

TH2 Geotechnical Engineering

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2  
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
  - a. What is density index ?
  - b. State Darcy's law ?
  - c. What is Active Earth Pressure ?
  - d. Define Effective stress ?
  - e. Define MDD & OMC ?
  - f. What is zero air void line ?
  - g. Define uniformity coefficient ?
  - h. What is Void ratio ?
  - i. Define specific gravity ?
  - j. What is quick sand condition ?
2. Answer **Any Six** Questions 5 x 6
  - a. Define relation between void ratio & porosity ?
  - b. Write short note on quick sand condition ?
  - c. Define OMC & also describe factor affecting compaction ?
  - d. Write down different types of shallow foundation ?
  - e. Define Liquid Limits & test to determine ?
  - f. Explain Mohr Coulomb's failure theory ?
  - g. Define Atterberg limits?
3. Answer **Any Three** Questions
3. The mass and volume of a saturated clay specimen were 29.8 gm & 17.7 cm<sup>3</sup> respectively. On oven drying the mass got reduced to 19gm and volume 8.9 cm<sup>3</sup>. Calculate shrinkage limit , shrinkage ratio and volumetric shrinkage . Also compute G of soil .? 10
4. Explain in detail Triaxial shear test of soil with neat sketch ? 10
5. In the falling head permeability test in duration of 3 hours the initial head of 1000 mm is dropped to 350 mm. The diameter of the stand pipe is 0.5 cm. The length and diameter of the soil specimen are 20 cm and 10 cm respectively. What is the coefficient of permeability of the soil ? 10
6. What are the types of shear failures ? Describe with neat sketches . 4+6
7. Discuss about Plasticity chart ? 10