Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No. .....

CE–801(N)

B. E. (Eighth Semester) EXAMINATION, June, 2011

(Civil Engg. Branch)

GEO-TECHNICAL ENGINEERING – II

[CE – 801(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions, i. e. *one* question from each Unit. All questions carry equal marks. Assume suitable data wherever needed.

Unit – I

1. (a) Describe Terzaghi's theory of bearing capacity of shallow strip foundations. 10

   (b) With a neat test-set-up diagram for plate load test describe its procedure and purpose in detail. 10

Or

2. (a) Calculate the depth at which the footing (1·8 m × 1·8 m) should be placed to transfer total load of 180 tons with a factor of safety 3. The soil is sandy having $\varphi = 30°$ and unit weight 1·99 gms/cm^3. Ground water level is too deep. Given $Nq = 22$ and $Ny = 20$. 10

P. T. O.

(b) Discuss the effect of total and differential settlement in the design of foundation. 10

Unit – II

3. (a) What are underreamed piles ? Under what circumstances they are considered suitable ? 10

(b) Design a friction pile group to carry a load of 300 + including the weight of the pile cap at the site, where the soil is uniformly clay to a depth of 20 metre. under lain by rock. Average unconfined compressive strength of clay is 0·7 kg/cm^2. The clay may be assumed to be of normal sensitivity and normally loaded with L. L. 60%. A F. O. S. 3 is required against shear failure, length of pile is 14 metre and diameter is 0·6. Take $\alpha = 0{\cdot}4$. 10

Or

4. (a) What are tilts and shifts in foundation well ? How are they measured ? Explain with neat sketches. 10

(b) What are Caissons ? Sketch different type of Caissons. How are they placed in deep water ? 10

Unit – III

5. (a) What is Compaction ? Explain the effect of compaction on soil properties. 10

(b) How will you compact clayee soils in the field to get best results ? 10

Or

6. (a) Differentiate between compaction and stabilization. Explain any *one* method of stabilization with detailed specification. 10

(b) What is Geosynthesis ? Give its types and functions. 10

Unit – IV

7. (a) What is Soil Exploration ? Explain its purpose, procedure and planning for a dam site. 10

(b) List out various tests that can be performed on the following : 10

(i) Disturbed soil sample

(ii) Undisturbed soil sample

Or

8. (a) Discuss various construction techniques in the expansive soils. 10

(b) Explain the following : 10

(i) CNS layer

(ii) Characteristics of expansive soils

Unit – V

9. (a) Discuss the use of single degree freedom system in the analysis of machine foundation. What are its limitations ? 10

(b) Explain the following : 5 each

(i) Resonance

(ii) Natural frequency of machine foundation

Or

10. Write short notes on any *four* of the following : 5 each

(i) Coffer dams

(ii) Bulk heads

(iii) Vibration isolation

(iv) Negative skin friction in piles

(v) Mass spring analogy