

M.Tech. Civil Engineering (Structural Engineering & Construction) (CBCS Pattern) Semester - III  
**PSES31 - Design of Earthquake Resisting RCC Structures**

P. Pages : 1

Time : Four Hours



GUG/S/23/11059

Max. Marks : 70

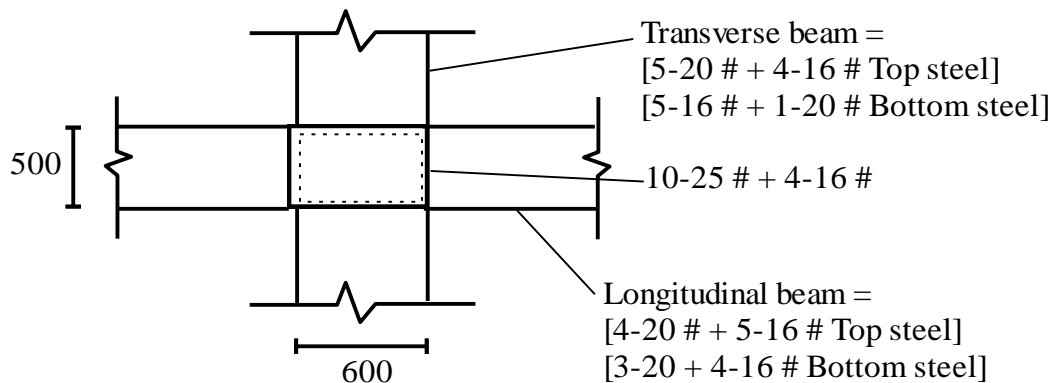
Notes : 1. Solve **any five** questions.

1. Explain the behaviour of beam and column joint in string earthquake. 14
2. Through the ductile detailing of middle floor beam of span 5m and cross section of beam is 300x600mm with following load conditions 14

| Load case | left end |        | centre |        | Right end |        |
|-----------|----------|--------|--------|--------|-----------|--------|
|           | Shear    | Moment | Shear  | Moment | Shear     | Moment |
| DL        | -51      | -37    | 4      | 32     | 59        | -56    |
| LL        | -14      | -12    | 1      | 11     | 16        | -16    |
| EQY       | 79       | 209    | 79     | 11     | 79        | -191   |

Depth of slab = 125mm  $f_{ek} = 25\text{N/mm}^2$ ,  $f_y = 415\text{N/mm}^2$ .

3. Check if beam column joint of figure satisfy the weak beam strong column proportion were span of left beam is 5m and right beam is 4m the slab thickness is 120mm. Hogging and Sagging moment live load =  $2\text{kN/m}^2$  capacity for longitudinal story height = 3m, beam = 288 kN-m and 221 kN-m for Transverse beam = 377 kN-m and 246 kN-m reinforcement detail is given in figure 14



4. Explain the philosophy and concept of earthquake resistance design of structure. 14
5. Explain in detail special aspects of multistory buildings and also explain P-delta effect. 14
6. Write short note on following  
 Shear wall, ductile detailing of column and beam joint factor affecting ductility of R.C. members. 14
7. Write short note on:  
 Shrinkage Creep Thermal Stresses. 14
8. Discuss about  
 Seismic design of floor diaphragm and fire Resistant of R.C. Building. 14

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