

SYLLABUS OF TRANSPORTATION ENGG -I

Unit -I

Highway Development & Planning: Principles of Highway planning, Road development in India Classification of roads, network patterns, Planning, Surveys. Highway Alignment: Requirements, Engineering Surveys. Highway Materials: Properties of sub grade and pavement component materials, Tests on subgrade soils, aggregates and bituminous materials. Application of Geosynthetics.

Unit - II:

Highway Geometric Design: Cross Section elements, carriageways, camber, stopping & overtaking sight distances Horizontal alignment- Curves, design of super elevation, widening, transition curves, vertical curves.

Unit- III

Pavement Design: Types of pavements & characteristic, Design parameters, Axle & Wheel load, tire pressure, ESWL for dual Wheels, repetitions, Group Index & IRC method of flexible pavement design. Analysis of load & temperature stresses of rigid pavement, joints Highway Construction & Maintenance: Earthen/Gravel road, Water Bound Macadam, Wet Mix macadam, Bituminous pavement, Cement Concrete pavement. Pavement failures, Pavement evaluation, Maintenance and strengthening measures.

Unit-IV

Traffic Engineering: Traffic characteristics (Road User, Driver and Vehicular characteristics) Traffic Studies (Volume studies, speed studies, parking studies and accident studies.) Traffic Safety (Causes and types of accidents, Use of intelligent transportation system)

Unit- V

Bridge Engineering: Classification, identification and site selection. Flood discharge, waterways, scour depth, economic span. IRC classification of Loads, Forces, Stresses: IRC Specification & code of practices, Critical combinations.

Unit-VI

Sub-Structure: Types of foundations & their choice, Open, Pile and well foundation, pneumatic Caissons, cofferdams. Abutment, Piers & Wing walls, their types general design principles (empirical.) Super Structure: Different structural forms Rating and Maintenance: Methods & Techniques of rating of existing bridges Inspection, Repairs, maintenance, corrosion-causes and prevention, Aesthetics.