*Seat No.: _____* *Enrolment No._____*

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BARCH - SEMESTER– I • EXAMINATION – WINTER 2016**

**Subject Code: 1015004** **Date: 31/12/2016**
**Subject Name: Structure I**
**Time: 10:30AM – 12:30PM** **Total Marks: 50**

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

| | | | |
|---|---|---|---|
| **Q.1** | **(a)** | Name and explain the function of various supporting structural members of framed structure. | **05** |
| | **(b)** | State and explain Lami's theorem | **05** |
| **Q.2** | **(a)** | State and explain law of Parallelogram of forces | **05** |
| | **(b)** | Difference between Moment and Couple | **05** |
| | | **OR** | |
| | **(b)** | Difference between Centroid and Centre of Gravity. | **05** |
| **Q.3** | | Explain Stress Strain Diagram of Steel with figure. | **10** |
| | | **OR** | |
| **Q.3** | | Explain Types of beam, Types of supports and type of loading on beam | **10** |
| **Q.4** | | Calculate moment of inertia about xx and yy centroidal axis of a T-section having flange of 200 mm X 20 mm and web of 200 mm X 20 mm. | **10** |
| | | **OR** | |
| **Q.4** | | Find moment of inertia about xx and yy centroidal axis of an angle 300 mm X 250 mm X 100mm by keeping longer leg vertical. | **10** |
| **Q.5** | | A simply supported beam 7 m long is carrying three point load 100 N, 600 N and 175 N acting at 2m, 4m, and 5.5m from left support. Determine support reaction and draw S.F. and B.M. diagram. | **10** |
| | | **OR** | |
| **Q.5** | | A simply supported beam of length 8 m rests on supports 6 m apart, the right hand end is overhanging by 2 m. the beam carries a uniformly distributed load of 1200 N/m over the entire length. Determine support reactions, point of zero shear , point of contra flexure and draw S.F. and B.M. diagram. | **10** |

**********