

Total No. of Questions : 8]

SEAT No. :

PC-2341

[Total No. of Pages : 3

[6354] - 457
B.E. (Civil Engg.)
FOUNDATION ENGINEERING
(2019 Pattern) (Semester - VII) (401001)

Time : 2½ Hour]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right side indicate full marks.*
- 4) Assume Suitable data, if necessary and mention it clearly.*
- 5) Use of non-programmable calculator is allowed.*

- Q1)** a) Define pre-consolidation pressure. How it is determined? [6]
- b) Explain Square root of time fitting method for determination of coefficient of consolidation. [6]
- c) In a consolidation test void ratio decreased from 0.75 to 0.70, when the load was changed from 50 KN/m². Compute compression index of volume change. [5]

OR

- Q2)** a) What are the different types of foundation settlement? Explain in detail.[5]
- b) Explain laboratory consolidation test with [6]
- i) Neat sketch with procedure
- ii) Different consolidation parameters obtain during test.
- c) A soil stratum is 10 m thick with pervious stratum on top and bottom. Determine the time required for 50% consolidation. Given that coefficient of permeability = 10^{-7} cm/s, coefficient of compression = 0.0003 cm²/gm, void ratio = 2 and time factor = 0.197. [6]

P.T.O.

- Q3)** a) What is negative skin friction? Explain with figure. [5]
- b) A group of 16 piles of 50 cm diameter is arranged with a centre to centre spacing of 1.0m. The piles are 9 m long and are embedded in soft clay with cohesion 30 kN/m^2 . Bearing resistance may be neglected for the piles (Adhesion factor 0.6). Determine the ultimate load capacity of the pile group. [6]
- c) Enlist the methods of determining pile capacity. Explain any two methods in short. [6]

OR

- Q4)** a) What methods you can use for determining pile capacity. Explain any two methods in short. [6]
- b) A group of 9 piles, 10 m long is used as a foundation for bridge pier. The piles used are 30 cm diameter with centre to centre spacing of 0.9 m. The subsoil consists of clay with unconfined compressive strength of 1.5 kg/cm^2 . Determine the efficiency neglecting the bearing action. Assume adhesion factor = 0.9. [6]
- c) How do you classify pile according to different criteria? [5]

- Q5)** a) What is Caisson? How Caissons are classified based on methods of construction? [6]
- b) Sketch and describe the various components of well foundation, indicating functions of each component. [6]
- c) What is pier? Explain methods of installation of pier. [6]

OR

- Q6)** a) What is mean by shallow foundations? What are the principles of design of footing? [6]
- b) What is mean by raft foundation? Explain any two types of raft foundation? [6]
- c) How do you find out the bearing capacity and depth of well foundation? What are the forces acting on well foundations? [6]

OR

- Q7)** a) What is sheet pile wall? Differentiate between cantilever sheet pile wall and anchored sheet pile wall. [6]
- b) Explain vibro-floatation of soil improvement. [6]
- c) Write a short note on problems and its solution Black cotton soil? [6]

OR

- Q8)** a) Explain Cofferdams types and its applications [6]
- b) Explain stone column techniques of soil improvement. [6]
- c) What is diaphragm wall? Explain with neat sketch construction of diaphragm wall. [6]

