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**Question Paper Code : 41164**

M.E./M.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Structural Engineering

ST 5301 — EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write short note on Strong ground motion.
2. Write short note on Seismic waves.
3. Explain inertia force.
4. Define resonance.
5. Write short note on categories of masonry building.
6. Write short note on box action of walls.
7. What are the principles of earthquake resistant design of RCC building?
8. Explain ductility.
9. Define vibration control system.
10. Define Tuned mass dampers.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the plate tectonics theory and its mechanism.

Or

- (b) Discuss briefly the direct and indirect effects of an earthquake.

12. (a) Derive a mathematical expression for the dynamic displacements using d'Alembert's principle for SDOF system under free vibration with damping.

Or

- (b) Explain briefly the Response Spectra.

13. (a) Describe the various earthquake resistant features that can be introduced in a masonry building to make it earthquake resistant.

Or

- (b) Describe the causes of damage in a typical masonry building during earthquake.

14. (a) What is the difference in the structural behaviour of long and short shear wall?

Or

- (b) Briefly explain procedure for lateral load analysis of RCC frames.

15. (a) Explain the basic concept of base isolation and the various systems adopted for base isolation.

Or

- (b) Explain briefly the various vibration control device used for structures.

PART C — (1 × 15 = 15 marks)

16. (a) What are the possible damages to RCC building during earthquake?

Or

- (b) Discuss briefly the effect of structural systems on the behaviour of a structures during earthquake.