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BICEE-011

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

December, 2015

BICEE-011 : EARTHQUAKE RESISTANT DESIGN OF STRUCTURES

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **five** questions. All questions carry equal marks. Assume any missing data suitably. Use of IS 1893-2002 is allowed. Use of scientific calculator is allowed.*

1. With the help of neat sketches, discuss about the classification and sub-classification of seismic waves. *14*

2. Derive the expression for a SDOF undamped free vibration system. *14*

3. List the objectives, general principles with respect to simplicity, symmetry and assumptions made in earthquake resistant design of structure. *14*

4. A three-storey RC building with storey height of 3·5 m has plan, as shown in Figure 1.

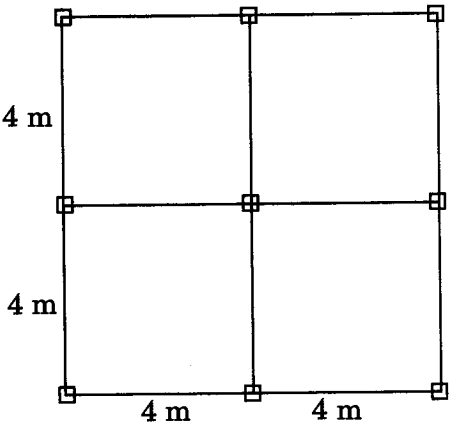

Figure 1

The building is located in seismic zone V, type of soil medium stiff and building is SMRF type. D.L. = 10 kN/m^2 and L.L. = 3 kN/m^2 on each floor. Determine the design seismic forces by equivalent lateral force method. *14*

5. Explain with neat sketches the design principles of towers and chimneys with respect to the evaluation of continuous systems under seismic vibrations. *14*

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

(a) Response Spectrum

(b) Ground Motion Parameters

(c) Intensity Scales