Guru Nanak Dev Engineering College, Ludhiana			
Department of Civil Engineering			
Program	B.Tech. (CE)	**Semester**	8th
Subject Code	PECE-136	**Subject Title**	Design of Steel Structures
Mid Semester Test (MST) No.	1	**Course Coordinator(s)**	Sukhwinder Singh
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	16 Feb' 2024	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Differentiate between compound sections and built-up sections.	CO1, L1	2
Q2	For a structural steel of grade Fe 410, what will be the working stress if the factor of safety is taken as 1.5?	CO1, L4	2
Q3	A double Angle tension member consists of 2 ISA 125 x 95 x 10 mm connected back to back with long leg as connected leg to a 10 mm thick gusset plate with 20 mm diameter high strength bolts of grade 8.8S. The bolts are connected with pitch distance of 75 mm and edge distance of 50 mm. Does the connection have enough capacity based on shear and bearing?	CO2, L4	4
Q4	Estimate the design strength of an Angle section ISA 150 x 115 x 12 mm connected to a 12 mm thick gusset plate with the help of 20 mm diameter bolts of grade 4.6S.	CO1, L4	4
Q5	Two plates 10 mm and 18 mm thick are to be jointed by double cover butt joint. Design the joint for a factored design load of 750 kN. Bolts to used are of grade 4.6S and diameter 20 mm.	CO2, L3	4
Q6	Design a bracket connection to transfer an end reaction of 225 kN due to factored loads. The end reaction from the girder acts at an eccentricity of 300 mm from the face of the column flange. Design bolted joint connecting Tee- flange with the column flange. Steel is of grade Fe 410 and bolts of grade 4.6.	CO2, L3	8

Course Outcomes (CO)

Students will be able to

1	Apply knowledge about various properties of steel sections to decide their appropriate use for a given design problem
2	Design bolted and welded connections for different type of given loads
3	Design tension and compression members including column bases for given loading
4	Design flexural members including build up sections for given loading
5	Assess design loads for a given roof truss and design its various components viz. rafter, web members, purlins etc.
6	Interpret steel structural drawings

RBT Classification	**Lower Order Thinking Levels (LOTS)**			**Higher Order Thinking Levels (HOTS)**		
RBT Level Number	L1	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating