CLASS: B.ARCH   SEMESTER: VI
BRANCH: ARCHITECTURE   SESSION: SP/2020

SUBJECT: AR6309 STEEL STRUCURES

TIME: 1.5 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1 The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.
6. IS 800 & Steel Tables allowed in Examination Hall.
7. All answers should be accompanied by neat labelled figures.

Q1   Determine the shape factor for a rectangular beam of width b and depth d about the major axis.   [5]

Q2   Determine the collapse load of a fixed beam of span L with a concentrated load W at mid span.   [5]

Q3   Two plates of thickness 14 mm and 12 mm are to be joined by groove weld. The joint is subjected to a factored tensile load of 350 kN. Assuming an effective length of 150 mm and shop welding, check the safety of the joint if (i) Single V groove weld is provided and (ii) Double V groove weld is provided.   [5]

Q4   A tie member of a truss consisting of ISA 65x65x6 is welded to 8 mm gusset plate. Design weld to transmit load equal to full strength of the member using shop welding.   [5]

Q5   Design a lap joint between two plates of 12 mm and 20 mm thickness to transmit a factored load of 70 kN using M16 bolts.   [5]

Q6   A single bolted double cover butt joint is used to cover two plates 6mm thick each. Assuming M20 bolts at 60 mm pitch calculate the efficiency of the joint.   [5]