material (C Horizon): Weathered rock fragments.

Bedrock (R Horizon): Solid rock at the base.

LEARNER'S TASK

Multiple Choice Questions

1. What layer of soil is compared to the top slice of bread in a sandwich?
A) Subsoil B) Organic Layer C) Topsoil D) Bedrock

Key: C

Solution: Topsoil is the upper fertile layer, like the top slice of bread.

2. Which layer of soil is compared to the middle layer of a sandwich and is harder with fewer nutrients?
A) Parent Material B) Topsoil
C) Subsoil D) Bedrock

Key: C

Solution: Subsoil is harder and lies between topsoil and parent material.

3. What layer lies beneath all the other layers of soil?

A) Bedrock

B) Parent Material

C) Topsoil

D) Subsoil

Key: A

Solution: Bedrock is the bottom-most solid rock layer.

4. Which layer of soil contains mainly organic matter in various stages of decomposition?

A) Subsoil

B) Topsoil

C) Bedrock

D) Organic Layer

Key: D

Solution: Organic layer is made up of decomposing leaves, twigs, and humus.

5. Which layer of soil is where plant roots primarily grow?

A) Bedrock

B) Topsoil

C) Subsoil

D) Organic Layer

Key: B

Solution: Topsoil supports root growth with nutrients and organic matter.

6. What layer of soil lies on the surface and is important for adding nutrients to the soil?

A) Bedrock

B) Subsoil

C) Organic Layer

D) Parent Material

Key: C

Solution: Organic layer adds nutrients to the soil through decomposition.

7. What can clay and loam be used for?

A) Cooking

B) Playing

C) Building materials

D) Fuel

Key: C

Solution: They are used in construction and pottery, not cooking or fuel.

8. Soil is compared to which part of the body in the final sentence of the paragraph?

A) Heart

B) Brain

C) Skin

D) Bones

Key: C

Solution: Soil is compared to the skin, as it covers and protects Earth.

ADVANCED LEVEL

(i) More than One Answer Type:

9. Which layers are involved in the decomposition process?

A) Organic Layer

B) Topsoil

C) Subsoil

D) Parent Material

Key: A, B

Solution: Organic layer and topsoil are where decomposition occurs.

10. What does soil provide for plants? (Select all that apply)

A) Nutrients

B) Water

C) Support for roots

D) Sunlight

Key: A, B, C

Solution: Soil provides nutrients, water, and root support—but not sunlight.

11. Which materials can be made from certain types of soil? (Select all that apply)

A) Bricks

B) Glass

C) Pottery

D) Metal

Key: A, C

Solution: Clay and loam are used to make bricks and pottery, not glass or metals.

(ii) Fill In the Blanks:

12. _____ is made of big rocks and stones and serves as the base for soil formation.

Solution: Bedrock

13. Some types of soil, like clay and _____, can be used to make bricks and pottery.

Solution: loam

(iii) Matching Type:

14.

s.no	Column I	Column II
1.	Organic Layer	A. Top layer where plants grow their roots
2.	Topsoil	B. Composed of solid rock, lies beneath all other layers
3.	Subsoil	C. Consists mainly of fallen leaves and twig
4.	Bedrock	D. Underneath the topsoil, harder with fewer nutrients

Key: C, A, D, B

(iv) Answer the Following Questions:

15. Explain about different layers of soil

Answer:

Soil is made up of different layers called the soil profile. Each layer has special features:

1. Organic Layer (O Horizon):

Found on the surface.

Made of dead leaves, twigs, and decomposed matter.

2. Topsoil (A Horizon):

Dark in color and rich in nutrients.

Plants grow here and roots spread in this layer.

3. Subsoil (B Horizon):

Below the topsoil, lighter in color.

Contains minerals but fewer nutrients.

4. Bedrock (R Horizon):

The bottom layer, made of solid rock.

It is very hard and cannot support plants.