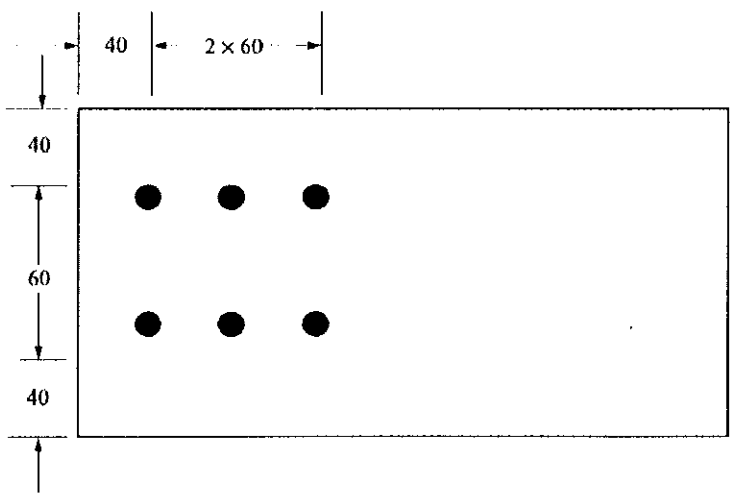
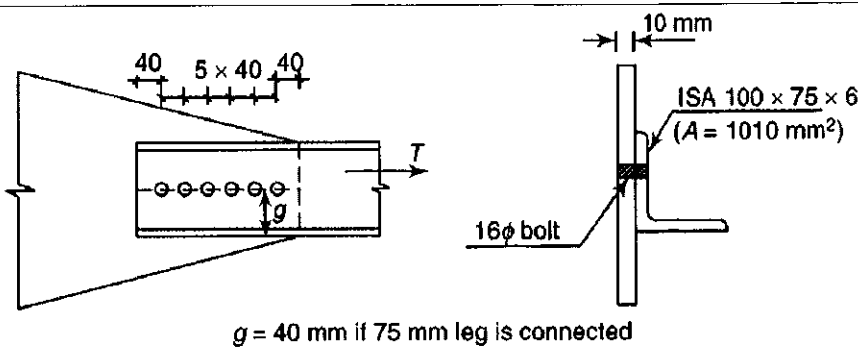


Note: (a) All questions are compulsory.

(b) IS 800, IS808 or Steel Table is allowed.

Q.No	Question	CO	Marks
Q1	A single angle ISA $100 \times 100 \times 10$ is connected to a gusset plate of thickness 10 mm by weld along two parallel edges. The size of weld (fillet) is 6 mm. The member is subjected to an axial compressive load of 150 kN (factored). Find the weld length along two parallel edges. Assume E250 grade of steel and shop welded. For ISA $100 \times 100 \times 10$, $c_y = c_z = 27.6$ mm. Use limit state method.	2	5
Q2	<p>Determine the Block Shear strength of the plate $140 \text{ mm} \times 10 \text{ mm}$ with the holes for 24 mm bolts as shown in the figure. Steel used is Fe410.</p> 	3	5
Q3	A single unequal angle $100 \times 75 \times 6$ is connected to a 10-mm thick Gusset plate at the ends with six 16-mm-diameter bolts to transfer tension as shown in Fig. Determine the design tensile strength of the angle assuming that the yield and the ultimate stress of steel used are 250 MPa and 410 MPa; if the gusset is connected to the 75-mm leg (May ignore the calculation of Block Shear Strength)	3	5

	 <p>$g = 40 \text{ mm}$ if 75 mm leg is connected</p>		
Q4	Design a tension member (Use Channel Section) to carry a factored force of 340 kN. Use 20 mm diameter black bolts and a gusset plate of 10 mm thick. Use Fe 410 steel and ordinary bolt of grade 4.6.	4	5
Q5	A single ISA 100x75x10 is used in a tension member with the longer leg connected to a 10 mm thick gusset plate. The connection is made with the help of a lug angle. Design the connection and sketch the bolt details. Use M20 bolts of grade 4.6 having bolt value of 45.27 kN. Section available for lug angle are: (a) ISA 60x60x8 - 896 mm ² , (b) ISA 60x60x10 - 1100 mm ² , (c) ISA 70x70x8 - 1200 mm ² .	3	5

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