Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.ARCH. - SEMESTER–III EXAMINATION – WINTER 2015

Subject Code: 1035003 **Date: 03/12/2015**

Subject Name: Structure III

Time: 10:30am to 12:30pm **Total Marks: 50**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain buckling of a column and write down the "Euler Crippling Load" formula for different end conditions of the long column.	**06**
	(b)	A square column of 500 mm side carries a compressive load of 500 kN at an eccentricity of 50 mm on x-x axis. Find maximum and minimum stresses at the base of the column.	**06**
	(c)	Calculate radius of gyration of a circular section of 50 mm diameter.	**06**
Q.2	**(a)**	Write advantages and disadvantages of indeterminate structures	**06**
	(b)	A weight of 2 kN is dropped on a collar at the lower end of a vertical bar 3 m long and 28 mm in diameter. Calculate the maximum height of drop if the maximum instantaneous stress is not to exceed 120 N/ mm^2. What is the corresponding instantaneous elongation? Take E = 2 x 10^5 N/ mm^2.	**10**
		OR	
	(b)	A steel rod 32 mm in diameter is 3 m long. Find the work done when an axial pull of 80 kN is suddenly applied to it. Calculate the maximum instantaneous stress and elongation produced. Take E = 2 x 10^5	**10**
Q.3	**(a)**	Determine the deflection at the free end B of a 6 m long cantilever beam AB, if end B carries a point load of 12 kN. I_{xx} = 6 X10^7 mm^4 and E = 2 X 10^5 N/ mm^2.	**06**
	(b)	A fixed beam of 6 m span carries a uniformly distributed load of 20 kN/m over its entire span. Find out positive and negative bending moments and shear force and draw bending moment and shear force diagram for the beam. Also find the point of contra flexure.	**10**
		OR	
	(b)	A two span continuous beam ABC is simply supported on supports at A, B, and C such that span AB = 5 m and span BC = 4 m. The span AB carries a central point load of 120 kN and span BC carries an U.D.L. of 25 kN/ m. Find out B.M. and S.F. and draw bending moment and shear force diagram for the beam.	**10**

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