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

Total No. of Questions : 10

B. Arch. (Sem.–4)

STRUCTURE DESIGN – IV

Subject Code : AR-238

M.Code : 45035

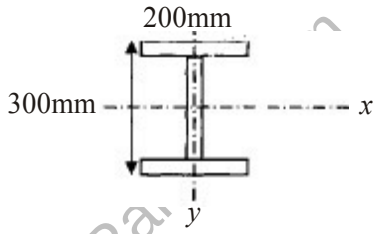
Time : 3 Hrs. Max. Marks : 50

INSTRUCTIONS TO CANDIDATES :

1. **Attempt five questions with one question form each part. —all questions are of equal marks**
2. **Use of IS - 800, Scientific Calculator is allowed. Assume missing data if any .Draw neat diagrams**

UNIT-I

1. Find radius of gyration about both axis of following I section made of 12mm thick plate flage and 10 mm thick plate web.



2. a) Write a note on permissible stress.

   b) Write a note on slenderness ratio.

   c) What is permissible stress in bending of steel having min yield stress 500mpa?

   d) What is permissible compressive stress of M30 concrete?

   e) Write difference between permissible stress and limiting stress of material.

UNIT-II

3. Design steel beam in I section for a simply supported, 7m span, to carry uniform load 30kN/m. Assume permissible bending stress in steel 150N/mm^2 calculate the deflection centre for designed section.

4. A steel beam ISMB 300 have maximum bending moment 250 kN-m at centre, check maximum bending stress at flange ?

UNIT -III

5. Design an I section purlin for an industrial building to support a galvanized corrugated iron sheet roof. Given:

   Spacing of the trusses=5.0m

   Spacing of purlins= 1.5m

   Inclination of main rafter to horizontal=300

   Wind load= 1.5kN/m^2 (upward direction)

   Assume steel strength 250 mpa (yield strength)

6. List out the various elements of the roof truss and mark all its significance.

UNIT-IV

7. Design a grillage foundation for axial load 2500 KN and in column section section two ISMC 250, with two cover Plates 300×25 mm. Allowable base bearing 100 kn/m^2. Use ISMB sections.

8. a) Describe web crippling

   b) Check required spread area and section modulus of girder if allowable bearing pressure is 130kN/m^2 in Question no. 7.

UNIT-V

9. Describe :

   a) Efficiency of joint.

   b) Aspect ratio of rivets

   c) Pitch of rivets

   d) Welded joints

   e) Difference between Moment connection and shear connection.

10. Write down advantages and disadvantages in riveted and welded connections.

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.