

22606

23242

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

Marks

1. Attempt any FIVE :

10

- (a) State the meaning of epicentre and focal length.
- (b) Define foreshock and aftershock.
- (c) Enlist the types of seismic waves.
- (d) Enlist types of earthquake and faults.
- (e) Enlist storey shear and weak storey.
- (f) Enlist various failure pattern occurred in brick masonry due to earthquake.
- (g) State the precautions to be taken in design and construction of earthquake affected zone. (Any two)

2. Attempt any THREE :

12

- (a) Explain in brief the method of earthquake shaking and Richter scale.
- (b) State the guidelines used for earthquake preparedness.



- (c) Explain interplate earthquake and intraplate earthquake with example.
- (d) State the principles for design of earthquake resistant buildings as per IS 1893 (Part I) – 2002.

3. Attempt any THREE : 12

- (a) Explain the effect of geometric shape on the damages due to earthquake.
- (b) Explain the causes of damages in brick masonry.
- (c) State the assumptions provided to improve seismic resistance of masonry building as per IS 4326, 1993.
- (d) Draw typical sketch showing details of transverse reinforcement of beams with all notations.

4. Attempt any THREE : 12

- (a) State any four provisions recommended in IS 13920 to design earthquake resistant building.
- (b) Define ductility and state its need in concrete structure.
- (c) Explain equivalent static lateral force method for the determination of design base shear.
- (d) Compare Koyna earthquake with Killari earthquake.
- (e) Define the term : Centre of stiffness and design eccentricity.

5. Attempt any TWO : 12

- (a) Explain elastic rebound theory with neat sketch.
- (b) Explain any three types of earthquake with their effect.
- (c) Suggest any six criteria to be considered in selecting site for earthquake resistant building against stability of slopes.

6. Attempt any TWO : 12

- (a) State any three damages in RCC building due to earthquake with neat sketch.
 - (b) Explain the typical damage & failure of stone masonry with its causes.
 - (c) State the learnings from earthquakes occurred in India.
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