

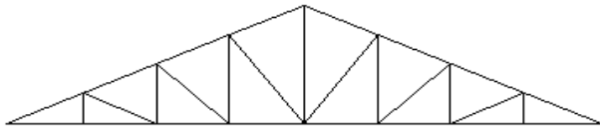


End Semester Examination – Nov/Dec – 2016

Code : 14CE3009
Sub. Name : Advanced design of metal structures

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Design a laterally restrained simply supported beam of span 6m carrying dead load of 12 kN/m and live load of 8kN/m from RCC slab. Use Fe 410 grade steel. Assume the relevant design data.	CO2	20
(OR)				
2.	a.	Design a bolted stiffened seat connection to join ISMB 400 @ 61.5kg/m with a column section ISHB 450@ 92.5kg/m. The beam transmits an end reaction of 500kN due to factored loads. Bending moment due to eccentricity – 50kNm, Use Fe 410 grade steel. Assume the relevant design data.	CO2	20
3.	a.	Check the moment carrying capacity of laterally unrestrained beam section ISMB 450 @ 92.5kg/m	CO1	20
(OR)				
4.	a.	Design a laterally restrained column in a building frame of 4m height, Column subjected to the following loads. Assume the relevant design data. Factored Axial load in compression = 750 kN Factored Moment in Z-Direction = 160 kN-m	CO2	20
5.	a.	 <p>Analyse the truss for the following data Span - 16m, Rise – 3m, Spacing of the truss – 4m, Assume the relevant data</p>	CO2	20
(OR)				
6.	a.	Design the Purlin to bear the weight of GI sheets and the wind intensity of 39m/s for the following data. span of purlin 5m, spacing of the purlin 1.5m, roof angle 20deg, Assume the channel section purlin	CO2	20
7.	a.	Write the conceptual design of welded plate girder as per Indian standard?	CO3	20
(OR)				
8.	a.	Determine the axial load capacity of builtup column for the following data. Width of flange - 250mm, Thickness of flange – 25mm, Depth of web – 450mm, Thickness of web – 16mm. Length of column – 5m, f_y – 250Mpa. Both the ends of columns are fixed.	CO2	20
<u>Compulsory:</u>				
9.	a.	A three story steel building shown in figure is located in seismic zone III on medium soil. The framing system of the building is moment-resisting frames without brick masonry infill panels. Analyze the building and find the base shear along with its distribution. Size of the building - 20X12 m Total height of the building – 9m	CO2	20

		Bay width in X-dir – 5m Bay width in Y-dir – 4m Bay height in Z-dir – 3m (height) Slab: 100mm thick RCC slab on all floors, Live load - 2.5kN/m ² Column sections: Ground floor: ISHB 300 Beam sections: Along 20m beams (B1) ISMB 250 All other beams (B2): ISMB 225		
--	--	--	--	--

ALL THE BEST