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3rd Sem / Automobile, Mechanical Engg.

Subject : Strength of Materials

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Young's modulus is defined as the ratio of (CO1)

a) Volumetric stress and volumetric strain

b) Lateral stress and lateral strain

c) Longitudinal stress and longitudinal strain

d) Shear stress to shear strain

Q.2 Tensile strength of a material is obtained by dividing the maximum load during the test by the (CO2)

a) Area at the time of fracture

b) Original cross-sectional area

c) Average of (A) and (B)

d) Minimum area after fracture

Q.3 The energy absorbed in a body, when it is strained within the elastic limits, is known as (CO3)

a) Strain energy b) Resilience

c) Proof resilience d) Modulus of resilience

Q.4 A steel bar of 5 mm is heated from 25°C to 45°C and it is free to expand. The bar will induce (CO2)

a) No stress b) Shear stress

c) Tensile stress d) Compressive stress

Q.5 The assumption made in Euler's column theory is that (CO7)

a) The failure of column occurs due to buckling alone

b) The length of column is very large as compared to its cross-sectional dimensions

c) The column material obeys Hooke's law

d) All of the above

Q.6 A hollow shaft of same cross-section area as compared to a solid shaft transmit (CO6)

a) Same torque b) Less torque

c) More torque d) Unpredictable

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 The neutral axis of the cross-section a beam is that axis at which the bending stress is_____ (CO6)

Q.8 Within elastic limit, stress is_____ (CO2)

Q.9 The point of contra flexure is a point where_____ (CO5)

Q.10 Impact strength of a material is an index of its _____ (CO3)

Q.11 The ratio of lateral strain to the linear strain within elastic limit is known as _____ (CO2)

Q.12 The property of a material by virtue of which a body returns to its original, shape after removal of the load is called_____ (CO1)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 What are the assumptions made in bending theory. (CO5)

Q.14 What are Volumetric Strain and Shear Strain? (CO1)

Q.15 What is the Strain energy, Resilience and Proof Resilience? (CO3)

Q.16 Define bending Moment and shear Force. (CO5)

Q.17 Define Helical Spring and Name the two important type of springs. (CO8)

Q.18 What is Elastic limit and limit of proportionality ? (CO2)

Q.19 Explain Theorem of Perpendicular axis. (CO4)

Q.20 What is Slenderness Ratio and Effective Length? (CO7)

Q.21 What is the difference between Torque and Torsion? (CO6)

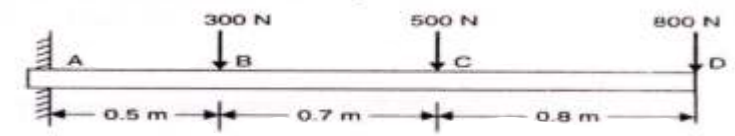
Q.22 What are the Factors effecting strength of column? (CO7)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 State the Drive the torsion equation for a circular shaft. (CO6)

Q.24 Draw SFD and BMD of the loaded beam as shown in figure. (CO5)



Q.25 Write short note on (CO2)

a) Stress Strain Curve for Ductile Material

b) Radius of Gyration and Section Modulus