

Subject: Geography
Topic: Soil

1. Consider the following statements

1. Pedogenesis is the process of soil formation under the action of various forces of nature such as wind, flowing water etc.
2. The different layers of the soil are arranged in a horizontal manner, which is known as the soil profile.

Which of these statements are correct?

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: A

Pedogenesis is the process of soil formation under the action of various forces of nature such as wind, flowing water etc.

The different layers of the soil are arranged in a vertical manner, which is known as the soil profile.

Issue : Soil profile

2. Which of the following statements are correct?

1. O- horizon contains organic matter which is either undecomposed or partially decomposed.
2. It is also known as the surface soil or the topsoil.

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: A

O-horizon

- This layer contains organic matter which is either undecomposed or partially decomposed. It includes leaves, twigs, mosses, and lichens.
- This layer lies on the top of the decomposed organic matter and the weathered rock material.

A-horizon

- Also known as the surface soil or the topsoil.
- It contains decomposed organic matter which is mixed with weathered rock minerals.
- Nutrients like iron, aluminium, clay, and organic matter are sometimes dissolved and carried out this layer.
- When the erosion is more pronounced, an eluviated layer appears at the subsurface or the base of the A-horizon.

Issue : Soil horizon

3. Which of the following layer is known as It is a zone of illuviation ?

- (a) B- horizon
- (b) A- horizon
- (c) E- horizon
- (d) O- horizon

Answer: A

B-horizon

- Also known as the subsoil, this layer lies below the A-horizon and the E-horizon.
- It contains minerals which reflect the physical and chemical alteration of the parent rock.
- It is a zone of illuviation i.e., the nutrients that are leached out of the A-horizon and E-horizon get accumulated here.
- Hence it is rich in iron, aluminium oxides, clay, and organic compounds.

Issue : B- horizon

4. Consider the following statements

1. R-horizon is also known as bedrock, this forms the bottommost layer of the soil profile.
2. It comprises of largely unbroken rock strata, as a continuous hard mass.

Which of these statements are correct?

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: C

R-horizon

- Also known as bedrock, this forms the bottommost layer of the soil profile.
- It comprises of largely unbroken rock strata, as a continuous hard mass.

- In situ, soils exhibit many features of the bedrock strata.

Issue : R-horizon

5. Which of the following processes are common in hot-wet tropical and equatorial climates ?

- (a) Podzolization
- (b) Laterization
- (c) Salinisation
- (d) Calcification

Answer : B

Laterization: Laterization is a pedogenic process which is a common to the soils found in the humid tropical and subtropical environments.

High temperatures and heavy precipitation result in the rapid weathering of rocks and minerals.

Movements of large amounts of water through the soil cause eluviation and leaching to occur.

Almost all of the byproducts of weathering are translocated from A horizon to B horizon by leaching, if not taken up by plants for nutrition, the two exceptions are insoluble iron and aluminium compounds which are not leached.

As a result, the topsoil is reddish, coarse textured and tends to be porous.

Issue: Laterization

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6. Consider the following statements

1. Podzolization is associated with humid cold mid latitude climates having short, cool summers and long, severe winters .
2. The coniferous forests of these climate regions are an integral part of the podzolization process.

Which of these statements are correct?

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: C

Podzolization: Podzolization is associated with humid cold mid latitude climates having short, cool summers and long, severe winters and coniferous vegetation.

Decomposition of coniferous litter and heavy summer precipitation create a soil solution that is strongly acidic. This acidic soil solution enhances the processes of eluviation and leaching causes the removal of soluble base cations and aluminium and iron compounds from the A horizon.

This process creates a sub layer in the A horizon comprising of silica sand and ash gray in color. The coniferous forests of these climate regions are an integral part of the podzolization process.

Issue : podzolization

7. Calcification is observed commonly in the

- (a) Polar region
- (b) Grassland region
- (c) Equatorial region
- (d) None of the above

Answer: B

Calcification:

It occurs when the evaporation exceeds precipitation. Under such conditions, the material has an upward movement within the profile due to capillary action.

This brings the calcium compounds to the upper layers. In grasslands, there is enhanced calcification, as grasses use a lot of calcium, leaving a dark, organic upper surface.

Issue : Calcification

8. Which of the following is a common phenomenon in areas with good canal irrigation facilities but poor drainage ?

- (a) Podzolization
- (b) Laterization
- (c) Salinisation
- (d) Calcification

Answer: C

Salinisation/Alkalisiation

This happens when a temporary excess of water and extreme evaporation bring the underground salts to the surface and a whitish fluorescent crust is left behind. This is a common phenomenon in areas with good canal irrigation facilities but poor drainage, as in some areas of Punjab in India.

Issue : **Salinisation**

9. Which of the following soils are often associated with recently deposited sediments from wind, water, or ice erosion ?

- (a) Entisols
- (b) Mollisols
- (c) Vertisols
- (d) Inceptisols

Answer: A

Entisols – Immature soils that lack the vertical development of horizons. These soils are often associated with recently deposited sediments from wind, water, or ice erosion. Given more time, these soils will develop into another soil type.

Issue : Entisols

10. Consider the following statements

1. Zonal soils are influenced more by the climate and vegetation of the area rather than the rock-type.
2. Azonal has been developed by the process of deposition by the agents of erosion.

Which of these statements are correct?

- (a) 1 Only
- (b) 2 Only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Answer: C

Zonal Soil

They are influenced more by the climate and vegetation of the area rather than the rock-type.

They are mature, as a result of stable conditions over a long period of time.

For example – red soils, black soils, laterite soils, desert soils etc.

Azonal Soil – It is that soil which has been developed by the process of deposition by the agents of erosion.

It means that it has been made by the fine rocky particles transported from the far-off regions.

These are immature soils and lack well-developed soil profiles. This may be due to the non-availability of sufficient time for them to develop fully or due to the location on very steep slopes which prohibits profile development.

For Example – alluvial and loess soils.

Issue : Zonal & Azonal soils