

Roll No. ....

Total Pages : 3

**002503**

**December 2023**

**B.Tech. Vth SEMESTER**

**Foundation Engineering (PCC-CED-303)**

Time : 3 Hours]

[Max. Marks : 75


*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

**PART-A**

1. (a) Define soil sampling Techniques. (1.5)
- (b) Define Terzaghi's equations. (1.5)
- (c) What is the difference between Deep foundation and Shallow foundation? (1.5)
- (d) Define the term settlement of piles, and negative skin friction. (1.5)
- (e) Discuss about Tilt and Shift. (1.5)
- (f) Give the preparation of soil investigation report. (1.5)
- (g) What do mean by sinking of well. (1.5)

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(h) List out the type of Slope Failure. (1.5)

(i) What is the assumption of Coulombs theory? (1.5)

(j) Define differential Settlement. (1.5)

### PART-B

2. (a) What are the forces acting on the well foundation? (10)
- (b) Give the measures for rectifying Tilts and Shift. (5)
3. (a) With a neat sketch state different component of a well foundation. (5)
- (b) What are the types of well foundation? Discuss the different shapes of well foundation. (10)
4. Define SPT with neat sketch and also define the working procedure. (15)
5. Define expansive soil. Their identification and problems of expansive soils. (15)
6. A plate load test was conducted with a 30 cm square plate at a depth of 1.2 m below the ground level. In a cohesive soil having  $\Phi = 0$ . The failure was observed to be at a load of 35 kN. The water table was observed to be at a depth of 4.7 m below ground surface. Compute the bearing capacity for a trip footing 1 m wide with its base located at the same level. As the test plate and in the same soil. Take the bulk unit wt. of the soil as  $16.8 \text{ kN/m}^3$ . Also calculate the safe bearing capacity of factor at a safety of 3. (15)

7. A soft normally consolidated clay layer is 6 m thick with a natural water content 30%. The clay has a saturated unit wt. of  $17.4 \text{ kN/m}^3$ . A specific gravity of 2.67 and a liquid limit of 40%. The ground water level at the surface of clay. Determine the settlement of foundation if the foundation load will be subjected at the Centre of clay layer to a vertical stress of  $8 \text{ kN/m}^2$ . (15)