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Question Paper Code : 50302

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Seventh Semester
Civil Engineering
CE 6701 – STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.
(Codes IS 1893 : 2002 and IS 13920 : 1993 to be permitted)

PART – A (10×2=20 Marks)

1. Define logarithmic decrement.
2. State D-Alembert's principle.
3. Enumerate orthogonality and normality principles.
4. Write the equation of motion for an damped two degree of freedom system.
5. What is elastic rebound theory ?
6. Define fault and list its types.
7. Define response spectra.
8. Write short note on pounding effect in buildings.
9. Define diaphragm discontinuity.
10. Explain floating column.

PART – B (5×16=80 Marks)

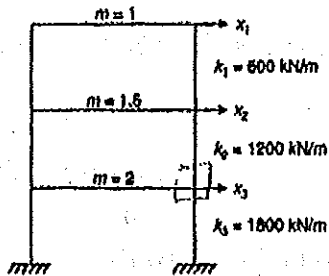
11. a) A machine foundation weighs 60 KN. The spring constant is 11000kN/m and dash constant (C) = 200 KN-s/m. Explain
 - i) Whether the system is over damped, under damped or critically damped.
 - ii) Determine Logarithmic decrement.
 - iii) Determine Ratio of two successive amplitudes.If the initial displacement is 10 mm and initial velocity is zero displacement at t = 0.1s.

(OR)



- b) A single degree of freedom system having a mass of 2.5 m is set into motion with a viscous damping and allowed to oscillate freely. The frequency of oscillation is found to be 20 Hz , and measure of the amplitude of vibration shows two successive amplitude to be 6 mm and 5.5 mm . Estimate the viscous damping co-efficient.

12. a) Evaluate the natural frequency and draw the mode shape for the shear building.



(OR)

- b) Derive the equation of motion of a two degree of freedom system for free vibration.

13. a) List out the causes of earthquake and explain it briefly.

(OR)

- b) Define focus and epicenter of an earthquake. Define surface and body waves and explain it with neat sketch.

14. a) Explain briefly the effect of earthquake on different types of structures.

(OR)

- b) Discuss in detail about the methods of seismic analysis.

15. a) Write down the various earthquake resistant features that can be introduced in masonry building to make it earthquake resistant.

(OR)

- b) Why ductility consideration is very important in earthquake resistant design of RC building? Explain the ductile detailing considerations in flexural members as per IS 13920-1993.