Total No. of Questions : 10]

SEAT No. :

P3659

[Total No. of Pages : 3

[4959]-1013
B.E. (Civil)
e-ADVANCED GEOTECHNICAL ENGINEERING
(2012 Pattern) (Semester - I) (Elective - II) (End-Semester)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, and Q5 or Q6, Q7 or Q8, Q9 or Q10.***
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, Mollies charts, electronics pocket calculator and steam tables is allowed.***
5) ***Assume suitable data if necessary.***
6) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Discuss different soil classification system. **[4]**

b) Explain the following: **[6]**

i) PRA classification

ii) USCS classification

OR

Q2) a) Determine the active earth pressure at a depth of 5.0 m in sand whose angle of friction is 36° and density of 16.5 kN/m^2 in dry state. **[4]**

b) Explain the structure of montmorillonite and give role of montmorillonite in foundation engineering. **[6]**

Q3) a) Differentiate between Rankine's and Coulomb's earth pressure theories. **[4]**

b) Discuss the application of geosynthetics in geoenvironmental engineering. **[6]**

OR

P.T.O.

Q4) a) Discuss slope stabilization using soil nails. **[4]**

b) What do you mean by "Reinforced Earth"? Give the advantages of reinforced earth structure. **[6]**

Q5) Explain the following:

a) Soil as a mass spring system. **[4]**

b) Barken's method. **[4]**

c) Pauw's method. **[4]**

d) Elastic half space method. **[4]**

OR

Q6) a) Resonance occurred at a frequency of 22 cycles/sec in a vertical vibration test of a block 1m * 1m* 1m. Determine the Cu of soil, if the weight of oscillator is 650N and the force produced by it at 12 cycles/sec is 1000N. **[8]**

b) Discuss the design criteria for impact type machine as per IS-2974 (Pt II) -1966. **[8]**

Q7) a) Explain the steps for design of sand drains with the following cases:

i) Isotropic case

ii) Anisotropic case **[8]**

b) Explain the stages for construction of bored compaction pile. **[8]**

OR

Q8) Explain the following:

a) Vibroflotation. **[4]**

b) Grouting. **[4]**

c) Sand drains. **[4]**

d) Freezing soil. **[4]**

Q9) a) Discuss the following in details. **[3×4=12]**

i) Rheological Model and its utility

ii) Maxwell Model

iii) Creep

b) Explain in detail "Saint Venant Model". **[6]**

OR

Q10)a) Explain secondary consolidation in detail. **[6]**

b) Reissner's Model with spring and dashpot. **[6]**

c) Explain basic and compound Rheological Models. **[6]**