

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

B.Tech-V Semester (CE)

COURSE CODE (CREDITS): 18B11CE612

MAX. MARKS: 25

COURSE NAME: DESIGN OF STEEL STRUCTURES

COURSE INSTRUCTORS: 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) Calculator is allowed, IS 800:2007 is allowed.

Q.No	Question	CO	Marks
Q1	Discuss advantages and disadvantages of Steel Design.	1	3
Q2	Discuss the design philosophy of (a). Limit state of Collapse and (b). Limit state of Serviceability.	1	3
Q3	With the help of a neat sketch, explain the following, (a). Pitch distance (b). Gauge distance and (c). End distance in a connection.	2	3
Q4	Design the following joints using ordinary black bolts between two plates of width 200 mm and thicknesses 10 mm and 18 mm respectively to transmit a factored load of 150 kN. For Double cover butt joint with 8 mm covers plates. Use plates made of Fe 410 grade steel and 16 mm diameter bolt of grade 4.6. Also calculate the Efficiency of the Joint.	2	6
Q5.	A tie member of a roof truss consists of ISA 100×75×8 of Fe410 grade, is welded to a 10 mm gusset plate. Designs the welded connection to transmit a factored tensile load, $T = 300$ kN. Assume connection is made in the workshop.	3	5
Q6.	Two plates of thickness 12 mm and 10 mm are to be joined by a groove weld. The joint is subjected to a factored tensile force of 250 kN. Assuming an effective length of 150 mm, check the safety of the joint for Double-V groove weld joint. Assume Fe 410 grade steel plates and that the welds are shop welded.	3	5

End of Paper