



C 47611

(Pages : 2)

Name.....

Reg. No.....

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
JUNE 2008**

CE 04 604—GEOTECHNICAL ENGINEERING II

Time : Three Hours

Maximum : 100 Marks

*Answer all questions from Q 1.*

*Answer any one question from each of Q 2 to Q 5  
Assume any additional data required appropriately.*

*Answer all questions.*

1. (a) What is reconnaissance ? What type of information is obtained in reconnaissance ? What is its use ?
- (b) What do you understand by disturbed and undisturbed samples ? How would you obtain undisturbed samples ?
- (c) Write down the formula for elastic settlement of a rectangular flexible shallow footing
- (d) How is consolidation different from compaction ? What do you understand by immediate settlement primary settlement.
- (e) What do you understand by a floating or compensated foundation ?
- (f) How would you find the depth of foundation ? Discuss Rankine's formula for minimum depth.
- (g) How is the allowable bearing pressure of a well foundation in sand determined ?
- (h) What are the limitations of dynamic formulae ? Discuss.

(8 × 5 = 40 marks)

2. (a) Describe and discuss in detail how to conduct the SPT and the corrections to be applied to the observed blow count values (N values). How are bearing capacities of isolated footing and raft foundation determined from the corrected N values (as recommended by the Bureau of Indian Standards.)

(15 marks)

*Or*

- (b) Discuss in detail the vane shear test and derive necessary formulae

(15 marks)

3. (a) Discuss the construction of Newmark's influence chart. How is it used ?

*Or*

- (b) Clearly differentiate between Boussinesq's theory and Westergaard's theory for the determination of vertical stress at a point.

(15 marks)

4. (a) Design rectangular combined footing to support two adjacent columns (30 cm × 30 cm) carrying loads of 600 kN and 900 kN, if the spacing between the two columns is 5m. The lighter column is near the property line. Allowable soil pressure is 100 kN/m<sup>2</sup>.

*Or*

**Turn over**

- (b) Discuss the procedure for proportioning of footings for equal settlement (15 marks)
- 5 (a) List the forces for which a well foundation is designed. With neat sketches briefly explain the different methods of rectifying tilts in wells.

Or

- (b) The following data refers to a cyclic pile load test carried out on a 300 mm dia., 10m long pile.

Load on pile top (kN)	150	200	250	300	400	500	600
Total Settlement of pile top (mm)	1.45	2.25	2.75	3.60	5.75	10.75	30.00
Net Settlement of pile top (mm)	0.40	0.65	0.80	1.00	1.70	5.25	22.80

Plot the load-settlement curves and estimate the allowable load of the pile as per Indian Standard Code of Practice.

(15 marks)

[4 × 15 = 60 marks]