

elongation if the length of rod is 4 meter. Take value of E as 210GN/m^2 .

- Q.4 A simply supported beam 15m effective length carries load of 400N, 600N and 500N at a distances of 3m, 7m and 11m respectively from left hand support. Draw the shear force diagram and Bending Moment diagram.
- Q.5 A solid shaft of to transmit a torque of 50kn-m. If the shear stress is not exceed 56n/mm^2 , find the minimum diameter of the shaft.
- Q.6 a) How will you calculate the position of principal planes.
b) Explain the stress and strain development in homogeneous bars due to temperature variations.
- Q.7 Find the MOI of a L-section 80 cm X 80 cm X 10 cm about
a) horizontal axis passing through C.G.
b) vertical axis passing through the CG

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3rd Sem./ Packaging Technology
Subject : Strength of Materials

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1 a) Define strain and its unit.
b) Define shear stress with example.
c) What is elastic limit?
d) Define young's modulus of elasticity and its units.
e) What is factor of safety and its units?
f) What is lateral strain?
g) What is value of instantaneous stress for sudden loading?
h) What is simply supported beam?
i) Define bending moment.
j) What are units of moment of inertia?

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- k) Give MOI equation for square.
- l) What is buckling load?
- m) What is torque?
- n) What is Lamb's formula?
- o) What is UDL and its symbol?
- p) Equation for stress in falling load from height 'h'.
- q) What is stiffness of a spring?
- r) What is value of section of modulus for a circular section?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Types of stresses.
 - ii) Difference between elastic limit and limit of proportionality.
 - iii) Type of beams.
 - iv) Explain theorem of perpendicular axis.
 - v) Define end conditions of columns.
 - vi) What are the equivalent lengths of columns according to various end conditions?

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- vii) Draw shear stress diagram for solid and hollow shaft.
- viii) Differentiate between hogging and sagging bending moments.
- ix) Write the assumptions in torsion equation.
- x) Difference of closed coil and open coil springs.
- xi) Write short note on UTM.
- xii) Draw bending moment diagram for cantilever beam having point load at free end.
- xiii) Write short note on principal stresses.
- xiv) What is the concept of strain hardening and its effect?
- xv) What are the stresses in thin cylinders due to internal pressure?

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 A mild steel rod is 22mm in diameter and subjected to an axial pull of 40KN. Determine the tensile stress induced in the rod and the

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