Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech. Structural Design (2016 & Onwards) (Sem.–2)

ADVANCE STEEL DESIGN

Subject Code : MTSD-203

M.Code : 74292

Date of Examination : 17-12-22

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

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions.**
2. **Each question carries TWENTY marks.**
3. **Any missing data may be assumed appropriately.**

l. Suggest and design beam-column welded connection for ISMB500 & ISSC200 to carry 120 kNm. B.M. & 100 kN shear.

2. A deck type 'N' truss bridge has 10 equal panels of 4m each with depth of truss 3.8m. The dead load and live load intensities are 24 kN/m & 40 kN/m respectively. Draw influence line diagram for members at top panel point from left end of truss. Using impact factor 0.40 design top chord section.

3. Design a riveted self supporting steel stack located in Chandigarh for the following data:

   Terrain category 2

   Topography almost flat

   Height of the steel stack 80m

   Diameter of the steel stack 3.2m

   Thickness of brick lining 100mm

   Design the stack at the base. Also design the base plate and the anchor bolts.

4. Analyse the beam ABC of length 5m propped cantilever at end C & fixed at end A. The cantilever is loaded by load w at B, which is 2m from C, for AB portion the plastic moment of resistance is 2 Mp while for BC it is Mp. Determine collapse load.

5. a) State advantages & disadvantages of tubular sections in steel structure.

   b) Compare the hollow circular & hollow square sections as thin, thin tubular sections, for its strength with respect to use as compression member.

6. A hat of 100×80×4mm section with a 25mm lip is to be used as a concentrically loaded column of 3.1m effective length. Determine the allowable load. Take fy = 250 N/mm^2.

7. An ISLB 300 carrying UDL of 55 kN/m has effective span of 8m. This is to be connected to the web of the girder ISMB 450. Design the frame connection using 20mm dia shop bolts.

8. a) Draw neat sketch showing different types of bridge bearings.

   b) Explain concept of effective width for simply supported plate in case of small moments acting on it.

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.