Total No. of Questions : 10] SEAT No. :

P3027 [Total No. of Pages : 2

[5354]-513
B.E. (Civil)
ADVANCED GEOTECHNICAL ENGINEERING
(2012 Pattern) (Elective - II) (Semester - I)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:-

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***
4) ***Use of electronic pocket calculator is allowed in the examination.***
5) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Discuss earth pressure at rest, active and passive. **[4]**

b) State different classification of soil system and explain any one in detail. **[6]**

OR

Q2) a) What are assumptions made in Rankine's and Coulomb's earth pressure theories. **[4]**

b) State different types of clay mineral and explain any one in detail. **[6]**

Q3) a) Explain the different types of Geosynthetics with their functions. **[5]**

b) A smooth vertical wall retains a level backfill with $\gamma = 18.5$ kN/m^3, $\phi = 30°$ and cohesion = 0 to a depth of 10 m. Draw the lateral pressure diagram and compute the total thrust on the retaining wall. What will be the active pressure if water stands at a depth of 4m? **[5]**

OR

Q4) a) Write a note on **[5]**

i) Reinforced earth wall

ii) Soil nailing and its application

b) A retaining wall with a smooth vertical back retains a purely cohesive fill. Height of wall is 12 m. Y=20 kN/M^3. C=10 kN/M^2. What is the total active Rankine thrust on the wall? At what depth is the intensity of pressure zero and where does the resultant thrust act? **[5]**

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Q5) Explain the following: **[16]**

a) Free and Forced vibrations

b) Elastic half space method

c) Braken's method

d) Pauw's Analysis

OR

Q6) a) Discuss the different types of machine foundations. **[8]**

b) State the design procedure for a block foundation for cyclic loading. **[8]**

Q7) a) Explain the following: **[8]**

i) Stone columns

ii) Sand drains

b) Write a note on in-situ ground improvement by compactions piles. **[9]**

OR

Q8) a) Describe the procedure of Vibro-flotation technique for ground improvement. **[8]**

b) Discuss the different methods for 'Grouting'. **[9]**

Q9) a) What do you mean 'Rheology and Rheological models' in respect of soil? **[8]**

b) Write a note on 'Reissner's model' with spring and dashpot. **[9]**

OR

Q10)a) Explain secondary consolidation with the help of Rheological model. **[8]**

b) Discuss the basic and composite Rheological models. **[9]**

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