

2.17 30283 THEORY OF STRUCTURE

UNIT-1 SLOPE AND DEFLECTION:

- 1.1 Calculation of slope and deflection in simply supported and cantilever beams, loaded with point and uniformly distributed load by
 - 1.1.1 Double integration method
 - 1.1.2 Macaulay's method
 - 1.1.3 Area moment method

UNIT-2 INFLUENCE LINE DIAGRAM FOR THE FOLLOWING IN SIMPLY SUPPORTED BEAMS:

- 2.1 Reaction
- 2.2 Shear force
- 2.3 Bending moment

UNIT-3 ROLLING LOADS:

- 3.1 Drawing of maximum B.M.D. and S.F.D. for simply supported beam for rolling loads of
 - 3.1.1 Single concentrated load
 - 3.1.2 Two point loads
 - 3.1.3 Series of point loads
 - 3.1.4 U.D.L. longer than span
 - 3.1.5 U.D.L. shorter than span

UNIT-4 INDETERMINATE STRUCTURES:

- 4.1 Types of indeterminacy
- 4.2 External and internal
- 4.3 Degree of indeterminacy in beams and pin jointed frames

UNIT-5 PROPPED CANTILEVER BEAM:

- 5.1 Concept
- 5.2 Drawing of B.M.D. and S.F.D. for propped cantilever beams loaded with point loads and U.D.L.
- 5.3 Slope and deflection for point loads and U.D.L.

UNIT-6 FIXED BEAMS:

- 6.1 Concept
- 6.2 Drawing of BMD and SFD

UNIT-7 CONTINUOUS BEAMS:

- 7.1 Drawing of BMD and SFD for continuous beams loaded with point load and UDL using Claypeyron's theorem of three moments.

Reference Books:

1. Strength of Material & Theory of Structures. Vol – I & II B.C. Punmia
2. Mechanics of Structure S.B. Junarkar.
3. Strength of Material S. Ramamurtham

