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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 72176

M.E./M.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Second Semester
Structural Engineering
ST 7204 – EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES
(Regulations 2013)

Time : Three Hours Maximum : 100 Marks

Answer ALL questions

PART – A (10×2=20 Marks)

1. Define : Intensity and magnitude of earthquake.
2. What are body waves and surface waves ?
3. Differentiate between SDOF and MDOF systems.
4. Name the dynamic response quantities.
5. What are the types of masonry buildings ?
6. How will you determine the elastic properties of masonry assemblage ?
7. What is a shear wall ?
8. What do you understand by the term "Soft storey" ?
9. Briefly state the concept of base isolation.
10. When and where do you use accelerometers and seismometer ?

PART – B (5×13=65 Marks)

11. a) i) Briefly describe about seismic zoning of India. (6)
ii) Explain the principles involved in the seismic instruments. (7)

(OR)

b) How will you estimate the earthquake parameters ? Explain briefly.

12. a) An over head water tank is subjected to linearly varying ground acceleration due to an earthquake. Find the response spectrum for the relative displacement of the water tank.

(OR)

b) Explain briefly how will you evaluate the earthquake forces on a three storey building by model analysis.

13. a) i) What are the planning considerations in earthquake design of masonry structures ? (6)

ii) What are the causes of damages and non-damages from Bhuj earthquake on masonry buildings ? (7)

(OR)

b) Illustrate the procedure involved in the lateral load analysis of masonry buildings.

14. a) Explain the ductility considerations in earthquake design of RC buildings.

(OR)

b) What do you understand by capacity based design and detailing of RC rigid frames ? Explain their step by step procedure.

15. a) What are the different types of seismic dampers ? Explain briefly their principles and design.

(OR)

b) Explain briefly the need, mechanism, elements and types of seismic base isolation systems.

PART – C (1×15=15 Marks)

16. a) What are the lessons learnt from past earthquakes in India ? What are the measurements taken so for to prevent such incidents ? Explain briefly.

(OR)

b) Explain the seismic provisions for improving the performance of non-engineered construction.