| BICE-012 |

B.Tech. CIVIL ENGINEERING (BTCLEVI)
Term-End Examination
June, 2015

00096

BICE-012 : GEOTECHNICAL ENGINEERING – II

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt any **seven** questions. Assume suitable data, if any. Use of scientific calculator is allowed.*

1. What do you understand by active and passive earth pressure ? How will you determine these in clay and sandy soils ?   *10*

2. Explain the methods of improvement of soil bearing capacity.   *10*

3. A square footing 2·5 m × 2·5 m is built in a homogeneous bed of sand (loose) of unit weight 16 kN/m³ and the angle of shearing resistance is 25°. The depth of the base of footing is 1·5 m below the ground surface. Calculate the safe load that can be carried by a footing with a factor of safety of 3 against complete shear failure. Use Terzaghi's analysis. For $\phi = 25°$, $N_c' = 14·8$, $N_q' = 5·6$ and $N_\gamma' = 3·2$.   *10*

4. A n-pile group has to be proportioned in a uniform pattern in soft clay with equal spacing in all directions. Assuming any value of c, determine the optimum value of spacing of piles in group. Take n = 25 and m = 0·7. Neglect the end bearing effect and assume that each pile is circular in section. *10*

5. Explain the importance of initial and final settlement. On what factors does the effect of settlement of soil depend ? *10*

6. Discuss briefly the field vane shear test. *10*

7. Discuss the basis for selection of different types of foundations in detail. *10*

8. Explain in brief the design considerations of well foundations for bridge project. *10*

9. What are the causes of settlement ? Write the limitations of settlement computation. *10*

10. Write short notes on any *two* of the following : *2×5=10*

    (a) Negative Skin Friction

    (b) Cohesive and Cohesionless Soils

    (c) Disturbed and Undisturbed Sample