Sub Code

:

06 CV 43

IA Marks

:

25

Hrs/ Week

:

04

Exam Hours

:

03

Total Hrs.

:

52

Exam Marks

:

100

PART – A

UNIT 1:

STRUCTURAL SYSTEMS

1.1 Forms of structures, 1.2 Conditions of equilibrium, 1.3 Degree of freedom, 1.4 Linear and Non linear structures, 1.5 One, two, three dimensional structural systems, 1.6 Determinate and indeterminate structures [Static and Kinematics].

PLANE TRUSSES

1.7 Introduction, 1.8 Assumptions, 1.9 Analysis by method of joints, 1.10 Analysis by method of sections

10 Hours

UNIT 2:

DEFLECTION OF BEAMS

2.1 Moment area method, 2.2 Conjugate beam method

6 Hours

UNIT 3:

STRAIN ENERGY

3.1 Strain energy and complimentary strain energy, 3.2 Strain energy due to axial load, bending and shear, 3.3 Theorem of minimum potential energy, 3.4 Law of conservation of energy, 3.5 Principle of virtual work, 3.6 The first and second theorem of Castigliano, problems on beams, frames and trusses, 3.7 Betti's law, 3.8 Clarke - Maxwell's theorem of reciprocal deflection.

5 Hours

UNIT 4:

STRAIN ENERGY Continued....

4.1 Deflection of beams and trusses using strain energy and unit load methods

7 Hours

PART – B

UNIT 5:

ARCHES AND CABLES

5.1 Three hinged circular and parabolic arches with supports at same levels and different levels, 5.2 Determination of thrust, shear and bending moment, 5.3 Analysis of cables under point loads and UDL, length of cables (Supports at same levels and at different levels).

6 Hours

UNIT 6:

ANALYSIS OF BEAMS

6.1 Consistent deformation method – Propped cantilever and fixed beams 6.2 Strain Energy

method – Propped cantilever and fixed beams.

6 Hours

UNIT 7:

7.1 Clapeyron's theorem of three moments – continuous beams and fixed beams

5 Hours

UNIT 8:

ANALYSIS OF ARCHES

8.1 Two hinged parabolic arch, 8.2 Two hinged Circular Arch

7 Hours

TEXT BOOKS:

1. **Theory of Structures**, Pandit and Guptha, Vol. – I, Tata McGraw Hill, New Delhi.

2. **Basic Structural Analysis** Reddy C. S., Tata McGraw Hill, New Delhi.

3. **Strength of Materials and theory of structures** Vol I & II, B.C. Pumia , R.K., Jain Laxmi Publication New Delhi

REFERENCE BOOKS:

1. **Elementary Structural Analysis**, Norris and Wilbur, International Student Edition. McGraw Hill Book Co: New York

2. **Structural Analysis**, Aslam Kassimali, Thomson Learning.

3. **Analysis of Structures**, Thandava Murthy, Oxford University Press, Edition 2005.