

Lukhdhirji Engineering College, Morbi

Department of Mechanical Engineering

Assignment 1- Basics of stress and strain (CO1)

Subject: Fundamental of Machine Design (3141907) Semester: 4th

Year : 2022-23

1. Explain the Hooke's law with a neat sketch for ductile materials.
2. Define and explain the following:
 - a. Elasticity and Elastic limit
 - b. Modulus of elasticity
 - c. Modulus of rigidity
 - d. Lateral Strains & longitudinal strains
 - e. Thermal stress & strain
 - f. Poisson's ratio
 - g. Elasticity & Plasticity
 - h. Centre of Gravity
 - i. Volumetric Strain
 - j. Factor of safety
3. List the different types of stresses considered in machine design. And explain shear stress and thermal stress.
4. Define strain and explain different types of strains.
5. Give the relation between modulus of elasticity, modulus of rigidity & Poisson's ratio.
6. Derive the relation between bulk modulus and modulus of rigidity with usual notations.
7. Explain the principle of complimentary shear stresses.
8. Explain stress – strain relationship with diagram.