

GUJARAT TECHNOLOGICAL UNIVERSITY
BE Arch. – SEMESTER - I • EXAMINATION – WINTER 2014

Subject Code: 1015004**Date: 26-12-2014****Subject Name: Structure-I****Time: 10:30Am 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.

- 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: **05**
1) Foundation 2) Beam 3) Column 4) Slab
- Q.2 (a)** What are the different types of structures and differentiate between Load bearing structure and Framed structure. **05**
- (b)** Define following: (with sketches) **05**
1) Dead Loads 2) Law of Parallelogram 3) Composition of Forces
OR
- (b)** Define following: (with sketches) **05**
1) Wind Loads 2) Lami's Theorem 3) Resolution of Forces
- Q.3 (a)** Define the following terms with suitable example: **04**
1) Centre of Gravity 2) Centroid
3) Moment of Inertia 4) Radius of Gyration
- (b)** Determine the Moment of Inertia about both the axis of a channel section, having size as given below: **06**
Depth of the section = 500 mm, Width of the flange = 250 mm, Thickness of the flange and web = 20 mm
OR
- (b)** Determine the Moment of Inertia about both the axis of an 'I' section, having size as given below: **06**
Depth of the section = 500 mm, Width of the flange = 250 mm, Thickness of the flange and web = 20 mm
- Q.4 (a)** Define following with suitable examples and sketches: **04**
1) Equilibrium condition 2) Resultant
3) Moment 4) Couple
- (b)** Calculate the resultant force using Law of Parallelogram for given condition: **P** = 10kg force is acting at an angle 45° and **Q** = 20kg force is acting at an angle of 120° with respect to positive X-axis. **06**
OR
- (b)** By Applying the Lami's Theorem, Calculate forces **P** and **Q** when weight of 50 kg is suspended acting vertically downward. **P** force is acting at an angle of 30° and **Q** force is acting at an angle of 150° with respect to positive X-axis. **06**
- Q.5 (a)** List out the different supporting system. **02**

- (b)** Determine reaction at support A and B. A 5 meter simply supported beam carrying one point load of 20 kN acting at a distance of 2 meter from the left end A and UDL of 10 kN/m intensity over the whole beam. **08**
