

**B.Tech. CIVIL ENGINEERING (BTCLEVI)**

**Term-End Examination**

**December, 2017**

00902

**BICE-012 : GEO-TECHNICAL ENGINEERING – II**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Attempt any seven questions. Assume missing data, if any. All questions carry equal marks. Use of scientific calculator is allowed.*

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1. Explain the Geophysical methods of soil exploration in brief. 10
  
2. Compute the intensities of active and passive earth pressure at a depth of 8 m in dry cohesionless sand with an angle of internal friction of  $30^\circ$  and unit weight of  $18 \text{ kN/m}^3$ . What will be the intensities of active and passive earth pressure if the water level rises to the ground level ? Take saturated unit weight of sand as  $22 \text{ kN/m}^3$ . 10
  
3. Explain the methods of improvement of soil bearing capacity. 10

4. Explain the Plate Load Test to determine the ultimate bearing capacity of soil. 10
5. Define the following terms with reference to bearing capacity of soil : 5×2=10
- (a) Net Pressure Intensity
  - (b) Gross Pressure Intensity
  - (c) Ultimate Bearing Capacity
  - (d) Net Ultimate Bearing Capacity
  - (e) Net Safe Bearing Capacity
6. (a) Define Combined footing and Strap footing. 3
- (b) Write the important points to be considered in designing of mat footing. 7
7. How will you select the depth of a well foundation ? What are the forces acting on a well foundation ? Explain them with a suitable sketch. 10
8. 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 the group. Take  $n = 25$  and  $m = 0.7$ . Neglect the end bearing effect and assume that each pile is circular in section. 10

9. What are the causes of settlement of foundations ? Write the limitations of settlement computation. 10
10. Write notes on any *two* of the following : 2×5=10
- (a) Disturbed and Undisturbed Samples
  - (b) 'Tilt' and 'Shift' in case of Sinking of Well Foundations
  - (c) Types of Well Foundations
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