Total No. of Questions : 6]

SEAT No. :

P4876

[Total No. of Pages : 2

[5155] - 2
M.E. (Civil Structure)
EARTHQUAKE RESISTANT DESIGN OF STRUCTURES
(2008 Pattern)

Time :3 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 IS1893 (2002) Part- I is permitted.***

SECTION - I

Q1) a) What is an earthquake? Explain the causes and classification of earthquake based on different parameters? **[6]**

b) Explain the lessons learnt from past earthquake? What is the philosophy behind earthquake resistant design of structure? **[9]**

c) Describe measurement of ground motion during earthquake? **[10]**

Q2) Write notes on **[25]**

a) Strong ground motion

b) Soil structure interaction

c) Plate tectonic theory

d) Tuned Mass Dampers

Q3) The plan for Five storey hospital building is shown in figure 3.1 Assuming OMRF construction in zone III and medium stiff soil, determine seismic loads in Y - direction on structure. Take D.L. = 10KN/m^2, LL = 3kN/m^2 and floor height 3.2 m. **[25]**

P.T.O.

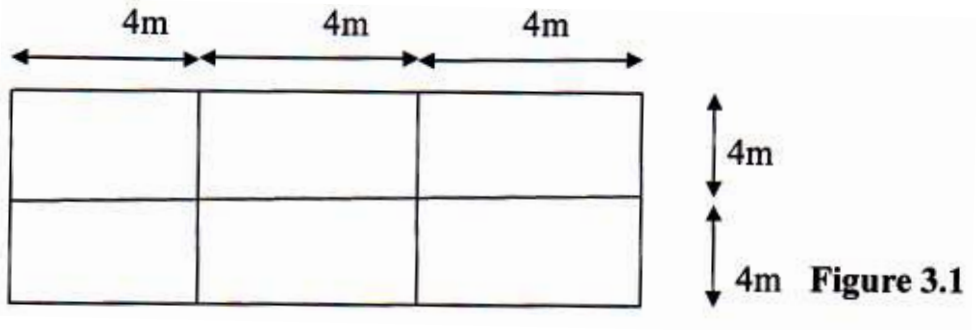

Figure 3.1

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 liquefaction? **[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]**