Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Arch - SEMESTER–V EXAMINATION – WINTER 2025

Subject Code:2X55004 Date:17-11-2025

Subject Name: Structure-IV

Time:10:30 AM TO 12:30 PM Total Marks:50

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	State the advantages and disadvantages of using structural steel.	**05**
	(b)	What is Limit state? Explain various serviceability limit states considered by IS: 800 – 2007	**05**
Q.2	**(a)**	Give the Advantages and Disadvantages of bolt connections	**05**
	(b)	Explain types of welds with sketches.	**05**
		OR	
	(b)	Explain the Various Failure modes of Beams	**05**
Q.3	**(a)**	Two plates 100 X 12 mm and 100 X 20 mm are connected by lap joint to resist factored tensile load of 70 KN. Design a lap joint using M 16 bolts of grade 4.6 and grade 410 plates.	**10**
		OR	
Q.3	**(a)**	Design suitable welded connection to connect a tie plate 75 x 8 mm to a 12 mm thick gusset plate. The plate is subjected to load of 100 kN, Assume site welding, Fe 410.	**10**
Q.4	**(a)**	Determine the tensile strength of ISA 100*100*8 mm, connected to a 12 mm thick gusset plate with 5 numbers of M16 bolts of grade 4.6 take f_y=250 Mpa?	**10**
		OR	
Q.4	**(a)**	Design a single angle tensile member to carry a tensile load of 210 kN assuming single row of M 20 bolts and fy = 250 N/ mm2	**10**
Q.5	**(a)**	Design a slab base foundation for a column ISHB 400 to carry a factored axial load of 1500kN. Assume Fe410 grade steel and M25 concrete. Take safe bearing capacity of soil as 200kN/m2.	**10**
		OR	
Q.5	**(a)**	Differentiate the single and double lacing system with neat sketch	**10**

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