Roll No. | | | | | | | | | | | | | **Total No. of Pages : 01**

Total No. of Questions : 08

M.Tech. (Structural Design) (2016 & Onwards) (Sem.-1)

DESIGN OF HIGH RISE STRUCTURES

Subject Code : MTSD-104

M.Code : 74245

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**
3. **Missing data if any can be suitably assumed, clearly stating the same.**
4. **Wherever possible support the answer with suitable sketches.**
5. **Use of relevant codes is allowed (IS 1893, IS 875 Part III, IS 13920, IS 4326 etc.)**

1. Determine the critical lateral loads for a five storey rigid frame building 36m long with the frame spaced at 9m c/c. The storey height is 3m and the weight of each floor is assumed to be constant. The weight of each storey is 1600 kN. The building is located at Chandigarh.
2. Soil-structure interaction involves both Static and Dynamic behaviour. In order to take care of Soil-Structure Interaction, how, as an engineer, you will account for static and Dynamic Behaviour?
3. Discuss the method of analysis of coupled shear wall supported on elastic foundations.
4. ''A classical analysis of warping torsion for a section requires the prior evaluation of shear center location, the principal sectorial coordinate diagram, the warping moment of Inertia and the torsion constant.'' How you will compute shear centre location and other parameters for computing torsion.
5. "*Floor structures form horizontal rigid planes. The floor framing transmits gravity and lateral forces to the columns and/or walls. Layout of floor framing depends upon shape and structural system of the structure.*" Discuss typical layouts with reference to above.
6. a) Explain briefly the stability analysis of tall buildings.
   b) Discuss the situations where fatigue and fracture play an important role, and cannot be ignored *w.r.t.* high rise structures.
7. Discuss types of high rise structures. Also discuss temperature induced movements in high rise structures.
8. Write short notes on :
   a) Vierendal Girders
   b) Structural behaviour of High Rise vis-a-vis Low rise structures.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.