

**IV-SEM**  
**CET-402-GEOTECHNICAL ENGG**

**2 Marks Questions**

- 1 (a) Write down the relation between void ratio & porosity.
- (b) What is density index?
- (c) Write down the formula for Coefficient of curvature..
- (d) Define honeycomb soil structure.
- (e) Define plasticity index.
- (f) Define Darcy's law.
- (g) What is quick sand condition.
- (h) Define consolidation.
- (i) Define piping.
- (j) Draw the figure of two spread footing.

**5 Marks Questions**

- 2.(a) State the relation between  $Y$ ,  $G$ ,  $e$  &  $S$ .
- (b) State the factors affecting permeability.
- (c) The mass specific gravity of a fully saturated specimen of clay having water content 36 % is 1.86. On oven drying, the mass specific gravity drops to 1.72. Calculate the specific gravity of clay & its shrinkage limit.
- (d) Describe Casagrande's plasticity chart with figure.
- (e) Describe the laboratory procedure of consolidation test.
- (f) Describe about the Mohr's Coulomb's failure theory.
- (g) Discuss about passive earth pressure.

**10 Marks Questions**

3. A natural soil sample has a bulk density of  $2 \text{ g/cm}^3$  with 67 water content. Calculate the amount of the water required to be added to one cubic meter of soil to raise the water content to 15 % while the void ratio remain constant. What is then the degree of saturation?  $G = 2.67$
4. Describe about different groups of clay minerals.
5. Write down the different application of flow net.
- 6 A strip footing 2m wide carries a load intensity of  $400 \text{ kN/m}^2$  at a depth of 1.2m in sand. The saturated unit weight of sand is  $19.5 \text{ kN/m}^3$ . The shear strength parameters are  $C = 0$  &  $\phi = \square^\circ$ . Determine the factor of safety with respect to shear failure for the following cases.
  - (a) Water table 4m below it.
  - (b) Water table 1.2 m below G.L.
7. Define foundation. State different types of foundation. Briefly discuss about pile foundation.