

B.Tech. CIVIL ENGINEERING (BTCLEVI)**Term-End Examination****December, 2015****BICEE-013 : ELEMENTS OF SOIL DYNAMICS
AND MACHINE FOUNDATION***Time : 3 hours**Maximum Marks : 70*

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

1. Explain the following in detail :
 - (a) Viscous damping and Coulomb damping 7
 - (b) Hysteretic damping and Aerodynamic drag-induced damping 7
2. What is free and forced vibration in case of undamped and damped for single degree of freedom system ? Explain. 14
3. Describe the following in mathematical expressions : 14
 - (a) Critically damped motion
 - (b) Overdamped system
 - (c) Underdamped system

4. Define the free field, far field and near field motion. Describe the importance of dynamic soil-structure interaction studies for earthquake resistant design of foundation. 14
5. Give the historical review of impact of earthquakes on the India Sub-continent. Describe the seismic zones of various important cities of India. 14
6. Describe briefly the state of art of seismic design of foundations. Write briefly the seismic design philosophy. 14
7. How are general shear failure, punching shear failure and local shear failure theories relevant for obtaining the bearing resistance to earthquake excitation ? Discuss. 14
8. Describe the recent trends in estimating seismic bearing capacity of soil. Discuss the bearing capacity factors in static and seismic conditions. 14

