M.Tech. Structural Engineering & Construction (CBCS Pattern) Semester - I

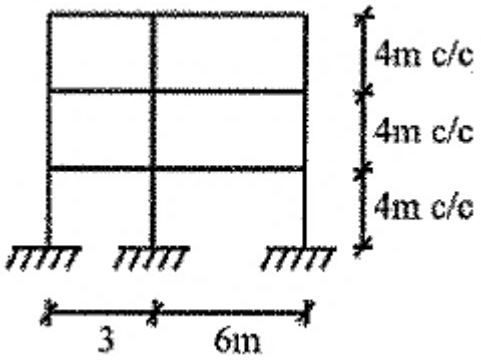
PSES12 - Advanced Concrete Structures

P. Pages : 1 **GUG/S/23/10962**

Time : Four Hours * 1 2 0 0 * Max. Marks : 70

Notes :
1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
6. I.S. Hand Book for structural steel section, I.S. Code 8000/1962 or 1964, I.S. 456 (Revised), I.S. 875 may be consulted.

1. Analyze the building frame for wind load shown in figure spacing of frame is 3.5 m c/c and wind load intensity is $1.5\,kN/m^2$. **17**
Draw SFD, BMD, and AFD with proper sign convention.



2. Design intze tank for 10 lac liters capacity resting on 10 numbers of column with staging height of 15 m where the wind intensity is $2\,kN/m^2$. Use M20 grade of concrete and Fe415 grade of steel. SBC of soil $300\,kN/m^2$ and draw reinforcement details also. **17**

3. Design RCC box culvert having clear vent way 4 X 4 m in size dead load on culvert is $15\ kN/m^2$ and live load $45\ kN/m^2$. Density of soil is $18\ kN/m^3 \phi = 30^o$ and SBC of soil is $200\ kN/m^2$. use M20 grade of concrete and Fe415 grade of steel. Draw reinforcement detail also. **18**

4. Design circular RCC silo of 12 m height and 4.5 m inner diameter to store cement of unit weight $15.5kN/m^{3\phi=30^o}$ SBC of soil is $300\,kN/m^3$. Use M20 grade of concrete and Fe415 grade of steel. **18**

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