Total No. of Questions : 6]

SEAT No. :

P3759

[Total No. of Pages : 2

[4760]-49

M.E. (Civil-Structure)

EARTHQUAKE RESISTANT DESIGN OF STRUCTURES

(2008 Course) (Semester - II) (Elective - III)

Time : 4 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Attempt any two questions from each section.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Use of non programmable electronic calculator is allowed.***
5) ***Assume suitable data if necessary.***
6) ***Use of IS 1893 (2002) Part -I is permitted.***

SECTION - I

Q1) a) What are the causes of earthquake? Explain with neat sketches the elastic Rebound Theory? **[7]**

b) Classify and describe with suitable sketches, different types of waves generated by an earthquake. **[8]**

c) Describe the difference between magnitude and intensity of an earthquake? **[10]**

Q2) a) What are the lessons learnt from past earthquakes? Explain philosophy behind earthquake resistant design of structures? **[10]**

b) Explain the interior of the earth with neat sketches? Classify the earthquakes based on different parameters? **[15]**

Q3) Determine the design eccentricity in Y-direction for a three storey building as shown in Figure 3.1. The total seismic weight /floor = 450 kN. The column size = 400mm X 600 mm. Assume grade of concrete = M25. **[25]**

P.T.O.

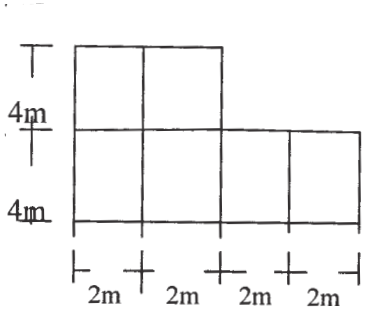

Figure 3.1

SECTION - II

Q4) a) What is the necessity of ductile detailing? Explain with neat sketches the detailing for flexural member as per IS 13920 (1993) **[10]**

b) What is liquefaction of soil? Explain the effects and various methods to reduce the effects of lequefaction? **[15]**

Q5) a) Define the shear wall and its classification? Describe the structural behavior of shear wall? **[10]**

b) What is Base Isolation? Explain energy dissipation devices to improve earthquake resistance of buildings? **[15]**

Q6) a) What is strengthening and retrofitting? Explain in brief the techniques for retrofitting of traditionally build constructions? **[10]**

b) Explain the terms active and passive control system? What are different types of steel frames used in earthquake prone areas. **[15]**

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