

Diploma in Engineering
Diploma in Mechanical Engineering
ETE - Jun 2023

Time : 3 Hours

Marks : 100

Sem IV - N1DL403B - Mechanics of Solid

*Your answer should be specific to the question asked
Draw neat labeled diagrams wherever necessary*

1. Illustrate the methods for finding out the slope and deflection at a section. K2 CO1 (5)
2. Classify different types of stresses. K2 CO1 (5)
3. Explain circumferential and longitudinal stresses. K2 CO1 (5)
4. Explain the relation between elastic moduli (E, C, K). K2 CO1 (10)
5. Draw stress strain curve for brittle material (Cast iron) and explain its salient points. K3 CO2 (10)
- 6) Calculate the bursting pressure for cold drawn seamless steel tubing of 50 mm inside diameter wall thickness. The ultimate strength of steel is 350 MN/m².. K4 CO3 (10)

OR

- Develop the formula of circumferential stress and strain for thin sphere. K4 CO3 (10)
7. A simply supported beam of span 24 m acted upon by point load at mid span with magnitude 120N, draw the shear force and bending moment diagram for the given beam. K3 CO2 (10)
 8. The normal stresses in two mutually perpendicular directions are 110N/mm² and 47N/mm² both tensile. The complementary shear stresses in these directions are of intensity 63N/mm². Find the principal stresses and its planes. K4 CO3 (15)
 - 9) Develop the relation of volumetric strain for thin sphere. K5 CO4 (15)

OR

- A simply supported beam of span 10m carries a concentrated load of 10 KN at 2m from the left support and a uniformly distributed load of 4KN/m over the entire length. Sketch the shear force and bending moment diagram for the beam. K5 CO4 (15)
10. Develop the relation of Torsion for a rotating shaft. K5 CO4 (15)