

M.Tech. Structural Engineering & Construction (CBCS Pattern) Semester-I  
**PSES12 - Advanced Concrete Structures**

P. Pages : 1

Time : Three Hours



**GUG/S/25/10962**

Max. Marks : 70

Notes : Solve **any two**.

1. Analyze the building frame for earthquake load as a special moment resisting frame residential building shown below in zone IV. Spacing of frame is 4.00 m c/c **35**
- i) Slab thickness – 110 mm
  - ii) All beams –  $350 \times 350$  mm
  - iii) All columns –  $450 \times 450$  mm
  - iv) LL on all floor -  $2.5 \text{ kN/m}^2$

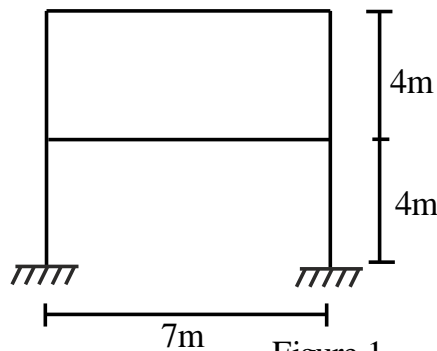


Figure 1

**OR**

2. Design a Intze tank for 8.5 lac liters capacity resting on 8 Nos. of column with staging height 12.5 m where the wind inter sity is  $1.5 \text{ kN/m}^2$ . Use M- 25 grade of concrete and Fe 415 steel. SBC of soil is  $250 \text{ kN/m}^2$ . Sketch reinforcement details. **35**
3. Design a RCC box culvert having clear vent way  $5.0 \text{ m} \times 5.0 \text{ m}$ . super imposed dead load on box culvert is  $18 \text{ kN/m}^2$  & live load is  $50 \text{ kN/m}^2$ , unit weight of soil is ,  $18 \text{ kN/m}^3$ ,  $\phi = 30^\circ$  and SBC of soil is  $200 \text{ kN/m}^2$ . **35**  
Use M25 concrete and Fe500 steel. Sketch reinforcement details.

**OR**

4. Design circular RCC silo of 15m height and 5.5 m internal diameter to store cement of unit weight  $15.5 \text{ kN/m}^3$  and  $\phi = 25^\circ$ . **35**  
Use M20 concrete and Fe415 grade of steel SBC of soil is  $300 \text{ kN/m}^2$ .

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