Total No. of Questions : 8]

SEAT No. :

PB2216

[Total No. of Pages : 2

[6263]-53
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 meausres 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/m^2 to 100kN/m^2. 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 below 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/m^2. 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 m 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]**

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