

Seat
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June 2013

मंगल - 012

Earthquake Resistant Design of Buildings

P. Pages : 2

Time : Four Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any five** questions.
5. Use of cell phones is prohibited in exam hall.

1. a) What is meant by focus & epicentre of an earthquake ? Name the two kinds of body waves & explain How they differ. 10
b) Discuss briefly the various soil models used for the dynamic analysis of soil - structure systems. Which of these is most favourable. 10
2. a) In what way is the earthquake resistance of a structure affected by : 10
i) Non - symmetry and
ii) Elongated shape of buildings.
b) If a building is to be constructed on the slope of a hilly area, What precautions will have to be exercised during planning of the building to avoid twisting. 10
3. a) Write short notes on : 10
i) Isolating devices.
ii) Energy dissipation devices.
b) Determine the frequency and design seismic coefficient for an ordinary masonry shear wall in a school building for the following data. 10
i) Roof load $p = 15 \text{ KN/M}$
ii) Height of wall $= h = 3.0\text{m}$.
iii) Width of wall $= b = 0.2\text{m}$.
iv) Unit weight of wall $= 19.2 \text{ KN/M}^3$
v) Soil is medium.

4. a) Discuss the behaviour of following masonry walls in the seismic regions. 15
 i) Unreinforced masonry walls
 ii) Reinforced masonry walls.
 iii) Infill walls.
- b) What are the various methods of restoring an Earthquake damaged masonry buildings. 5
5. a) Define shear wall, How are these classified. 5
- b) What is the difference in the structural behaviour of long & short shear wall. 5
- c) Discuss the concept of flanged shear wall. 5
- d) In what way do stirrups help in R.C.C. beams. 5
6. a) Describe with the help of Neat sketches, restoration and strengthening of R.C.C. beams & columns. 10
- b) What are possible damages to RCC buildings in the earthquake prone - regions. 10
7. a) Describe "Sesmic coefficient method" for seismic analysis in detail. 10
- b) What is an Irregular building ? How does the Irregularity affect the seismic performance of any building. 10
