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Question Paper Code: 12064

M.E. DEGREE EXAMINATION, MAY 2014.

First Semester

Structural Engineering

01PSE103 - EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

(Use of IS 13920, IS 1893 (Part – I) and IS 4326 are permitted.)

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Differentiate epicenter and hypocenter.
2. Define intensity of earthquakes.
3. What are the various types of dynamic loads?
4. Define design response spectra.
5. Write short notes on “Soft Story”.
6. Define the term Infill walls.
7. What is meant by ductile failure?
8. What are the effect of transverse reinforcement?
9. Define Seismic Co - efficient.
10. What are the effects of bearing plates?

PART - B (5 x 14 = 70 Marks)

11. (a) Explain the working principle of seismograph with neat sketch. (14)

Or

(b) Explain briefly the characteristics of strong earthquake motion. (14)

12. (a) What are various types of dynamics loads? State some of the characteristics of Seismic Loads. (14)

Or

(b) Derive a mathematical expression defining the dynamic displacement using D' Alembert's principle. (14)

13. (a) What are the behaviour of unreinforced Masonry walls? (14)

Or

(b) Describe the various earthquake - resistant feature that can be introduced in Masonry building to make it earthquake resistant. (14)

14. (a) What are the possible damages to RCC Buildings in earthquake - prone regions. (14)

Or

(b) Design a rectangular RCC beam of 7 m span supported on RCC column to carry a point load of 150 kN in addition to its own weight. The moment due to seismic force in 6 kN.m and shear force is 35 kN. Use M-25 grade concrete and Fe 415 steel. (14)

15. (a) Explain various analysis software application in earthquake resistant design. (14)

Or

(b) What is meant by base isolation system? Explain base isolation application in important structures. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Explain some significant earthquake in India. Explain the features of India Seismic Zone Map. (10)

Or

(b) What are the general principles and design criteria for Earthquake resistant bridges. (10)