Roll No. | | | | | | | | | | | | | **Total No. of Pages : 03**

Total No. of Questions : 08

M.Tech. (Civil / Soil Mechanics & Foundation Engg. / Geo Technical Engg.) (Sem.–1)

ANALYSIS OF SETTLEMENT OF SOIL AND FOUNDATION

Subject Code : CESE-5

M.Code : 93321

Date of Examination : 12-01-23

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. Explain three dimensional consolidation equation in Cartesian coordinates. Also write assumptions made in derivation of Terzaghi's consolidation equation.

2. a) Explain three dimensional consolidation equations in polar coordinates.

   b) Explain strain related to stress and water pressure in general theory of three dimensional consolidation.

3. Write physical interpretation of soil constants. What is instantaneous compressibility?

4. What are the different methods of soil classification? How is soil classified according to ISSCS?

5. a) Write two methods for the design of Raft foundation.

   b) Write different types of foundation settlement. Also write foundation settlement causes.

6. A raft foundation of 6m × 9m is placed at a depth of 3m in a cohesive soil having c = 120 KN/m^2. What is the net ultimate bearing capacity of soil using Terzaghi's theory. What are the factors affecting choice of Raft foundation.

7. a) 8m long piles having diameter 200mm are used as a foundation for a column in a uniform deposit of medium clay (qu = 100 KN/m^2). The spacing between the piles is 500mm. There are 9 piles in the ground arranged in a square pattern. Calculate the ultimate pile load capacity of the group. Assume adhesion factor = 0.9.

   b) Write classification of piles.

8. Explain with diagram spring model for consolidation of soil mass.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.