

MECHANICS OF MATERIALS

Written by Administrator
Sunday, 01 November 2009 10:08 -

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Sub Code

: 06 ME 34

IA Marks

: 25

Hrs/week

: 04

Exam Hours

: 03

Total Lecture Hrs

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: 52

Exam Marks

: 100

PART – A

UNIT 1:□□□□□□□□□□□□□□□□

Simple stress and strain: Introduction, stress, strain, mechanical properties of materials, Linear elasticity, Hooke's Law and Poisson's ratio, Stress-Strain relation – behaviour in Tension for Mild steel and non ferrous metals. Extension / Shortening of a bar, bars with cross sections varying in steps, bars with continuously varying cross sections (circular and rectangular), Elongation due to self weight, Principle of super position.

7 Hours

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shearing stresses in beams, shear stress across rectangular, circular, symmetrical I and T sections (composite / fletched beams not included).

7 Hours

UNIT 7:

Deflection of beams: Introduction, differential equation for deflection, equations for deflections, slope and moments, double integration method for cantilever and simply supported beams for point load, UDL, UVL and Couple, Macaulay's method.

6 Hours

UNIT 8:

Torsion of circular shafts and Elastic stability of columns : Introduction, pure torsion, assumptions, derivation of torsional equations, polar modulus, torsional rigidity / stiffness of shafts, power transmitted by solid and hollow circular shafts. Introduction to columns, Euler's theory for axially loaded elastic long columns, derivation of Euler's load for various end conditions, limitations of Euler's theory, Rankine's formula.

6 Hours

1. **“Strength of Materials”**, S.S.Bhavikatti, Vikas publications House – Pvt. Ltd., 2nd Ed., 2006.
2. **“Mechanics of materials”** K.V. Rao, G.C. Raju, First Edition,2007
3. **“Engineering Mechanics of Solids”** Egor.P. Popov, Pearson Edu. India, 2nd, Edition, 1998.
4. **“Mechanics of Solids”**, Mubeen, Pearson Edu. India, 2002
5. **“Strength of Materials”**, W.A. Nash, Sehaum’s Outline Series, Fourth Edition-2007.

Scheme of examination:

One Question to be set from each chapter. Students have to answer any FIVE full questions out of EIGHT questions, choosing at least 2 questions from part A and 2 questions from part B.

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