

Total No. of Questions : 8]

SEAT No. :

PB2216

[6263]-53

[Total No. of Pages : 2

B.E. (Civil Engg.)

FOUNDATION ENGINEERING

(2019 Pattern) (Semester - VII) (401001)

Time : 2½ Hours]

[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) Figures to the right indicate full marks.
- 3) Assume suitable data, if necessary.
- 4) Use of calculator is allowed in the examination.
- 5) Neat diagrams must be drawn wherever necessary.

- Q1)** a) Enlist the assumptions of Terzaghi's consolidation theory. [5]
b) Discuss the different causes of differential settlement. Mention the measures to avoid it. [6]
c) In a consolidation test the void ratio decreases from 0.7 to 0.65 when the load was changed from 50 kN/m² to 100 kN/m². Calculate compression index coefficient of volume change. [6]

OR

- Q2)** a) Explain in detail significant depth of foundation. [5]
b) Define [6]
i) Over consolidation ratio
ii) Normally consolidated soil
iii) Over consolidated soil
c) A consolidation test on a sample of clay having thickness of 2.3cm indicates half of consolidation in first 5 minutes, under similar condition how long the strata of 6m thick will take time for half consolidation with single drainage. [6]

- Q3)** a) Write a note on classification of pile according to function. [5]
b) Explain the concept of field rule to calculate the efficiency of pile group with example. [6]
c) A wooden pile is being driven with a drop hammer weighing 20 kN and having a free fall of 1.0 m. The penetration in last blow is 5 mm. Determine the load carrying capacity of pile according to the Engineering News Formula. [7]

OR

P.T.O.

- Q4)** a) Discuss the negative skin friction with neat sketch How it is calculated for single pile? [5]
b) Write a note on uplift capacity of pile. [6]
c) In a 16 piles group, the pile diameter is 45 cm and c/c spacing of the square group is 1.5 m. if cohesion is 50 kN/m². Determine whether failure would occur with the pile acting individually or as a group? Neglect the bearing at the tip of the pile. All piles are 10 m long. Take α is 0.7 for shear mobilization around each pile. [7]

- Q5)** a) Write down the steps involved in proportioning of footing. [5]
b) When following footing types are recommended [6]
i) trapezoidal footing
ii) strap footing
c) Enlist the components of well foundation with neat sketch. [6]

OR

- Q6)** a) Explain the concept of floating raft. [5]
b) Write a note on determination of [6]
i) Scour depth
ii) Bearing capacity of well foundation
c) What is tilts and shifts of well foundation? How they are rectified? [6]

- Q7)** a) Discuss any three types of cofferdams with neat sketch. [6]
b) Explain how to evaluate swelling potential of black cotton soil. [6]
c) Write a note on interlocking circular piles. [6]

OR

- Q8)** a) Explain the different engineering problems associated with black cotton soil. [6]
b) Enlist the different applications of cofferdam [6]
c) Discuss the preloading techniques with neat sketch. [6]

