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BICEE-013

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

June, 2015

00266

BICEE-013 : ELEMENTS OF SOIL DYNAMICS AND MACHINE FOUNDATION

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **five** questions. Assume suitable data, if any. All questions carry equal marks. Scientific calculator is allowed.*

1. (a) Draw the typical section of Machine foundation. Explain the various types of Machine foundations. *7*

(b) Explain briefly the importance of soil dynamics in machine foundation. *7*

2. The exciting force of a machine is 120 kN. Determine the force which shall be transmitted to the foundation system, if the natural frequency of machine foundation system is 5 Hz. The damping factor = 0·40, and the operating frequency = 8 Hz. *14*

3. (a) Explain the following terms :

(i) Single Degree Freedom System

(ii) Natural Frequency

(iii) Resonance *7*

(b) Why is it difficult to control low frequency vibrations ? *7*

4. (a) What are the various effects of dynamic loads on slope stability and bearing capacity of soil ? *7*

(b) Briefly explain Barkan's method of Machine Foundation Design. *7*

5. Discuss the design criteria in the design of Reciprocating machines as per I.S. Code. *14*

6. Explain in brief the dynamic response of retaining walls. Derive the equation of total active thrust in active earth pressure conditions. *14*

7. What are the characteristics of seismic waves ? Explain the various types of seismic waves with suitable sketches. *14*