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

Total No. of Questions : 10

B. Arch.   (Sem.–4)
STRUCTURE DESIGN – IV
Subject Code : AR-238
Paper ID : [A0927]

Time : 3 Hrs.   Max. Marks : 50

INSTRUCTIONS TO CANDIDATES :
1. **Attempt FIVE Questions with ONE question from each part.**
2. **Assume any missing data.**
3. **ALL questions carry EQUAL marks.**
4. **Draw neat diagrams.**
5. **Use of IS – 800, Scientific Calculator is allowed.**

UNIT-I

1.   Find radius of gyration about both axis of following I section.

200 mm

300 mm

12 THK PLATE FLANGE

10 THK PLATE WEB

12 THK PLATE FLANGE
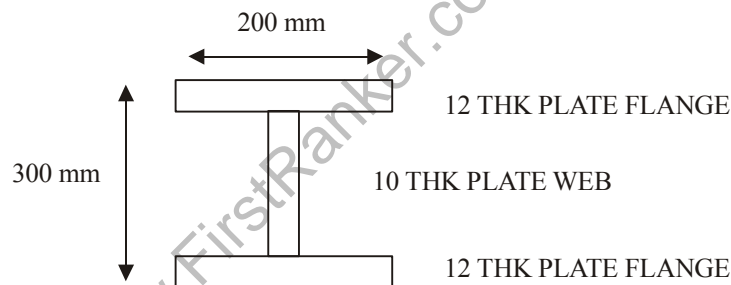
2.   a) What do you understand by permissible stress, what is the permissible stress for grade E350 steel ?   (5)

   b) What is effective length of uniform section column if both ends are

   c) 1) hinged   2) fixed, draw sketches?   (5)
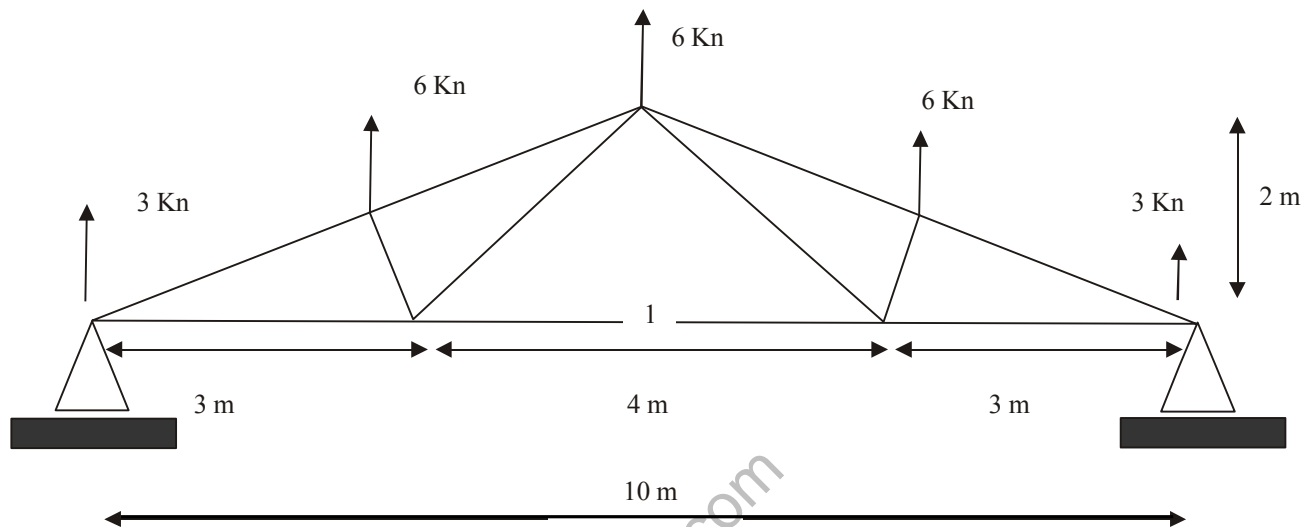
UNIT-II

3.   Design steel beam in I section for a simply supported, 5m span, to carry uniform load 40Kn/m. Assume permissible bending stress in steel 150n/mm^2. Calculate deflection at centre for designed section.   (10)

4. a) What is maximum deflection if hollow box 200×200mm with wall thickness 6mm is used in question no. 3. (5)

b) How will you check the shear resistance of steel section? (5)

UNIT-III

5. Design member 1 in following truss, (use ANGLE SECTION) (10)

6. a) Describe nature of forces in all members (tensile or compressive) in above figure. Draw sketch. (10)

UNIT-IV

7. What is grillage foundation? Draw a general sketch of grillage foundation and describe function of all parts? (10]

8. Design grillage foundation for 1000Kn load. Assume column base plate 400×400mm allowable base bearing 100 kn/m^2. Use grade 250 ISMB sections. (10)

UNIT-V

9. Describe various types of joints in steel structure. Explain with sketches. (10)

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