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Reg. No. : | | | | | | | | | | |

Question Paper Code: 52U02

M.E. DEGREE EXAMINATION, APRIL 2019

Second Semester

Structural Engineering

15PSE202 - STEEL STRUCTURES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 1= 5 Marks)

1. Column bases are designed primarily as CO1- R

   (a) Plates (b) Studs (c) Stub columns (d) Bearings

2. If the moment to be transferred through the connection is large, such connections are called CO2 -U

   (a) Split beam (b) Framed (c) Bracket (d) Seat

3. In case manually operated crane the maximum deflection is CO3- R

   (a) L/500 (b) L/300 (c) L/400 (d) L/750

4. Squash load ratio is denoted by CO4 -R

   (a) N/N_p (b) N_p/N (c) Z/Z_p (d) Z/Z_e

5. If elements without intermediate stiffeners, the $(w/t)_{lim}$ CO5- R

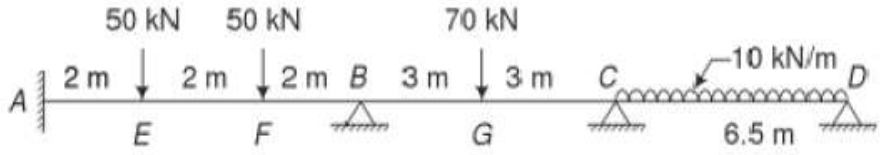
   (a) $1235/\sqrt{f}$ (b) $1435/\sqrt{f}$ (c) $1335/\sqrt{f}$ (d) $1245/\sqrt{f}$

PART – B (5 x 3= 15Marks)

6. What is meant by gable girder? CO1-R
7. Write the short notes on clip angle connection. CO2-U
8. What are the loads that will act on roof trusses? CO3-U
9. Define plastic hinge. CO4-U
10. What is meant by local buckling of plate elements? CO5-U

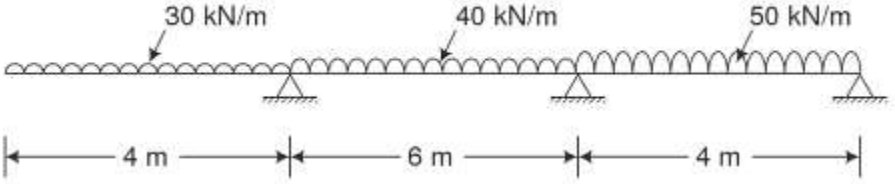
PART – C (5 x 16= 80Marks)

11.	(a)	Explain the procedure for design of moment resisting base plates.	CO1- U	(16)
		Or		
	(b)	Briefly explain the column bases and its types with neat sketch.	CO1- U	(16)
12.	(a)	Briefly explain the step by step procedure for stiffened seated connection and unstiffened seated connection.	CO2- App	(16)
		Or		
	(b)	An ISMB400 transfers an end reaction of 160 kN and end moment of 80kN-m to the flange of an ISHB 300@577 N/m. Design the moment resistant connection.	CO2- App	(16)
13.	(a)	Explain the Braced frames and Unbraced frames with neat sketch.	CO3-U	(16)
		Or		
	(b)	Explain the design procedure for gantry girder located at the industrial building.	CO3-U	(16)
14.	(a)	Design the continuous beam with the ultimate load as shown in figure. Provide uniform cross-section.	CO4 - Ana	(16)

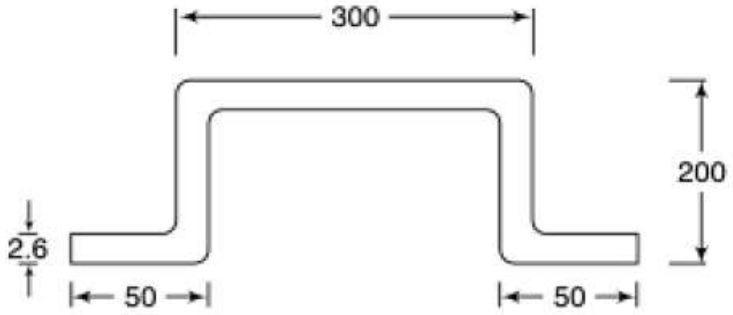


Or

	(b)	Design the continuous beam with the service load as shown in the fig. The load factor may be assumed as 2. Provide a uniform cross section throughout the beam.	CO4 - Ana	(16)



15. (a) Compute the allowable load on the light gauge steel beam as shown below CO4 - App (16)



Or

(b) Determine the allowable load per meter on the beam as shown below. Also, determine the deflection at the allowable load. The length of the column is 3.1m. The two sections are joined together by spot welding. The steel has a yield point of 235 N/mm^2. Take $E = 2 \times 10^5 N/mm^2$. CO5-App (16)