

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

P. Pages : 1

Time : Four Hours



**GUG/W/22/11059**

Max. Marks : 70

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

1. Design the column of size 300 mm x 530 mm subjected to axial loads 800 kN, 350 kN & 13 200 kN due to dead load, live load and seismic load respectively, column also subjected to moment about major axis as 90 kN.m 54 kN.m and 46 kN.m due to dead load, live load and seismic load respectively. column has an unsupported length 3.1 m. Use M25 concrete and Fe415 steel. **14**
2. a) Write the influence of the unsymmetry of structure. **7**  
b) Explain in detail the following Base Isolation. **7**
3. Give technical reasons for the following: **14**  
a) Soft-Storey should be avoided in R.C.C structure.  
b) For R.C.C design strong column & weak beam design approach should be consider
4. a) Define Inter storey drift and explain in detail overall drift index of a structure. **7**  
b) Explain following point **7**  
a) Effect of torsion  
b) Effect of soil-structure inter action on building response.
5. a) What is shear wall. Explain with your own example, the procedure for design of shear wall. **7**  
b) Explain with reasons various ductile detailing considerations as per IS 13920:1993 for flexural members, columns and Aame members subjected to bending and axial load. **7**
6. For a R.C.C. framed building find the design lateral forces and its distribution along the height, using equivalent. Static lateral force method. **14**  
i) Location: Roorkee  
ii) Use: Hospital building  
iii) Plan dimension : 6 bay of 5m each along X direction and 6 bay of 5 m each along Y – direction  
iv) Soil condition : Medium soil  
v) Elevation : 6 storey including ground storey each with 3.2m floor height.  
vi) Column : 400mmx400mm  
vii) Beam : 300mmx400mm viii) Walls : Outer wall 230mm brick masonry, inner 150mm brick masonry  
ix) Parapet wall : 230mm thick 1.0 m ht. brick masonry,

\*\*\*\*\*