Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

MVCT/MVCP - 302(B)

M.E./M.Tech., III Semester

Examination, June 2016

Advanced Foundation Engineering (Elective-II)

Time : Three Hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

1. a) Derive an expression for general shear failure given by Terzaghi. 7

   b) A strip footing, 1 m wide at its base is located at a depth of 0.8 m below the ground surface. The properties of the foundation soil are : $Y = 18\ kN/m^3$, $C = 30\ kN/m^2$ and $\phi = 20°$. Determine the safe bearing capacity using a factor of safety of 3. Use Terzaghi's analysis. Assume that the soil fails by local shear. 7

2. a) Explain Meyerhof's analysis of bearing capacity. 7

   b) Discuss the laterally loaded piles in. 7

3. a) Describe pile load test in detail. 7

   b) Design of friction pile group to carry a load of 3000 kN including the weight of the pile cap at a site where the soil is uniform clay to depth of 20 m, underlain by rock. Average unconfined compressive strength of the clay is $70\ kN/m^2$. The clay may be assumed to be of normal sensitivity and normally loaded with liquid limit 60%. A factor of safety of 3 is required against shear failure. 7

4. a) Discuss use of geosynthetics for strengthening the soil of foundation. 7

   b) Describe the functions of geosynthetics. 7

5. a) Discuss various strength characteristics of reinforced soil. 7

   b) Describe the design steps for the pear of a bridge. 7

6. Describe the sinking operation of wells. Why tilts and shifts occurred during sinking and how these are rectified. 14

7. a) Discuss various steps involved in design of gravity wall. 7

   b) Describe general criteria for design of marine structures. 7

8. Write short notes on any four of the following: 14

   i) Types of beating capacity failures

   ii) Negative skin friction

   iii) Elements of bridge structure

   iv) Costal and off shore structures

   v) Uses of geosynthetics

   vi) Balla's theory

******