Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.ARCH - SEMESTER– V EXAMINATION – SUMMER 2017

Subject Code: 1055004 Date:22/11/ 2017

Subject Name: Structure – V

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. **Use of IS –800 and steel table is permitted**

Q.1	**(a)**	Enlist various types of steel structures with sketches	**04**
	(b)	Write short note on: Beam to Beam Web angle connection	**03**
	(c)	Explain various types of welds with sketches	**03**
Q.2	**(a)**	Give advantages and disadvantages of structural steel.	**05**
	(b)	Write advantages of bolted connections over riveted and welded connections.	**05**
		OR	
	(b)	A tie plate of 100 X 8 mm is connected to the gusset plate to transmit a factored load of 120 kN. Determine the size and length of fillet weld. Assume field welds and Fe 410 steel.	**05**
Q.3		Two plates 120 X 10 mm and 120 X 16 mm are connected by lap joint to resist factored tensile load of 120 KN. Design a lap joint using M 16 bolts of grade 4.6 and grade 410 plates.	**10**
		OR	
Q.3		Two plates of 8 mm thickness are connected by single bolted double cover plated butt joint using 20 mm bolts at 50 mm pitch. Calculate the efficiency of the joint	**10**
Q.4		A tension member in a bracing system consists of 2 angles placed back to back on each side of the gusset plate and subjected to factored tensile load of 350 kN. Design the tension member using M 20 bolts and f_y = 250 N/ mm^2.	**10**
		OR	
Q.4		Design a single angle tensile member to carry a tensile load of 200 kN assuming single row of M 20 bolts and f_y = 250 N/ mm^2.	**10**
Q.5		Determine the design axial compressive load on column section ISMB 400 @ 61.6 Kg/m having length of 4.5 m between intersections and pinned at ends. Take f_y = 250 MPa.	**10**
		OR	
Q.5		Design a steel column to carry factored axial load of 1300 kN. The length of column is 3.2 m and hinged at both ends. Assume f_y = 250 MPa.	**10**

****