Register Number: ……..

M.E DEGREE EXAMINATIONS: JUNE 2013

Second Semester

STRUCTURAL ENGINEERING

SEE508**:** Aseismic Design of Structures

(Use of IS 4326, IS 1893, IS 13920, IS13827 and IS 13828 codes are permitted)

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. Differentiate over damped and critically damped systems.
2. Briefly explain elastic rebound theory.
3. What do you mean by design spectrum?
4. Define modal participation factor.
5. When special confining reinforcement is needed?
6. Briefly explain the various types of ductility.
7. List the types of shear walls.
8. What is capacity design?
9. What is active control system?
10. What is (i) pre processor and (ii) post processor?

PART B (5 x 16 = 80 Marks)

11. a) (i) Explain the different types of seismic waves with neat sketches. (8)

(ii) Explain the working of a seismograph with a neat sketch. (8)

(OR)

b) (i) Explain the behaviour of buildings, dams and bridges in past earthquakes. (8)

(ii) Explain the theory of vibration, damped and undamped systems with examples. (8)

12. a) What is response spectrum? What is the importance of response spectrum? Explain the factors influencing response spectrum.

(OR)

b) List and explain the approximate methods for lateral load analysis with neat sketches.

13. a) (i) Explain the ductile behaviour of plain concrete, reinforcing steel and reinforced concrete with sketches. (8)

(ii) Highlight the recommendations of IS 13827 with neat sketches. (8)

(OR)

b) What is ductility? Explain with neat sketches how ductility can be introduced in RC structures as per IS 13920?

14. a) List and explain the types of shear wall with neat sketches. Explain in detail the procedure for design of a flanged rectangular shear wall with an example.

(OR)

b) What do you mean by strengthening, retrofitting and rehabilitation? Explain the various techniques for strengthening of RC members and masonry members with neat sketches.

15. a) (i) What is base isolation? Explain with neat sketches. (8)

(ii) Explain the features of any one software used for earthquake analysis and design. (8)

(OR)

b) (i) What are active and passive control systems? Explain types of dampers with neat sketches. (8)

(ii) What is preprocessor and post processor? List the advantages of using software packages for earthquake analysis and design. (8)

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