

Total No. of Questions :12]

SEAT No. :

P2835

[4958]-1007

[Total No. of Pages :3

T.E. (Civil)

FOUNDATION ENGINEERING

(2012 Pattern) (End Semester) (Semester - II)

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, Q7 or Q.8 and Q.9 or Q.10.*
- 2) *Answer to the two sections should be written in separate books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of logarithmic tables, slide rule, Mollier charts, electronics pocket calculator and steam tables is allowed.*
- 5) *Assume suitable data, if necessary.*
- 6) *Neat diagrams must be drawn wherever necessary.*

Q1) Explain with neat sketch standard penetration test. Define standard penetration number. State various corrections applied to this number. **[7]**

OR

Q2) Define the term: inside clearance, outside clearance and area ratio. A sampling tube of 15 cm internal diameter is 1m thick. It is fitted with a cutting edge. The inside diameter of cutting edge is flushed with sampling tube. The cutting edge is 1.2 mm thick. Compute inside clearance, outside clearance and area ratio. Comment on sample collected by this tube. **[7]**

Q3) State Terzaghi's bearing capacity equation for strip, circular, square footing and describe all the terms. **[6]**

OR

Q4) A column carries a load of 1000 KN resting on dry sand weighing 20 KN/m³ and having angle of internal friction as 35°. Find the size of square footing resting on ground surface. The required Terzaghi's bearing capacity $N_c=57.8$, $N_q=41.4$ and $N_r=42.4$. **[6]**

P.T.O.

Q5) Define Differential settlement. What is angular distortion? Explain causes and technique to reduce differential settlement. [7]

OR

Q6) A consolidation test performed in laboratory on a sample of clay having thickness of 2.3 cm indicates that half the ultimate compression occurs in the first 5 min. Under the similar condition, how long will be required for a building on 6 m layer of the same clay to experience half of its final settlement. [7]

- Q7)** a) Define Negative Skin Friction. How it is determined. Also explain how it is prevented. [6]
- b) Design square pile group to carry 500 kN load in clay with an unconfined compressive strength of 80 kN/m². The pile are 30cm diameter and 8m long and adhesion factor 0.6. Use FS=3. [6]
- c) Discuss the necessity of pile foundation. [6]

OR

- Q8)** a) Enlist the classification of piles and explain with neat sketch pile classified with respect to function. [6]
- b) Draw the neat sketch of Well Foundation showing all components and state function of each. Also enlist various forces acting on well foundation. [6]
- c) Write a short note on caisson disease. [6]
- Q9)** a) What is coffer dam? Discuss the types of coffer dam. Explain any one in detail. [6]
- b) List out the various techniques of soil improvement. Explain any one. [6]
- c) Explain any four engineering problem associated with black cotton soil. [4]

OR

- Q10)** a) Explain design principle of undreamed pile. [6]
- b) Explain in details about the R.C. diaphragm wall method. [6]
- c) Explain vibro-floatation method of soil improvement. [4]

- Q11)**a) State the various function of geosynthetic materials and explain any two function with suitable example? [6]
- b) What is liquefaction? Discuss the effect of liquefaction. [6]
- c) What is strong ground motion? Write down any four characteristic of strong ground motion. [4]

OR

- Q12)**a) Write down the classification of geosynthetics and explain any two geosynthetic with suitable example. [6]
- b) Differentiate between P-wave and S-wave. [6]
- c) Explain with neat sketch mechanism of reinforced soil. [4]

