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BICEE-022

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00923

December, 2016

BICEE-022 : ADVANCED DESIGN OF FOUNDATION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted. Assume suitable data, if required.*

1. Derive the equation for the deflection for a semi-infinite beam with single concentrated load on Winkler's model foundation. *14*

2. (a) Describe the characteristics of various types of dynamic loading on soil machine foundation and the general criteria for design of machine foundation. *7*

(b) Describe different types of machines and their foundations. Give sketches wherever possible. *7*

3. Determine the natural frequency of a machine foundation which has a base area of 2·2 m × 2·2 m and the weight of 200 kN including the weight of machine. Take coefficient of elastic uniform compression as $4{\cdot}4 \times 10^4$ kN/m^3 (use Barken's method). *14*

4. What is a coffer dam ? What is its purpose ? Explain with sketches different types of coffer dams. *14*

5. An anchored sheet-pile wall is to support a mass of cohesionless soil, up to a height of 5 m above the ground level with the horizontal surface. The anchor ties are 1 m below the top at a horizontal spacing of 1 m. Consider density of soil = 20 kN/m^3 and $\phi = 30°$. Find the minimum depth of anchor for the pile. *14*

6. What is shell foundation ? Write the different types of shell foundations. What are the forces acting on shell foundations ? Explain with diagrams. *14*

7. Write short notes on any ***two*** of the following : *2×7=14*

   (a) Braced Coffer Dams

   (b) Degree of Freedom with Damping

   (c) Foundation for Offshore Structures
