UNIT -I
Introduction to Railway: Permanent way components - Cross Section of Permanent Way - Functions of various Components like Rails, Sleepers and Ballast, Gauge - Creep of Rails - Theories related to Creep - Sleeper density.

UNIT - II
Geometric Design of Railway Track: Gradients - Grade Compensation - Cant and Negative Super elevation - Cant Deficiency - Degree of Curve, Points and Crossing, Rail Joints & Welding of Joints, Railway station & Yards, Signaling & interlocking.

UNIT - III

UNIT - IV
Port and Harbour Engineering: Requirements of Port and Harbour, Classification of Port & Harbour, Features of a Harbour, Planning of Harbour, Breakwaters, Dry docks, Jetties, Aprons, Transit shed and Warehouses, Navigational aids, Maintenance of Port and Harbours, Inland Water Transport

UNIT - V
Intelligent Transport Systems: ITS Definition, Benefits of ITS, user services, Detectors, Automatic Vehicle Location (AVL), Automatic Vehicle Identification (AVI), Introduction to ITS applications; Advanced Traffic Management systems (ATMS), Advanced Public Transportation systems (APTS), ITS architecture components and standards, Overview of ITS implementations in developed countries.

TEXT BOOKS:

REFERENCES: