Seat
No.

T.E. (Civil) (Part - II) (Semester - VI) Examination, April - 2016
GEOTECHNICAL ENGINEERING - II (Pre-Revised) (Old)
Sub. Code : 45543

Day and Date : Monday, 18 - 04 - 2016　　　　　　　　Total Marks : 100
Time : 03.00 p.m. to 06.00 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) All questions are compulsory　　　　　　　　　　　　　　　[3 × 6 = 18]

　　a)　Explain Rock Quality Designation with its significance.

　　b)　Explain the purposes for which soil exploration is carried out.

　　c)　List and explain types of soil samples.

Q2) a)　Explain finite and infinite slopes.　　　　　　　　　　　　　[6]

　　b)　A slope is to be constructed at an inclination of 30° with the horizontal.
　　　　Determine the safe height of the slope at factor of safety of 1.5. The soil
　　　　has following properties,

　　　　Cohesion = 15 KN / sq.m, angle of internal friction 22.5°, unit weight =
　　　　19 KN / cu.m, stability number = 0.046.　　　　　　　　　　[6]

　　c)　Explain friction circle method for stability analysis of finite slope.　[6]

Q3) a)　Describe Menard pressure meter test for determination of bearing capacity
　　　　of soil.　　　　　　　　　　　　　　　　　　　　　　　　[8]

　　b)　Determine the gross and safe bearing pressure of sand having $\phi = 36°$ and
　　　　effective unit weight of 18 KN /cu.m under i) 1 m wide strip footing ii) 1 m
　　　　square footing. The footings are placed at a depth of 1 m below ground
　　　　surface. Take factor of safety as 3. Terzaghi's bearing capacity factor For
　　　　$\phi = 36°$, Nc = 47, Nr = 43.　　　　　　　　　　　　　　[6]

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Q4) a) Describe types of settlement that can occur in buildings. **[6]**

b) List modes of failure of soil mass under foundation load. Explain any one. **[6]**

c) List and explain corrections applied to the observed standard penetration Test 'N' value. **[6]**

SECTION - II

Q5) All questions are compulsory :- **[4 × 5 = 20]**

a) Write a note on floating foundation.

b) What is group efficiency of pile group? Explain feld's rule.

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

d) Explain Stone Columns.

Q6) a) Explain the various factors to be considered in deciding the location and depth of shallow foundation. **[6]**

b) When there is need of combined footing and where Raft foundation is it needed? Explain. **[9]**

Q7) a) Discuss the various method of classification of piles. **[6]**

b) A group of 16 piles of 650 mm diameter is arranged in a square pattern with centre to centre spacing of 1.0 m. The piles are 11 m long and are embedded in clay with cohesion of $36kN/m^2$. Determine the ultimate bearing capacity of this pile group. Neglect bearing at the tip of the pile. Assume adhesion factor 0.6. **[9]**

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

b) Write note on braced cofferdam. **[5]**

c) Write note on precast bored pile. **[4]**

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