Question Paper Code: R18A32CE05

R18

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech II Semester Supplementary Examinations, December-2024

STRUCTURAL ENGINEERING - II

(CIVIL ENGINEERING)

Time: 3 Hours **Max. Marks: 75**

Section – A (Short Answer type questions) (25 Marks)

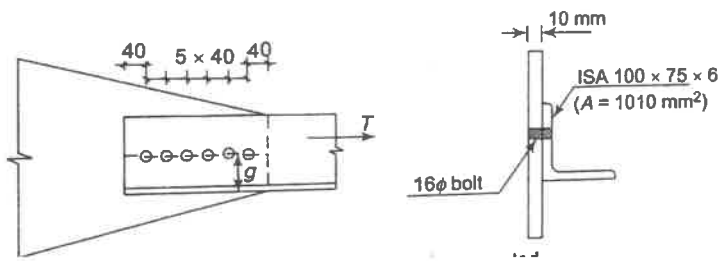
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	List the different types of loads on steel structures.	CO1	L1	2M
2.	Define the following terms: (a) Size of the weld (b) Throat thickness of fillet weld	CO1	L1	3M
3.	List the different steel sections which are used for compression members.	CO2	L1	2M
4.	What are the factors that are affecting the strength of a tension member?	CO2	L1	3M
5.	State any three Codal provisions to be followed in the design of lacing system as per IS: 800-2007.	CO3	L1	2M
6.	Illustrate the failure modes of axially loaded columns.	CO3	L1	3M
7.	What are the different types of beam connections?	CO4	L1	2M
8.	State the classification of cross sections in beams.	CO4	L1	3M
9.	Classify the different types of stiffeners.	CO5	L1	2M
10.	List the forces acting on web splices of plate girder.	CO5	L1	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 X 10M = 50M)**

11. A)	i) Discuss the advantages and disadvantages of bolted connections. ii) Explain the types of bolted connections long with neat sketches.	CO1	L3	5M 5M
	OR			
B)	Design a single bolted double cover butt joint to connect boiler plates of thickness 16mm for maximum efficiency. Use M16 bolts of grade 4.6 and Fe410 grade steel.	CO1	L3	10M
12. A)	i)List out the IS specifications for design of lug angle. ii)Determine the design axial load of the column section ISMB 350 @ 524N/m, given that the height of the column is 4m and that is pin ended. Also assume E250 grade steel.	CO2	L3	10M
	OR			
B)	A single unequal angle 100 mm x 75 mm x 6 mm is connected to a 10mm thick gusset plate at ends with six 16mm diameter bolts to transfer tension as shown in figure. Determine the design tensile strength of the angle. Assume 100mm leg is connected to plate take g = 60mm.	CO2	L3	10M



13. A)	Design a batten system for the column 8m long to carry a factored axial load of 900kN. The column is restrained in position but not in direction at both ends. Assume that two channels are kept back-to-back.	CO3	L3	10M
	OR			
B)	Design a laced column 10m long to carry a factored axial load of 1100kN. The column is restrained in position but not in direction at both ends. Provide single lacing system with two channels back-to-back along with bolted connections.	CO3	L3	10M
14. A)	Design a standard hot rolled section of steel with Fe 410 grade steel for the simply supported beam of 6m carries a UDL of 50kN/m. Assume the beam has continuous lateral support.	CO4	L3	10M
	OR			
B)	An ISMB 500 beam transmits of end reaction of 250kN to the web of a column ISHB 300 @577N/m. Design a stiffened seated connection using M20 bolts.	CO4	L3	10M
15. A)	i) Explain the significance of stiffeners in plate girder ii) Describe the procedure for design of plate girder.	CO5	L3	10M
	OR			
B)	Design a welded plate girder of span 24 m to carry a superimposed load of 35 kN/m. Use web and end stiffeners, but avoid intermediate stiffener. Use E250 steel.	CO5	L3	10M