



INDIAN SCHOOL AL WADI AL KABIR



Class: VII	DEPARTMENT: SCIENCE (2023-24)	DATE: 13.11.2023
WORKSHEET NO.: 12 WITH ANSWERS	TOPIC: SOIL	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

OBJECTIVE TYPE QUESTIONS:

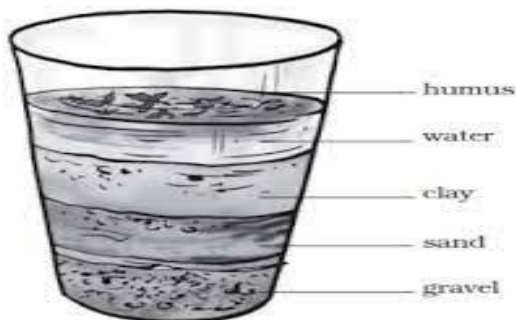
1. The organic matter present in the soil forms the
 a. **Humus** b. Bedrock
 c. Soil profile d. Weathering

2. Sudha collects 10 g of four different soil samples. What should she do to find out which sample contains the maximum moisture?
 a. Add the soil samples to water and check which one mixes the best.
 b. **Heat the soil samples for an hour and check which one weighs the least**
 c. Put the soil samples on paper sheets and check which one creates the smallest spot.
 d. Squeeze the soil samples with your fingers and check which one forms the smallest lump.

3. Which of the following does not cause soil erosion?
 a. Deforestation **b. Afforestation**
 c. Floods d. Overgrazing

4. The soil that has maximum water-holding capacity
 a. Sandy b. Loamy
 c. **Clayey** d. Sandy-loam soil

5. On what basis did the layers separate in the jar?



- a. Size of particle **b. Mass of particles**
 - c. Shape of particles d. The volume of the particles

6. The living organism which is known as the farmer's friend
 a. Cockroach b. Beetle
 c. **Earthworm** d. Hookworms

For the following questions, two statements are given- one labelled Assertion (A) and the other labelled Reason (R) Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

i) Both A and R are true and R is the correct explanation of the assertion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

iii) A is true but R is false.

iv) A is false but R is true

7. **Assertion (A):** The water holding capacity is the highest in clayey soil.

Reason (R): The particles of the clayey soil are big.

iii) A is true but R is false.

8. **Assertion (A):** Soil erosion doesn't affect the fertility of soil.

Reason (R): Humus present in the soil is eroded along with the soil.

iv) A is false but R is true

9. **Assertion (A):** Loamy soil is considered best for growing plants.

Reason (R): The space between the particles of loamy soil has the right water-holding capacity and is well aerated.

i) Both A and R are true and R is the correct explanation of the assertion.

10. **Assertion (A):** Soil is formed by the process of weathering.

Reason (R): The process of breaking down rocks by the action of wind, water and climate is called weathering.

i) Both A and R are true and R is the correct explanation of the assertion.

II. SHORT ANSWER TYPE QUESTIONS (2 M):

1. Explain why, the soil covered by vegetation is not eroded easily but the bare soil is eroded.

[**Hint: The roots of vegetation (trees and other plants) growing in the soil bind the particles of topsoil firmly and prevent erosion. On the other hand, the soil which is not covered with vegetation is eroded easily because there are no roots to which soil particles can bind.**]

2. 480g of soil is dried completely under the sun. The mass of dried soil is 464g. Calculate the moisture content in the given sample of soil.

[**Hint: Moisture content = $\frac{\text{Weight of moist soil (g)} - \text{Weight of dry soil (g)}}{\text{Weight of moist soil (g)}} \times 100$**
= $\frac{480\text{g} - 464\text{g}}{480\text{g}} \times 100 = 3.33\%$]

3. a) How does deforestation lead to soil erosion?

[**Hint: Deforestation loosens the soil particles. It makes the land barren and increases the chances of flood thus causing soil erosion.**]

b) Name two non-biodegradable wastes that can pollute the soil.

[**Hint: Plastic and Polythene are the non-biodegradable wastes that can pollute the soil.**]

4. How is loamy soil good for crops?

[Hint: Loamy soil is a mixture of sand, clay, silt and humus. The space between the particles has the right water-holding capacity and the soil is well-aerated. Therefore, it is the best soil for growing crops.]

5. Why on a hot summer day does the soil seem to shimmer?

[Hint: On a hot summer day, water present in the soil evaporates. The water vapour coming out of the soil reflects the sunlight and the air above the soil seems to shimmer]

6. Why does topsoil have the most humus? **[Hint: Topsoil provides shelter to many decomposers, insects, worms, etc. Humus is formed by the decaying remains of plants and animals by the decomposers]**

7. a) Which of the climatic factors affect the soil profile and bring changes in the soil structure? **[Hint: Soil is affected by wind, rainfall, light, temperature and humidity.]**

b) It has been observed that 8-10 days after the rains, the level of water in a nearby well rises. Which type of soil would allow rainwater to reach the well faster and in greater amounts? Give a reason for your choice. **[Hint: Sandy soil. The particles of sandy soil are big with large spaces between them. These spaces are filled with air. Thus, sandy soil is well aerated and has the highest percolation rate of water.]**

8. 600g of soil is dried completely under the sun. The mass of dried soil is 532 g. Calculate the moisture content in the given sample of soil.

[Hint-Moisture content = Weight of moist soil (g) – Weight of dry soil (g)]

$$= 600\text{g} - 532\text{g}$$

$$= 68\text{g}]$$

III. SHORT ANSWER TYPE QUESTIONS (3 M):

1. Explain that “soil is an inseparable part of our life.” **[Hint: (i) Soil is the most important natural resource. It supports the growth of plants by holding the roots firmly. (ii) It helps in supplying water and nutrients to plants. (iii) It is the home for many organisms. (iv)It is essential for agriculture, which provides food, clothing and shelter.]**

2. Suppose that for a certain soil sample, it took 25 minutes for 100 mL of water to percolate. Calculate the rate of percolation of water.

[Hint: Percolation rate (ml/min) = amount of water(mL) / percolation time(min)]

$$= 100\text{mL} / 25\text{min} = 4 \text{ mL /min}]$$

3. To percolate 50 mL of water, the time taken is 5 minutes. Calculate the percolation rate.

[Hint: Percolation rate (ml/min) = amount of water(mL) / percolation time(min)]

$$= 50\text{mL} / 5\text{min} = 10 \text{ mL/min}]$$

4. 100ml of water was taken in a measuring cylinder. This water was added drop-wise to 50g of dry soil kept on a filter paper in a funnel. When the water started dripping from the soil in

the funnel, the amount of water left in the measuring cylinder was found to be 60 ml. Calculate the percentage of water absorbed by the soil. **[Hint: Percentage of water absorbed**

$$= (\text{Initial volume of water} - \text{Final volume of water}) \times 100 / \text{weight of the soil}$$

$$= (100 - 60) \times 100 / 50 = 80 \%$$

5. Which soil would be most suitable for growing the following crops? Give reasons for your choice.

- a) Gram **[Hint: clayey-rich in humus, fertile, retains water]**
- b) Lentils **[Hint: loamy- right water holding capacity and is well aerated.]**
- c) Cotton **[Hint: sandy- loam or loam- drain water easily, hold plenty of air]**
- d) Paddy **[Hint: clayey – rich in humus, retain water]**

6. Describe the bedrock layer of soil. **[Hint: The last layer of the soil is called the bedrock. It contains large pieces of rocks that are not weathered or exposed to any winds or water. Bedrock cannot be dug with the help of a spade. It is very hard in texture.]**

7. Clayey soil is heavy and has little air'. Give reason. **[Hint: Clayey soil has small particles which are tightly packed together. This leaves little space between the particles for air. Water will be held in tiny gaps between the soil particles as it cannot drain out fast. Thus, the soil becomes heavy when wet.]**

8. What is soil pollution? How is it caused? **[Hint: Contamination of soil by the presence of man-made chemicals or other undesirable substances is called soil pollution. Soil pollution is caused by:**

- a. Excessive use of fertilisers, pesticides and insecticides.
- b. Waste products from industries which contain chemicals.
- c. Untreated sewage water.
- d. Non-biodegradable waste like polythene, plastic, metal.]

9. What is the relation between the rate of percolation and the amount of water retained? **[Hint: Rate of percolation is the quantity of water percolated per unit of time through the soil. The amount of water retained is the quantity of water absorbed by the soil. If a soil sample has a high rate of percolation, less water will be retained by it. But if the soil has less rate of percolation, more water will be retained by it.]**

IV.LONG ANSWER TYPE QUESTIONS (5 M):

1. List the differences between clayey soil and sandy soil.

SL.NO.	CLAYEY SOIL	SANDY SOIL
1	It has much smaller particles.	It has much larger particles.
2	Particles are tightly packed	Particles are loosely packed
3	It can hold a good amount of water.	It cannot hold water.
4	Air content is low.	Air gets trapped between the particles.
5	Good for growing various crops.	Not suitable for growing crops.

2. Explain how soil pollution and soil erosion could be prevented.

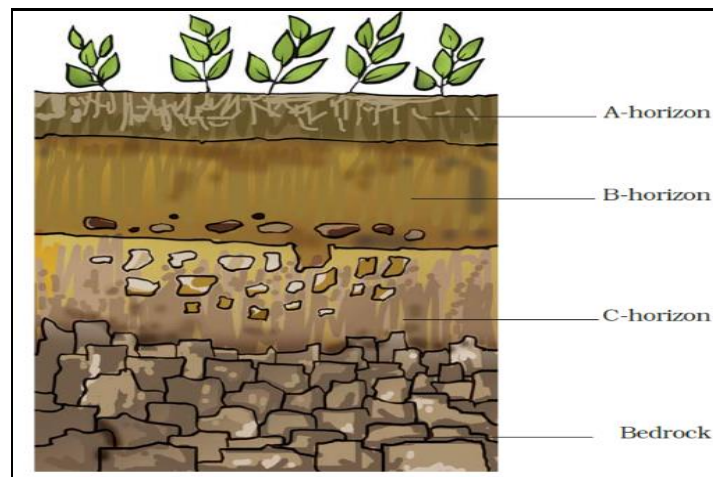
[Prevention of soil pollution: To prevent soil pollution, its causes must be controlled.

1. **Reduce the use of plastics: Plastics and polythene bags destroy the fertility of soil. Hence, these should be disposed off properly and if possible, their use should be avoided.**
2. **Industrial pollutants: Some waste products from industries and homes pollute soil. These pollutants should be treated chemically to make them harmless before they are disposed off.**
3. **Insecticides: Other pollutants of soil include pesticides and insecticides. Therefore, excessive use of these substances should be avoided.**

Prevention of soil erosion: The following steps can be taken to reduce soil erosion:

1. **Mass awareness to reduce deforestation for industrial purposes.**
2. **Helping local people to regenerate degrading forests.**
3. **Planting trees.]**

3. What is meant by soil profile? Sketch the soil profile and label the various layers. **[Hint: A vertical section through different layers of the soil is called the soil profile**



[A-Horizon

- The layer is also called topsoil and is visible to us.
- It is rich in humus and minerals which makes it dark in colour.
- It is generally soft, porous and retains more water
- It also provides shelter to many decomposers, insects, worms, etc.
- The roots of small plants are embedded entirely in the topsoil.

B- Horizon

- It forms the middle layer which is less rich in humus and contains more of minerals.
- This layer has a hard texture, and light colour and is more compact than topsoil.
- The roots of plants generally grow till this layer.
- This layer is also known as Subsoil
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C-Horizon

- It is made up of small lumps of rocks with cracks and crevices. These rocks are partly weathered.
- It lacks humus and is infertile.

Bedrock

- The last layer of the soil is called the *bedrock/R horizon*.
- It contains large pieces of rocks that are not weathered or exposed to any winds or water.
- Bedrock cannot be dug with the help of a spade. It is very hard in texture.

V. CASE STUDY- BASED QUESTIONS/ PASSAGE-BASED QUESTIONS-

1. A student visits two types of fields and observes that soil from field A has a high percolation rate of water, while soil from field B has a low percolation rate, however, the percolation rate is calculated by the formula given as $\text{Percolation rate (ml/min)} = \frac{\text{amount of water(mL)}}{\text{percolation time(min)}}$. Also, the student noticed that Crops like paddy were grown in field B and there was no standing crop in field B.

(i) Name the types of soil present in two fields. **[Hint: A- Sandy soil, B- Clayey soil]**

(ii) Express the percolation rate in its unit. **[Hint: ml/min]**

(iii) The following are a few statements related to soil

- 1) Weathering is a very fast process of soil formation.
- 2) Percolation of water is faster in sandy soil.
- 3) Loamy soil contains only sand and clay.
- 4) Topsoil contains the maximum amount of humus

Which of the above statements is correct?

- a) (2) and (4)** b) 1) and (3) c) (2) and (3) d) (1) and (2)

(iv) Name the soil that can lead to the maximum water logging in the fields.

[Hint: Clayey soil]

2. Soil is one of the most important natural resources. It provides anchorage to the plants and supplies water and nutrients. It is the home for many organisms. Soil is essential for agriculture. Agriculture provides food, clothing and shelter for all. Soil is thus an inseparable part of our life. The earthy fragrance of soil after the first rain is always refreshing.

Polythene bags and plastics pollute the soil. They also kill the organisms living in the soil. That is why there is a demand to ban the polythene bags and plastics. Other substances which pollute the soil are several waste products, chemicals and pesticides. Waste products and chemicals should be treated before they are released into the soil. The use of pesticides should be minimized.

- a) List any one importance of the soil as a natural resource. **[Hint: Soil is the home for many organisms.]**
- b) Name two non - non-biodegradable wastes that can pollute the soil. **[Hint: Plastic and Polythene are the non-biodegradable wastes that can pollute the soil.]**
- c) Name some substances which pollute the soil. **[Hint: Soil is polluted by several waste products, chemicals and pesticides.]**

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