

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

B.Tech-VI Semester (CE)

COURSE CODE (CREDITS): 23B11CE612 (3)

MAX MARKS: 25

COURSE NAME: DESIGN OF STEEL STRUCTURES

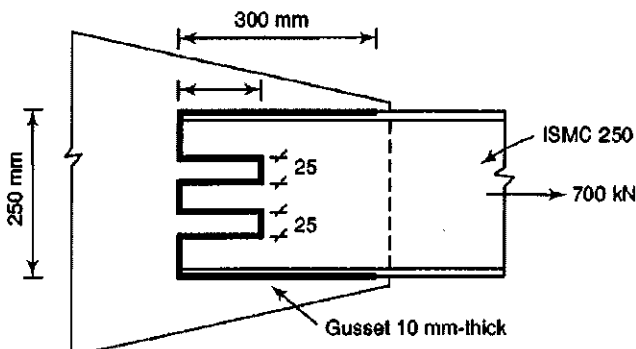
COURSE INSTRUCTOR: Dr. KAUSHAL KUMAR

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator along with IS 800-2007 and IS808 or Steel Table are allowed.

Q.No	Question	COs	Marks
Q1	Discuss the various factors affecting the strength of tension members and explain how they are incorporated in design as per IS 800:2007	2	3
Q2	What is meant by shear lag? How can the effects of shear lag be considered in the design calculation?	2	3
Q3	Under what circumstances are slot and plug welds used? List some of the common defects associated with welds.	3	4
Q4	An ISMC 250 is used to transmit a factored force of 700 kN. The channel section is connected to a gusset plate 10 mm thick as shown in figure. Design a fillet weld if the overlap is limited to 300 mm. Use slot welds if required. 	3	5
Q5	An angle section 8 mm thick carrying 120 kN factored load is to be connected to a gusset plate (lap joint) using M20 bolts of grade 4.6. Find the number of bolts required and sketch the connection details.	1	4

Q6

A single unequal angle section of size $100 \times 75 \times 6$ mm is connected at its ends to a 10 mm thick gusset plate using six bolts of 16 mm diameter, as illustrated in the figure below. Determine the design tensile strength of the angle, considering the yield stress and ultimate stress of steel as 250 MPa and 410 MPa, respectively, when the gusset plate is connected to the 75 mm leg.

4

6

