Total No. of Questions : 12] SEAT No. :

P3117 [Total No. of Pages : 3

[4858] - 107
T.E. (Civil)
FOUNDATION ENGINEERING
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer three questions from Section I and three questions from Section II.***
2) ***Answers to the two Sections should be written in separate answer-books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Use of logarithmic tables, slide rule, electronic calculator is allowed.***
5) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) Explain why density index is a significant parameter in Foundation Engineering. **[4]**

b) How is the number and depth of exploratory holes determined? **[5]**

c) What are penetration methods of investigations? Are they reliable in all soils? **[5]**

d) What are the factors that influence SPT data? **[4]**

OR

Q2) a) What are the objectives of soil investigation? **[6]**

b) State various types of soil samplers. What is area ratio? State its significance. **[6]**

c) What is meant by geophysical methods of soil exploration? Explain anyone of them with neat sketch. **[6]**

Q3) a) Distinguish between elastic settlement and consolidation settlement and explain how they are estimated? **[6]**

b) What is "active zone' in soil? Explain it with reference to the pressure bulb concept? **[6]**

c) Define preconsolidation pressure & explain how it is determined. **[4]**

P.T.O.

OR

Q4) a) With a neat sketch explain laboratory consolidation test and list the various consolidation parameters of soil obtained from test data. **[8]**

b) Explain, with neat sketch, square root of time fitting method to find coefficient of consolidation. **[4]**

c) Define the terms normal consolidation, over consolidation & under consolidation pressure in detail. **[4]**

Q5) a) What are the basic characteristics of failure mechanisms in general shear and local shear failure. Explain with neat sketch. **[6]**

b) Explain how water table and depth influence bearing capacity. **[5]**

c) Explain the concept of floating foundation with a neat sketch. **[5]**

OR

Q6) a) Describe a plate load test as carried out in the field with a neat sketch of experimental Setup. **[6]**

b) Explain how SPT test data is used to find bearing capacity of cohesion less soil. **[5]**

c) Explain the concept of floating foundation with a neat sketch. **[5]**

SECTION - II

Q7) a) Explain in detail with sketches fivefold classification of piles foundation. **[6]**

b) Explain with a sketch the concept of negative skin friction & state how you would determine the same in non-cohesive soil. **[6]**

c) State the advantages and disadvantages of piers in comparison of pile foundation. **[6]**

OR

Q8) a) What is caisson disease? Mention what precautions should be taken to avoid caisson disease. **[6]**

b) Explain with sketches the following difficulties met during sinking of well. **[6]**

i) Sand blow

ii) Rectification of tilt.

c) Enlist five important component parts of open caisson & explain with sketches design considerations involved in them. **[6]**

Q9) a) Compare in tabular form cantilever & anchored sheet piles on five different points. **[5]**

b) Draw in cross-section of braced excavation indicating component parts. State forces & design Principles involved. **[5]**

c) Derive an expression for depth of embedment of cantilever pile by making simplified assumptions. **[6]**

OR

Q10)a) With reference to Black cotton soil explain: **[6]**

i) Free swell index.

ii) Differential free swell index.

iii) Swelling potential.

b) Explain the construction procedure for under-reamed piles. **[6]**

c) Enlist typical characteristics of Black cotton soils & give their approximate values. **[4]**

Q11)Write detailed notes on any four of following with sketches. **[4 marks each]**

a) Liquefaction.

b) Factors affecting ground motion.

c) Types of Earthquake.

d) Geotextile in drains.

e) Requirements reinforced soil mechanism.

OR

Q12)Write detailed notes on any four of following with sketches if required. **[4 marks each]**

a) Hazards of mitigation.

b) Seismic waves.

c) Types of Geosynthetics.

d) Geotextiles in foundations.

e) Geotextiles in embankment.