

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-I &II (SPFU) EXAMINATION – SUMMER-2019

Subject Code:ENG004**Date: 03/06/2019****Subject Name: Mechanics of Solids****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

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

- Q.1** (a) Explain following terms (i) Rigid body, (ii) Deformable body (iii) Elastic body **07**
- (b) State 'Hooks Law'. Derive formula to determine change homogeneous axially loaded member of length (L), c/s area (A) and modulus of elasticity (E), subjected to axial tensile force (P) **07**
- Q.2** (a) Define Moment & Couple giving two suitable examples **07**
- (b) Find the unknown weight 'W' in a given force system shown in **Fig. 1** **07**
- Q.3** (a) Define (i) Strain (ii) Poisson's ratio (iii) Bulk Modulus **07**
- (b) Determine the Centroid of the lamina shown in **Fig. 2.** **07**
- Q.4** (a) Define (i) Stress (ii) Young's modulus (iii) Modulus of rigidity **07**
- (b) Derive equation to find volumetric strain for cylindrical specimen. **07**
- Q.5** (a) Write the assumption made in theory of pure torsion **07**
- (b) Define : Angle of Repose **07**
- Q.6** (a) Define: Coefficient of Static Friction and state the Laws of Friction **07**
- (b) Derive with usual notation the relation between shear force and Bending moment. **07**
- Q.7** (a) State and prove parallel axes theorem. Find moment of inertia of rectangular section using first principle. **07**
- (b) Determine the support reactions for the beam shown in **Fig. 3** **07**

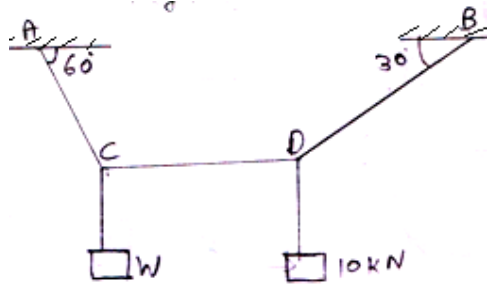


Fig: 01

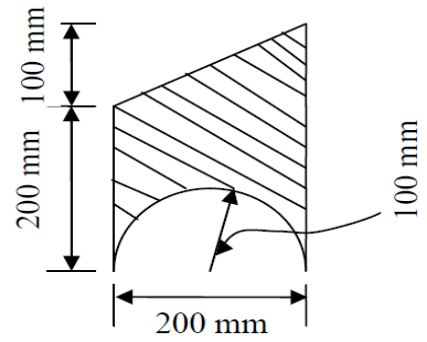


Fig: 02

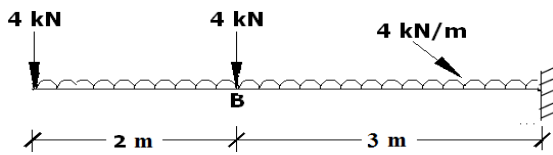


Fig: 03
