22606

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

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 of the following : **10**

(a) Define focal depth and seismic waves.

(b) Enlist any two damages in stone masonry structures due to earthquake.

(c) Define seismic mass and seismic weight.

(d) State any two IS codes used in earthquake resistant design of structures.

(e) Define centre of mass, centre of stiffness.

(f) List any four types of earthquakes with respect to magnitudes.

(g) Define body waves and enlist its two types.

2. Attempt any THREE of the following : **12**

(a) Explain the working principle of Richter scale.

(b) Identify any four measures to enhance earthquake resistance of a given building.

(c) Explain any four effects of Tsunami.

(d) Explain elastic rebound theory.

3. Attempt any THREE of the following : **12**

(a) Explain Planning aspect of building regarding earthquake resistance.

(b) Explain the causes of damages in stone masonry.

(c) State any four provisions of IS : 1893 regarding earthquake resistant structures.

(d) Compare Koyna and Killari earthquakes with any four characteristics from each.

4. Attempt any THREE of the following : **12**

(a) Draw typical sketch showing details of transverse reinforcement in beams with ductile detailing.

(b) State any four general principles for design of earthquake resistant masonry building.

(c) Suggest action plan required to handle the probable earthquake in Nagpur area with minimum four points.

(d) List any four provisions for ductile detailing as per IS : 13920.

(e) Suggest action plan required to handle the probable earthquake in laturo area with minimum four points.

5. Attempt any TWO of the following : **12**

(a) Identify any six effects of earthquake.

(b) Enlist any four types of tectonic plates and explain movement of Indo-Australian plate with sketch.

(c) Suggest criteria to be considered in selecting site for earthquake resistant building against loose sand and stability of slopes.

6. Attempt any TWO of the following : **12**

(a) Draw sketches of any three damages in R.C.C. building due to earthquake.

(b) Suggest action plan required to restore roads and bridges on working condition after severe earthquake.

(c) Suggest any six precautions to be taken with respect to design and construction in the earthquake area.
