S-2443

Total No. of Pages : 3

Seat No.	

B.E. (Civil Engineering) (Part-I) (Semester-VII) Examination, December - 2015

ADVANCED FOUNDATION ENGINEERING (Elective-I)

Sub. Code : 47908

Day and Date : Tuesday, 15-12-2015 **Total Marks : 100**

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

Instructions :
1) **Question 1 and Q. 4 are compulsory.**
2) **Attempt any two questions from each Section.**
3) **Figures to the right indicate full marks.**
4) **Use of non-programmable calculator and relevant I.S. Codes are allowed.**

SECTION-I

Q1) Write note on (Any Three): **[18]**

a) Engineering News and Hiley's formula.

b) Types of matt foundation.

c) Negative skin friction.

d) Types of shallow foundation.

Q2) a) Where do you provide a combined footing? Discuss the procedure for the design of the rectangular combined footing. **[8]**

b) Design combined rectangular footing for two columns A and B, carrying loads of 500 and 700 kN respectively. Column A is 300 × 300 mm in size and column B is 400 × 400 mm in size. The center to center spacing of the column is 3.4 m. The safe bearing capacity of soil may be taken as 150 kN/m^2. **[8]**

P.T.O.

Q3) a) Explain in details Conventional Design of Rafts. **[6]**

b) Abuilding consists of 12 columns 400 × 400 mm in sizes arranged in three rows of four each. Distance between the columns is 5m each. The load carried by four corner column is 500 kN each, that carried by exterior column is 700 kN each and that carried by interior column is 900 kN. Allowable soil pressure is 90 kN/m^2. Calculate soil pressure. **[10]**

Q4) a) Outline the procedure to determine the bearing capacity of a single driven pile and that of a group of piles in a thick layer of soft clay. **[8]**

b) A group of 16 piles of 600 mm diameter is arranged in a square pattern with center to center spacing of 1.2m. The piles are 10m long and are embedded in soft clay with cohesion 30 kN/m^2. Bearing resistance may be neglected for piles, adhesion factor is 0.6. Determine the ultimate load capacity of the pile group. **[8]**

SECTION-II

Q5) Write note on (Any Three): **[18]**

a) Foundation drainage.

b) Methods of underpinning.

c) Permissible amplitude of vibrations.

d) Types of machine foundation.

Q6) a) Define the following with respect to machine foundations: **[8]**

i) Degree of freedom.

ii) Free Vibration and forced vibration.

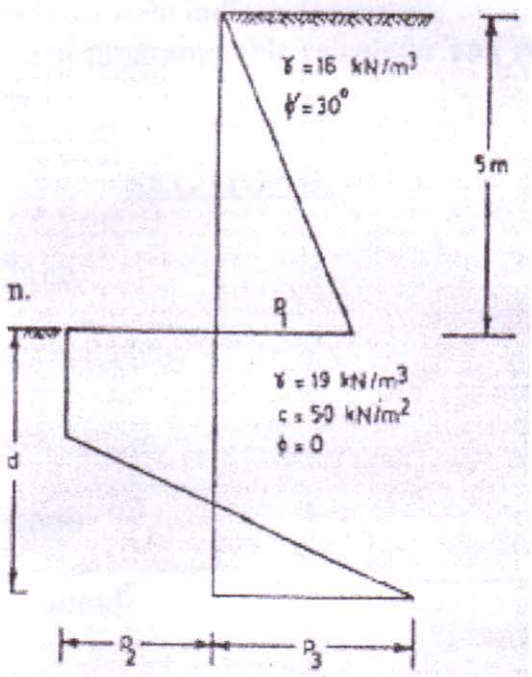
iii) Frequency.

iv) Resonance.

b) The exciting force in a constant force type of excitation was 120 kN. The natural frequency of the machine foundation is 4 Hz. The damping factor is 0.36. Determine the magnification and transmitted force at an operating frequency of 10 Hz. **[8]**

Q7) a) What are different types of sheet pile walls? Draw the sketches shoeing the pressure distribution. **[8]**

b) Determine required depth of penetration for the cantilever sheet pile which retains soil to a height of 5m as shown in figure. **[8]**



Q8) a) Explain in detail different methods shoring and underpinning for lowering ground water table? **[8]**

b) Explain in detail the problem associated with foundation installation. **[8]**

●●●●●