Roll No .....

MVCT/MVCP - 302(B)

M.E./M.Tech. III Semester

Examination, December 2014

Advanced Foundation Engineering (Elective-II)

Time : Three Hours

Maximum Marks : 70

Note : Attempt any five questions. Assume suitably if any data is found missing or misprint.

1. a) Discuss how bearing capacity factors are computed.
   b) A steam turbine with base 6m×3.6m weighs 10,000 kN. It is to be placed on a clay soil with C = 135 kN/m². Find the size of the foundation required if the factor of safety is to be 3. The foundation is to be 60 cm below ground surface.

2. a) Describe pile load test in detail.
   b) A group of 9 piles arranged in a square pattern with diameter and length of each pile as 25 cm and 10 m respectively, is used as a foundation in soft clay deposit. Taking the unconfined compressive strength of clay as 120 kN/m² and the pile spacing as 100 cm centre to centre. Find the load capacity of the group. Assume the bearing capacity factor Nc = 9 and adhesion factor = 0.75. A factor of safety of 2.5 may be taken.

3. a) Describe Balla's Theory of bearing capacity.
   b) Explain the following:
      i) Negative skin friction
      ii) Types of piles

4. a) Describe different types of Geosynthetics.
   b) Explain major functions of Geotextiles.

5. a) Explain the construction of reinforced earth retaining wall.
   b) Describe various parts of well foundation.

6. a) Discuss design procedure of abutment of a bridge.
   b) Describe various elements of bridge substructure.

7. a) Describe construction detail of any one marine structures.
   b) Discuss various design steps of gravity wall.

8. Write short notes on any four of the following:
   i) Local shear failure
   ii) Laterally loaded piles
   iii) Applications of Geosynthetics
   iv) Tilts and shifts
   v) Breakwaters
   vi) Necessity of piles.

******