M.E. First Semester (Civil (Structural Engg.)) (New-CGS)

13088 : Earthquake Resistant Design of Reinforced Concrete Structures

1 SFSE 5

P. Pages : 2 | AU - 3448

Time : Four Hours | Max. Marks : 80

Notes :
1. All question carry equal marks.
2. Answer **any three** question from Section A and **any three** question from Section B.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of ECN calculator is permitted.
7. I.S.I. Hand book for structural Steel section, I.S. Code 1893, IS13920, SP16 IS456 (Revised) I.S. 875 may be consulate.
8. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. Explain in detail seismic design Philosophy for buildings. **13**

2. Explain **any two** points from the following. **13**

a) Over strength

b) Base Isolation

c) Damping

3. A RCC beam of rectangular section has to carry a uniformly distributed live load of 30kN/m in addition to its own weight and dead load of 25kN/m. Maximum bending moment and shear force due to earthquake are 65kN-m and 50kN respectively. Centre to centre distance between support is 6.5m. Design the beam using M25 concrete and Fe415- Steel. (Assume beam as fix beam). **13**

4. Design the reinforcement for column of size 300×600mm subjected to following forces. Column has an unsupported length 3.5m. Use M25 concrete and Fe415. Steel. **14**

	Dead load	Live load	Seismic load
Axial load (kN)	1000	550	350
Moment (kNm)@ Major axis	120	60	50

5. Explain **any two** points from the following. **13**

a) Over strength

b) Redundancy

c) Damping

SECTION - B

6. Explain **any two** points form the following: **13**

   a) Drift in building

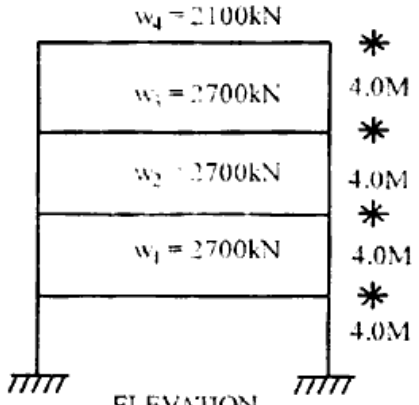
   b) Effect of masonry infill

   c) P-delta effect

   d) Effect of soil structure interaction on building response

7. What is shear wall? Explain with your own example the procedure for design of shear wall. **13**

8. A four storey RCC frame structure building as shown in Fig. 8, is situated at Amravati. The height between the floor is 4.0m. The total dead load and normal live load is Lamped at respective floor as shown in Fig. 8 at respective floor. The type of soil below the foundation is assumed to be medium and it is proposed to design the building with special moment resisting Frame. Assume building to be used for school purpose. Determine the total base shear and its distribution along the height of building. **14**



ELEVATION

Fig. (8)

9. Explain **any two** points from the following. **13**

   a) Flexible first storey.

   b) P-delta effect

   c) Effect of masonry infill.

10. Explain with your own example the procedure for calculation of wind load on building located at Amravati. Also explain various load combinations required to be considered for wind load. **13**

****