

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE PILANI
I SEMESTER 2023-24
COMPREHENSIVE EXAMINATION
CE G612 ADVANCED STEEL STRUCTURES (CLOSE BOOK)

Duration: 180 Mins

Max Marks: 60

1. A column is to be designed to carry a factored axial load of 1500 kN using two channel sections placed back to back. Assuming column to be restrained in position but not in direction at both ends, design [20M]

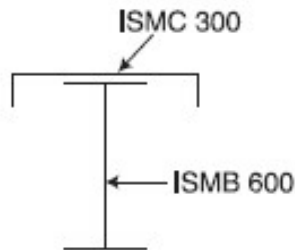
- a. laced column
- b. battened column

2. Design a fixed ended beam 5 m in span if loaded with uniform factored load of 24 kN/m. [10M]

3. Determine the safe uniform load that a beam comprising of ISLB 600 @ 976.1 N/m can carry in bending if it is simply supported with span 7.2 m. Assume the following cases [10M]

- a. compression flange is restrained against lateral buckling
- b. compression flange not restrained

4. Check girder section shown in Fig. for adequacy in bending. Moment about major axis is 650 kNm
Moment about minor axis is 15 kNm.



5. A tension member is supposed to carry a factored axial load of 450 kN. Constraints require that ISA 100x100x10 be used along with lug angle. Design the section and the connection. [10M]