Code No: J8702/R16

M. Tech. II Semester Regular Examinations, May-2017

EARTHQUAKE RESISTANT DESIGN / EARTHQUAKE RESISTANT STRUCTURES

(Common to Structural Engineering (87) and Computer Aided Structural Engineering (35))

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions
All Questions Carry Equal Marks

1. a Name the kinds of body waves and explain it with neat sketch.
   b Explain the principle of seismograph and seismogram with sketch.

2. Explain vertical and horizontal irregularities in multistoried buildings and their effect on seismic behavior of such buildings

3. Write the step by step procedure for seismic analysis of RC buildings as per IS 1893:2002.

4. Define structural walls. How are they classified? Explain their structural behavior with neat sketches.

5. a Briefly explain various systems suitable to resist Lateral Loads.
   b Explain about the Response Spectrum method with a neat sketch.

6. A beam AB is to be designed for positive and negative moments at the supports A and B. Moments at the supports A and B are, M_A = - 99 kNm and +28 kNm; M_B = - 108 kNm and +12 kNm. The characteristic dead and live loads are 14 and 9 kN/m respectively. The span of beam is 12 m, beams are of 300 × 600 mm with 150 mm slab. Assume M30 concrete and Fe 415 grade steel. The structure is situated in seismic zone IV. Design both the flexure and shear reinforcement as per IS 13920.

7. a Describe in detail about the concept of base isolation
   b Explain about the working and functions of a tuned mass damper.

8. Explain about the Retrofitting and restoration techniques for buildings subjected to damage due to earthquakes

*****