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Question Paper Code : X 60264

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020
Seventh Semester
Civil Engineering
CE 2403/10111 CE 703/CE 73 – BASICS OF DYNAMICS AND
ASEISMIC DESIGN
(Regulations 2008/2010)

(Common to PTCE 2403/10111CE703 – Basics of Dynamics and Aseismic Design for B.E.
(Part-Time) Fifth/Seventh Semester – Civil Engineering – Regulations 2009/2010)

Time : Three Hours

Maximum : 100 Marks

(Use of IS 1893 – 2002/IS 13920 – 1993 (Reaffirmed 1999) and IS 4326 – 1993
is permitted)

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Explain Frequency Ratio.
2. Explain Critical Damping.
3. What is dynamic load factor ?
4. What do you mean by two degrees of freedom system ?
5. What is the difference between intensity and magnitude of earthquake ?
6. What is Modified Mercalli scale ?
7. What is liquefaction of soils ?
8. What is ductility ratio ?
9. Write the expression for design horizontal seismic coefficient for a structure.
10. Define Viscous damping.



PART – B

(5×16=80 Marks)

11. a) Derive the equation of motion of single degree of freedom for free vibration to find out the natural frequency and angular frequency.

(OR)

- b) Define and discuss the following :

(8)

i) Critical damping

(8)

ii) Damped circular frequency.

12. a) For the MDOF system shown in figure 12(a), find the frequencies and the fundamental mode shape. The stiffness k and mass m are same.

(16)

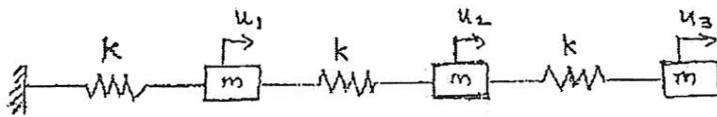


Fig. 12(a)

(OR)

- b) A cantilever bar shown in figure 12 (b) is to be modelled by a mass less uniform bar to which are attached with two lumped masses representing the mass of original system as $K = 2 AE/L$ and $m = \rho AL$. Determine the natural frequencies and the normal modes of this model.

(16)

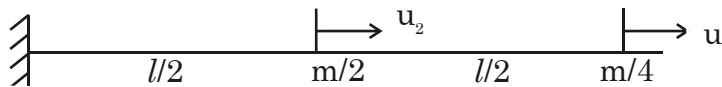


Fig. 12(b)

13. a) Explain briefly plate tectonics and lithospheric plates.

(16)

(OR)

- b) Discuss on some of the disastrous earthquakes.

(16)

14. a) How will you construct response spectrum diagram ? Explain the types of response spectrum with neat sketches.

(16)

(OR)

- b) Briefly discuss with neat sketches about the plan irregularities and vertical irregularities normally occurred in buildings.

(16)

15. a) What is the effect of ignoring the contribution of masonry infill in the lateral load analysis of a multi-storey frame ?

(16)

(OR)

- b) In what manner is the behavior of a soft storey construction likely to be different from a regular construction in the event of an earthquake ?

(16)