CE8602 STRUCTURAL ANALYSIS II

DETAILED SYLLABUS

UNITI INFLUENCE LINES FOR DETERMINATE BEAMS

Influence lines for reactions in statically determinate beams – Influence lines for shear force and bending moment – Calculation of critical stress resultants due to concentrated and distributed moving loads – absolute maximum bending moment - influence lines for member forces in pin jointed plane frames.

UNITII INFLUENCE LINES FOR INDETERMINATE BEAMS

Muller Breslau's principle– Influence line for Shearing force, Bending Moment and support reaction components of propped cantilever, continuous beams (Redundancy restricted to one), and fixed beams.

UNIT III ARCHES

Arches - Types of arches – Analysis of three hinged, two hinged and fixed arches - Parabolic and circular arches – Settlement and temperature effects.

UNIT IV CABLES AND SUSPENSION BRIDGES

Equilibrium of cable – length of cable - anchorage of suspension cables – stiffening girders - cables with three hinged stiffening girders – Influence lines for three hinged stiffening girders.

UNITV PLASTIC ANALYSIS

Plastic theory - Statically indeterminate structures – Plastic moment of resistance – Plastic modulus – Shape factor – Load factor – Plastic hinge and mechanism – collapse load – Static and kinematic methods – Upper and lower bound theorems - Plastic analysis of indeterminate beams and frames.

TEXTBOOKS:

1. Bhavikatti, S.S, Structural Analysis, Vol.1 & 2, Vikas Publishing House Pvt. Ltd., NewDelhi-4, 2014.

2. Punmia. B.C, Ashok Kumar Jain and Arun Kumar Jain, Theory of structures, Laxmi, Publications,2004.

3. Vazrani. V.N And Ratwani, M.M, Analysis of Structures, Vol. II, Khanna Publishers,2015.

OBJECTIVES:

- To learn the method of drawing influence lines and its uses in various applications like beams and plane trusses.
- To analyse the arches, suspension bridges and space trusses.
- Also to learn Plastic analysis of beams and rigid frames.