Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
B. ARCH - SEMESTER–I- EXAMINATION– WINTER- 2017

Subject Code: 1015004   **Date:29-12-2017**

Subject Name: Structure-I

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

Instructions:
1. **Figures to the right indicate full marks.**
2. **Make suitable assumptions wherever necessary.**
3. **Calculator is allowed in the examination.**

Q.1	(a)	Give the importance of structure design in Architecture.	05
	(b)	List out various structural members in building and explain following with neat sketch: 1) Foundation 2) Beam 3) Column 4) slab	05
Q.2	(a)	State and explain law of Parallelogram of forces.	06
		OR	
	(a)	Two tensile forces of 20 KN & 30 KN are acting at a point with an angle of 60° between them. Find the magnitude & direction of resultant force using law of triangle.	06
	(b)	Determine the Moment of Inertia about both the axis of symmetrical 'I' section, having size as given below: overall depth of the section = 300 mm, Width of the flange = 100 mm, Thickness of the flange and web = 10 mm.	08
		OR	
	(b)	A channel section, 300 mm deep has 150 mm wide flanges at top and bottom. If thickness of web and flanges are 10 mm uniform, determine its Moment of Inertia about the horizontal centroidal x-x axis.	08
Q.3	(a)	Explain Types of beam and types of supports with neat sketches.	08
	(b)	Define following terms with suitable examples: a) centroid b) couple c) radius of gyration d) moment of inertia.	08
		OR	
	(b)	Calculate centroid of angle section ISA90 x60x6 mm keeping longer leg vertical.	08
Q.4	(a)	A simply supported beam of span 8 m is subjected to two point loads of 50 KN & 100 KN acting at 2 m from each support. It is also subjected to uniformly distributed load of 20 KN/m over the full length. Find the reactions at the support.	10
		OR	
	(a)	A simply supported beam 10 m long is carrying a point load of 8 KN at 2 m from the left support & uniformly distributed load of 4 KN/m over the length of 6m from the right side support. Determine support reaction of the beam.	10

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