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3rd Sem / Branch : 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 Bulk modulus is defined as the ratio of . (CO1)

a) Normal stress and volumetric strain

b) Lateral stress and lateral strain

c) Longitudinal stress and longitudinal strain

d) Shear stress to shear strain

Q.2 A brittle Material has . (CO1)

a) No elastic Zone b) No plastic Zone

c) Yield point d) Breaking point

Q.3 For a simply supported beam of span L, with point load w at the maximum B.M will be (CO5)

a) WL b) WL/2

c) WL/4 d) WL/8

Q.4 The moment of inertia of a body is always minimum with respect to its. (CO4)

a) Base b) Centroidal axis

c) Vertical axis d) horizontal axis

Q.5 Neutral axis of a beam is the axis. (CO6)

a) Of zero stress b) Of maximum stress

c) Of negative stress d) Of positive stress

Q.6 When two shafts of same length, one of which is hollow , transmit equal torques and have equal maximum stress, then they should have equal. (CO6)

a) Polar moment of inertia

b) Polar modulus

c) diameter

d) Angel of twist

SECTION-B

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

Q.7 Longitudinal stress in a thin cylinder is _____ the hoop stress. (CO2)

Q.8 Define stress and strain. (CO2)

Q.9 The stress induces in a body , when suddenly loaded, is _____the stress induced when the the same load is applied gradually. (CO3)

Q.10 If the slenderness ratio for a column is 100, then it is said to be a _____Column. (CO7)

Q.11 The bending stress in a beam is _____section modulus. (CO6)

Q.12 Shear modulus is the ratio of _____and_____ (CO2)

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 torsion? (CO6)

Q.14 What is poission's ratio and factor of safety? (CO2)

Q.15 Define section modulus and radius of gyration? (CO4)

Q.16 Draw a shear force diagram of a uniformly distributed load W N/ mm 2 over the whole span on a simply supported beam of length L. (CO5)

Q.17 What is stiffness and stain energy in springs. (CO8)

Q.18 Name different type of loading in beams? (CO2)

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

Q.20 What is buckling load slenderness ratio? (CO7)

Q.21 What is torque and power transmitted by torque also write torsion equation. (CO6)

Q.22 Explain Stress-Strain diagram with neat sketch. (CO2)

SECTION-D

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

Q.23 State and drive the bending equation and also write its assumptions. (CO5)

Q.24 A steel rod 500mm long and 20mm X 10mm in cross-section is subjected to axial pull of 300KN. if modulus of elasticity is 200000 Nmm^2 . Calculate the elongation the rod. Also calculate strain induced in the bar. (CO2)

Q.25 Find the moment of inertia of a I-section as shown in the figure about X-X axis and Y-Y Passing through the C.G of the section (CO4)