Code No. 2027

FACULTY OF ENGINEERING

B.E. 4/4 (Civil) I-Semester (Main) Examination, November / December 2012

Subject : Elements of Earthquake Engineering
(Elective-I)

Time : 3 Hours **Max. Marks: 75**

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. How is the magnitude of an earthquake related to the energy released? (2)
2. List some important causes of earthquakes. (3)
3. What do you understand by "degrees of freedom"? (2)
4. Explain the term response spectrum. How is it affected by damping ? Show with a sketch. (3)
5. Is "redundancy" desirable in a structure? If so how? (3)
6. Give typical values of response redactor factor (R) for ordinary and ductile moment resistant frames as per IS code. (2)
7. List 5 past earthquakes of India having Richter magnitude greater than or = 8. (3)
8. Name some energy dissipation devices. (2)
9. What is the difference between "primary" and "secondary" seismic waves? (3)
10. Explain the term "Rehabilitation".

PART – B (5x10=50 Marks)

11. With the help of neat sketches illustrate the different types of "seismic waves" and their effects on structures. (10)

12. (a) Explain the difference between under over and critically damped vibrations. (5)
    (b) Illustrate with sketches "long" and "short" period structures. (5)

13. (a) How do you determine the earthquake forces on buildings as per IS code sketch the lateral force and storey shear diagrams? (6)
    (b) Explain the terms "over strength" and "ductility" applied to buildings. (4)

14. (a) Illustrate the performance of Non-engineered buildings in sense of the past great earth quakes of India. (6)
    (b) Suggest some precautions to be taken to prevent such damages. (4)

15. What do you understand by "seismic retrofitting" , with the help of neat sketches illustrate the same for an RC beam and column. (10)

16. With the help of neat sketches illustrate the seismic detailing of RC (10)
    (a) beam (b) column and (c) beam column joint

17. Write short notes on the following: (3x31/3=10)
    (a) Storing ground motions
    (b) Rural houses during earth quakes
    (c) Re-analysis

*****