

GUJARAT TECHNOLOGICAL UNIVERSITY

B.ARCH- SEMESTER-V EXAMINATION – WINTER 2024

Subject Code:2X55004

Date:25-11-2024

Subject Name: Structure-IV

Time:10:30 AM TO 12:30 PM

Total Marks:50

Instructions:

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.
5. Use of IS 800 (2007) & Steel Table is Permitted.

		Marks
Q.1	(a) Which are the different structural steel section used in design, explain each with neat sketch?	10
Q.2	(a) Advantages and Disadvantages of bolt connections?	10
Q.3	(a) What is welding? Explain different type of weld connection with neat sketch?	10
Q.4	(a) Draw the beam to column connection with neat sketch?	05
	(b) Explain the advantages and disadvantages of steel structure?	05
Q.5	(a) Find out the Number of Bolt for connecting two plates 120 mm X 6 mm to transmit a factored load of 200 kN. Use 16 mm diameter black bolts of grade 4.6 and steel plate having $f_u = 410 \text{ N/mm}^2$. Consider Ultimate strength of bolt material $f_{ub} = 400 \text{ N/mm}^2$.	10
Q.6	(a) Determine the Tensile strength of an angle ISA 100 x 75 x 6 mm connected to the gusset plate by 4 mm welds at toe (140 mm long) and back (310 mm long) take $f_y = 250 \text{ MPa}$?	10
Q.7	(a) Design a steel column to carry factored axial load of 1500kN. The length of column is 3.6m and consider both the ends as hinged?	10
