

22606

24225

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) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE :

10

- (a) Define Focus & Focal depth.
- (b) State any two types of seismic waves.
- (c) Differentiate between P-waves & S-waves. (Any 2 points)
- (d) State the causes of earthquake. (Any 4 points)
- (e) State the meaning of soft storey effect.
- (f) Enlist any two damages in stone masonry structure due to earthquake.
- (g) State any two characteristics of post-earthquake handling techniques of building.

2. Attempt any THREE :

12

- (a) Explain the working principle of Richter Scale.
- (b) State the meaning of ductile detailing and explain the need of ductility in concrete structure.
- (c) Explain elastic re-bound theory.
- (d) Explain any four effects of tsunami.



- 3. Attempt any THREE :** **12**
- (a) Explain the step by step procedure for calculating design seismic base shear.
 - (b) Illustrate the failure patterns in brick masonry and explain any one in detail.
 - (c) State the provisions as per IS :1893 regarding earthquake resistant structures.
 - (d) State any four general principles for design of earthquake resistant masonry buildings.
- 4. Attempt any THREE :** **12**
- (a) State the assumptions made in the earthquake resistant design of structures.
 - (b) Explain the method of measurement of earthquake shaking and its working principle.
 - (c) Suggest action plan required to handle the probable earthquake in Latur area with minimum four points.
 - (d) State the learning from past earthquakes such as Killari, Bhuj on any four points.
 - (e) List methods of lateral load analysis and explain any one.
- 5. Attempt any TWO :** **12**
- (a) Explain any three types of earthquakes with their causes.
 - (b) Suggest any six criteria to be considered in selecting site for earthquake resistant building against stability of slopes.
 - (c) Explain in detail the different vertical irregularities.
- 6. Attempt any TWO :** **12**
- (a) Identify any six probable damages to RCC buildings due to earthquake.
 - (b) Draw sketches of any three damages in RCC building due to earthquake.
 - (c) Suggest action plan required to restore roads and bridges in working condition after severe earthquake.
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