



**SECTION-B**

- Q2 What are the different factors of safety used in the stability of slopes?
- Q3 A clay layer 4 m thick is subjected to a pressure of  $55 \text{ kN/m}^2$ . If the layer has a double drainage and undergoes 50% consolidation in one year, determine the coefficient of consolidation. Take  $T_v = 0.196$ . If the coefficient of permeability is  $0.020 \text{ m/yr}$ , determine the settlement in one year and rate of flow of water per unit area in one year.
- Q4 Explain concept of O.M.C. and zero air void line the help of a diagram.
- Q5 In a consolidation test on a soil, the void ratio of the sample decreased from 1.25 to 1.10 when the pressure is increased from  $200 \text{ kN/m}^2$  to  $400 \text{ kN/m}^2$ . Calculate the coefficient of consolidation if the coefficient of permeability is  $8 \times 10^{-8} \text{ cm/sec}$ .
- Q6 What is a flow net? Describe its properties and applications. Describe different methods used to construct the flow net.

**SECTION-C**

- Q7 The results of two drained triaxial tests on saturated clay are given as:

Specimen I:  $\sigma_3 = 69 \text{ kN/m}^2$

$\sigma_d = 213 \text{ kN/m}^2$

Specimen II:  $\sigma_3 = 120 \text{ kN/m}^2$

$\sigma_d = 258.7 \text{ kN/m}^2$

Calculate shear strength parameters of the soil.

- Q8 What is particle size distribution curve? What is its use in soil engineering?
- Q9 Obtain the differential equation defining the one – dimensional consolidation as given by Terzaghi, listing the various assumptions.