

ASSIGNMENT 4

1. What is the factor of safety? What is the importance of FOS?
2. Explain principle plane and principle stresses.
3. Explain different types of failure theory.
4. What is eccentric loading?
5. Explain cotter joint and knuckle joints in brief.
6. What is lever? Explain different types of lever.
7. A bell crank lever is to be designed to lift the load of 10 kN acting at the end of short arm of the lever. The length of short arm and long arm is 500 mm and 750 mm respectively. Allowable shear stress and tensile stress for lever and pin materials is 60 N/mm² and 80 N/mm² respectively. Allowable bearing pressure for pin material is 8 N/mm². For pin $L/D=1.25$. And for the rectangular cross section of the lever, ratio of height to width is 3. Determine: (1) dimension of the fulcrum pin (2) Dimension of lever
8. Design a spigot and socket type cotter joint to connect two similar rods subjected to 75 kN axial loads in both the direction. For the rod as well as cotter material, shear stress is equal to 80 % of tensile stress. Tensile stress and crushing stress are 50 N/mm² and 100 N/mm² respectively. Determine (1) Diameter of rod (2) Diameter of spigot (3) Diameter of socket sleeve