



# 17578

16117

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All questions are **compulsory**.
  - (2) Answer **each** next main question on a **new** page.
  - (3) Figures to the **right** indicate **full** marks.
  - (4) Assume suitable data, if **necessary**.

**Marks**

1. Answer **any five** :

**(5×4=20)**

- a) Define soil. Write functions of soil.
- b) Describe physical properties of soil in relation to growth of plants.
- c) Define moisture content of soil on dry basis and wet basis.
- d) What is meant by soil erosion ? Explain its classification.
- e) State principles of erosion control.
- f) Name permanent soil conservation structures. Write adaptability of each.
- g) Enlist the types of earth dam. Draw a diagram of one type and label the components.

2. Answer **any four** :

**(4×4=16)**

- a) Name major soils of India. Describe any two.
- b) Name the constituents of soil. Explain their importance for soil as a medium of plant growth. (any two constituents).
- c) Define soil texture. State textural classification of soil.
- d) What is meant by soil structure ? Write its significance.
- e) Define 'Porosity' and 'void ratio'. State its importance.
- f) Describe soil separates, stating its physical nature and classification.

3. Answer **any four** :

**(4×4=16)**

- a) Classify soil moisture. Describe any two types.
- b) Explain any two procedures to determine moisture content of soil.
- c) Describe :
  - i) Field capacity
  - ii) Permanent wilting point
  - iii) Available water
  - iv) Readily available water.
- d) Define soil permeability and explain its importance.
- e) State and explain Darcys law. Write its applications.
- f) What is soil tilth ? Write its significance.

**P.T.O.**

**4. Answer any four :****(4×4=16)**

- a) What is cation exchange ratio ? How is it determined ? State its importance.
- b) Describe exchangeable sodium percentage. State as to how it affects properties of soil.
- c) Make comparison between wind erosion and water erosion of soil.
- d) Under what conditions wind erosion occurs ? List the variables involved in the erodibility of soil caused by wind.
- e) Distinguish between-rill erosion and gully erosion.
- f) Explain the mechanism of raindrop erosion and sheet erosion.

**5. Answer any four :****(4×4=16)**

- a) Illustrate stream channel erosion.
- b) What is tillage ? Enlist the activities involved in it. Write its advantages and limitations.
- c) List the data required for designing a contour bund system. Enumerate the steps in design process.
- d) State types of bench terrace. Enlist the design parameters.
- e) Elaborate the points that govern the choice of vegetation selection for given water way.
- f) Enumerate the temporary structures for control of gully erosion. Explain suitability of each.

**6. Answer any four :****(4×4=16)**

- a) Draw 'plan and downstream elevation' of drop spillway. Label the components.
  - b) Explain chute spillway, state its principle, adaptability and constructional features.
  - c) Explain the importance of farm ponds in relation to soil and water conservation.
  - d) What is ground water recharge ? State its necessity and importance. Name the techniques used for recharging.
  - e) Describe construction and explain maintenance of earthen dam.
  - f) Describe any two causes of failure of earthen dam.
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