

Instructions to the Students:

1. Assume suitable data wherever necessary and State it clearly.
2. Figures to Right Indicate full Marks.
3. L indicates Low Level, M indicates Medium Level & H indicates High Level.

QUESTIONS

Marks

Q. 1 Attempt following Questions (6 Marks)

6

1. Define Strain
2. Define Poissons ratio
3. Define Longitudinal Stress
4. Define Pure Torsion
5. Define Strain Rosette
6. Define Principal Stress

Q.2 Solve Any TWO of the following.

Time: 3 pm to 4 pm

Duration: 1 Hour

6

- (A) Explain the Stress Strain Curve for Mild Steel Bar.
- (B) The pipe of 400 mm internal diameter and 100 mm thickness contains a fluid at pressure of 8 N/mm^2 . Find the Maximum and Minimum Hoops Stress across the Section. Also Sketch the Radial and Pressure Distribution and Hoop stress distribution across the Section.
- (C) In a tensile test, a piece 25 mm in diameter, 200 mm gauge length is stretched 0.0975 mm under a pull of 50 kN. In a Torsion test, the same rod is twisted 0.025 radians over a length of 200 mm, when the torque of 400 Nm was applied. Evaluate the Poissons ratio and three Elastic Moduli for the material.

Marks

6

Q.3 Solve ANY ONE of the following.

8

- (A) Derive the Torsion Formula.
- (B) A steel Plate 15 mm x 30 mm is testd by pulling it with a tensile force of 45 kN, the line of action of the load being 35 mm from one edge. An extensometer set along the line of the action of the load shows the extension of 0.055 mm over a gauge length of 125 mm. Determine the extreme stresses for the Plate section and the Young's Modulus of Steel.

*** End ***

- (C) In a tensile test, a piece 25 mm in diameter, 200 mm gauge length is stretched 0.0975 mm under a pull of 50 kN. In a Torsion test, the same rod is twisted 0.025 radians over a length of 200 mm, when the torque of 400 Nm was applied. Evaluate the Poissons ratio and three Elastic Moduli for the material.