S-950

Total No. of Pages :3

Seat No.	

T.E. (Civil) -II (Semester - VI)Examination, Dec. - 2013
GEOTECHNICAL ENGINEERING - II (Revised)
Sub. Code : 45543

Day and Date : Friday, 20 - 12 - 2013 **Total Marks :100**

Time : 10.00 a.m. to 1.00 p.m.

Instructions :
1) **Question No. 1 from Section -I and Question No. 5 from Section -II are compulsory. Attempt any two questions from the remaining in each section.**
2) **Figures to the right indicate full marks.**
3) **Make assumptions wherever necessary.**
4) **Use of non-programmable calculator is allowed.**

SECTION-I

Q1) Attempt all questions: **[4x5=20]**

a) What are the objectives of field exploration?

b) What are the types and causes of slope failure?

c) Write the characteristics of general shear failure.

d) Explain the terms: Elastic Settlement, Differential Settlement and Angular Distortion.

Q2) a) Write a short note on Taylor's Stability Number. **[5]**

b) A 5 m deep canal has side slopes of 1:1. The properties of soil are Cu = 20kN/m^2, Φ = 10°, e = 0.8 and G = 2.8. If Taylor's stability number is 0.108, determine the factor of Safety with respect to cohesion when the canal runs full. Also find the same in case of Sudden drawdown, if Taylor's stability number for this condition is 0.137. **[6]**

c) What do you mean by disturbed and undisturbed of soil samples? **[4]**

P.T.O.

Q3) a) Discuss the various factors influencing bearing capacity of soil. **[5]**

b) What will be the net ultimate bearing capacity of sand having $\Phi = 36^{\circ}$ and $\gamma = 19\ kN/m^3$ for

i) 1.5 m strip foundation and

ii) 1.5 m X 1.5 m square footing. The footings are placed at a depth of 1.5 m below ground level. Assume F = 2.5. Use Terzaghi's equations.

Φ	N_c	N_q	N_γ
35°	57.8	41.4	42.4
40°	95.7	81.3	100.4

[10]

Q4) Write notes on (any three) **[15]**

a) Modes of failure of rocks.

b) Friction circle method.

c) Plate load test.

d) Consolidation settlement computation.

SECTION-II

Q5) All questions are compulsory: **[4x5=20]**

a) Write a note on floating foundation.

b) What are the various causes of negative skin friction? How it can be estimated.

c) Write the different types of sheet pile and their suitability.

d) Name the techniques used in ground improvement and explain any one in short.

Q6) a) Write the different types of shallow foundation with their suitability. **[6]**

b) Give stepwise procedure to design combined trapezoidal footing. **[9]**

Q7) a) Write a note on under reamed pile. [6]

b) A group of 9piles, 12 m long and 250 mm in diameter is to be arranged in a square form in a clay soil with an average unconfined compressive strength of 60kN/m^2. Work out center to center spacing of piles for a group efficiency factor of 1.Neglect bearing at the tip of the pile Take $\alpha = 0.9$. [9]

Q8) a) Discuss difficulties in well sinking and remedial measures. [6]

b) Write a note on safety precautions in pneumatic caissons. [5]

c) Write the use of geotextile in civil engineering projects. [4]

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