

22606

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**10**

- (a) Define magnitude and intensity of earthquake.
- (b) Explain seismic waves.
- (c) Define seismic mass and seismic weight.
- (d) List causes of earthquake.
- (e) State the meaning of soft storey effect.
- (f) State two advantages and two limitations of using stone masonry as compared to brick masonry.
- (g) State any two characteristics of post earthquake handling techniques of building.

**2. Attempt any THREE of the following :**

**12**

- (a) Explain earthquake time history analysis.
- (b) Identify any four measures to enhance earthquake resistance of a given building.
- (c) List the types of tectonic plates responsible for earthquake.
- (d) Explain the formation of Earth.



- 3. Attempt any THREE of the following : 12**
- (a) Differentiate between soft storey and weak storey.
  - (b) State the causes of damages to stone masonry due to earthquake.
  - (c) Explain the term Ductility. State the factors affecting the ductility of R.C.C. structure.
  - (d) State any four salient points with respect to Killari earthquake.
- 4. Attempt any THREE of the following : 12**
- (a) Explain the role of horizontal bands in earthquake resistant buildings.
  - (b) Draw typical sketches of column and beam connection showing longitudinal steel, transverse steel, stirrups as per IS : 13920.
  - (c) State the step by step procedure to determine base shear by equivalent static lateral force method.
  - (d) List any four provisions of IS : 1893 regarding earthquake resistant buildings.
  - (e) State any four principles for design of earthquake resistant building.
- 5. Attempt any TWO of the following : 12**
- (a) Explain three types of earthquakes with their causes.
  - (b) Identify any three probable characteristics of ground shaking and ground failures when earthquake magnitude is 6 on Richter's scale.
  - (c) Explain the effect of geometric shape on the damages due to earthquake.
- 6. Attempt any TWO of the following : 12**
- (a) Explain the damages to RCC structure during earthquake.
  - (b) Explain with sketch of damage and failure pattern of brick masonry.
  - (c) Explain the factors to be considered for design of earthquake.
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