B.TECH. CIVIL ENGINEERING (BTCLEVI)

00157

Term-End Examination

June, 2013

BICE-012 : GEOTECHNICAL ENGINEERING - II

Time : 3 hours *Maximum Marks : 70*

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

1. Explain the Coulomb's and Rankine's earth pressure theories in detail. 10

2. Discuss different methods of the site investigation and soil exploration. 10

3. A square footing 2.5 m × 2.5 m is built in a homogeneous bed of sand of unit weight 20 kN/m^2 and having an angle of shearing resistance of 36°. The depth of the base of footing is 1.5 m below the ground. Calculate the safe load with a factor of safety 3. Use Terzaghe's analysis. 10

4. What are the different causes of settlement of the foundation and discuss in detail ? 10

5. A soft normally consolidated clay layer is 6 m thick with a natural water content 30%. The clay has a saturated unit weight of 17.4 kN/m^3, a specific gravity of 2.67 and liquid limit of 40%. The ground water level is at the surface of clay. Determine the settlement of foundation if the foundation load will subject the centre of the clay layer to a vertical stress increase of 8 kN/m^2. **10**

6. Explain the functions of foundation in detail. **10**

7. What are the advantages and limitations of various types of foundations ? **10**

8. Discuss the floating foundations in detail. **10**

9. Explain the classification of piles based on their function. **10**

10. In a 16 pile group, the pile diameter is 45 cm and C/C spacing of the square group is 1.5 m. If cohesion C = 50 kN/m^2. Determine whether the failure would occur with the pileacty individually or as a group. All piles are 10 m long. Take m = 0.7 for shear mobilisation around each pile. **10**