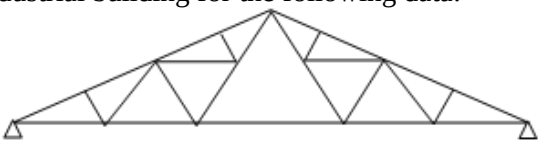
Guru Nanak Dev Engineering College, Ludhiana			
Department of Civil Engineering			
Program	B.Tech. (CE)	**Semester**	8th
Subject Code	PECE-136	**Subject Title**	Design of Steel Structures
Mid Semester Test (MST) No.	2	**Course Coordinator(s)**	Sukhwinder Singh
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	26 April' 2024	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Why unequal angles with long legs connected are more efficient for tension members?	CO1, L2	2
Q2	An I section beam is fabricated with plates of following dimensions: Flanges: 600 x 20 mm Web: 1600 x 12 mm Classify flanges, web and the section. Also determine the plastic moment capacity of the beam about its both the axis, if the grade of steel is Fe 410.	CO1, L4	2
Q3	Design a tension member 3.4 m between c/c of intersections using double angle section and carrying a factored pull of 200 kN. The member is subjected to reversal of stresses. Draw a neat section of the member.	CO3, L6	4
Q4	A steel floor beam in a building has a span of 6.0 m. It is supported over supports and carries a uniformly distributed load of 40 kN/m, inclusive of self weight. Design and draw the beam section when the compression flange is restrained throughout the span against lateral bending.	CO4, L6	4
Q5	Determine the node forces caused by the wind and gravity loads for the Fink type roof truss for an industrial building for the following data:  Overall length of the building = 42 m Span of Truss = 16 m c/c spacing of truss = 7 m Rise of Truss = L/5 Self-weigth of purlins = 300 N/m Eave height = 10 m Roofing covering, Asbestos sheets = 170 N/m^2 The building is located in outskirts of Ludhiana city.	CO5, L4	4
Q6	A column ISHB 350 @ 661.2 N/m carries an axial compressive factored load of 1900 kN. Design a suitable gusset base. The base rests on M-15 grade of concrete. Also draw neat section of the column and its base.	CO3, L6	8

Course Outcomes (CO)

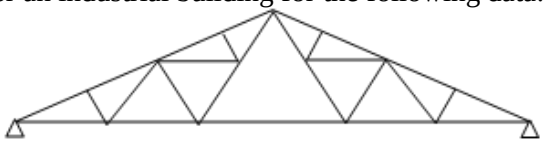
Students will be able to

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 colu mn 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

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.	2	**Course Coordinator(s)**	Sukhwinder Singh
Max. Marks	24	**Time Duration**	1 hour 30 minutes
Date of MST	26 April' 2024	**Roll Number**	

Note: Attempt all questions

Q. No.	Question	COs, RBT level	Marks
Q1	Why unequal angles with long legs connected are more efficient for tension members?	CO1, L2	2
Q2	An I section beam is fabricated with plates of following dimensions: Flanges: 600 x 20 mm Web: 1600 x 12 mm Classify flanges, web and the section. Also determine the plastic moment capacity of the beam about its both the axis, if the grade of steel is Fe 410.	CO1, L4	2
Q3	Design a tension member 3.4 m between c/c of intersections using double angle section and carrying a factored pull of 200 kN. The member is subjected to reversal of stresses. Draw a neat section of the member.	CO3, L6	4
Q4	A steel floor beam in a building has a span of 6.0 m. It is supported over supports and carries a uniformly distributed load of 40 kN/m, inclusive of self weight. Design and draw the beam section when the compression flange is restrained throughout the span against lateral bending.	CO4, L6	4
Q5	Determine the node forces caused by the wind and gravity loads for the Fink type roof truss for an industrial building for the following data:  Overall length of the building = 42 m Span of Truss = 16 m c/c spacing of truss = 7 m Rise of Truss = L/5 Self-weigth of purlins = 300 N/m Eave height = 10 m Roofing covering, Asbestos sheets = 170 N/m^2 The building is located in outskirts of Ludhiana city.	CO5, L4	4
Q6	A column ISHB 350 @ 661.2 N/m carries an axial compressive factored load of 1900 kN. Design a suitable gusset base. The base rests on M-15 grade of concrete. Also draw neat section of the column and its base.	CO3, L6	8