

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

B.Tech-VI Semester (CE)

COURSE CODE (CREDITS): 18B11CE612 (3)

MAX MARKS: 25

COURSE NAME: DESIGN OF STEEL STRUCTURES

COURSE INSTRUCTOR: Dr. KAUSHAL KUMAR

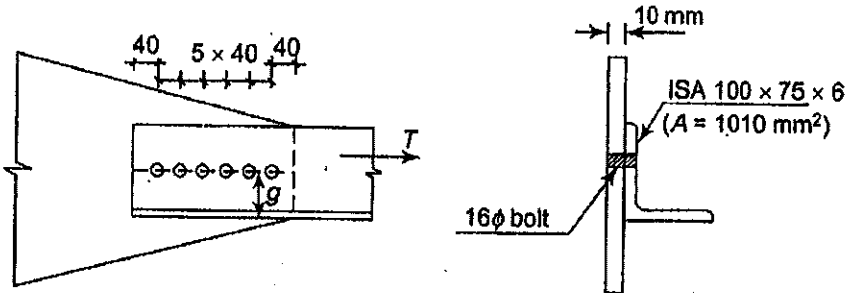
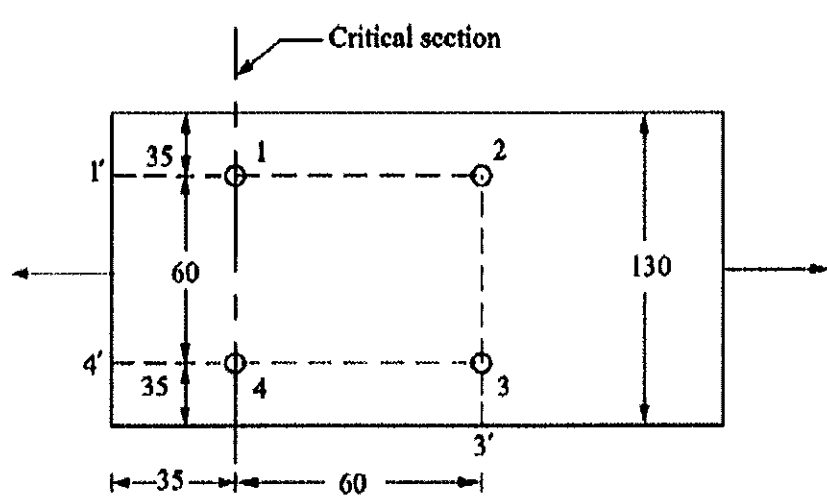
MAX. TIME: 1 Hour 30 Min

**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	<p>Find the maximum force which can be transferred through the double covered butt joint shown in Fig. 3.19. Find the efficiency of the joint also. Given M20 bolts of grade 4.6 and Fe 410 steel plates are used.</p> <p style="text-align: center;">All dimensions in mm</p>	2	6
Q2	<p>A tie member consists of two ISMC 250. The channels are connected on either side of a 12 mm thick gusset plate. Design the welded joint to develop the full strength of the tie. However the overlap is to be limited to 400 mm.</p>	3	6
Q3	<p>Two plates 180 mm wide and 8 mm thick are to be connected by butt welding, using shop welds, design the connection.</p>	3	3

<p>Q4</p>	<p>A single unequal angle section of size <math>100 \times 75 \times 6</math> mm is connected at its ends to a 10 mm thick gusset plate using six bolts of 16 mm diameter, as illustrated in Fig. 7.28. 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 100 mm leg.</p>  <p style="text-align: center;"> <math>g = 40</math> mm if 75 mm leg is connected  <math>= 60</math> mm if 100 mm leg is connected         </p>	<p>4</p>	<p>6</p>
<p>Q5</p>	<p>Determine the Block Shear Strength of the plate <math>130</math> mm <math>\times</math> <math>12</math> mm with the holes for 16 mm diameter bolts as shown in figure below. Steel used is of Fe 410 grade quality.</p> 	<p>4</p>	<p>4</p>