



# HIGHWAY ENGINEERING



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REVISED  
& ENLARGED

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## ABOUT THE BOOK

This text-book deals with the design methods of construction, planning, alignment and maintenance of all types of highways; and various other topics such as traffic management, road making machineries, drainage, arboriculture and lighting, highway economics, etc. connected with the subject of Highway Engineering.

The book is divided into sixteen well-arranged chapters: *therein it contains* –

- \* 280 Self-explanatory and neatly drawn sketches
- \* 31 Illustrative problems
- \* 54 Important tables
- \* 316 Typical questions at the end of each chapter.

The salient features of the book are:

- \* Comprehensive presentation
- \* Clear exposition and brief description
- \* Step-by-step treatment
- \* Simple and lucid language.

The book should prove to be extremely useful to the Civil Engineering students preparing for the Degree Examinations of all the Indian Universities, Diploma Examinations conducted by various Boards of Technical Education, Certificate Courses as well as for the A.M.I.E., U.P.S.C., G.A.T.E., I.E.S. and other similar competitive and professional examinations. It should also prove of interest to the practising professionals.

## CONTENT

- 1: INTRODUCTION
  - 2: HIGHWAY PLANNING AND ALIGNMENT
  - 3: GEOMETRICAL DESIGN OF HIGHWAYS
  - 4: LOW COST ROADS
  - 5: BITUMINOUS ROADS
  - 6: CEMENT CONCRETE ROADS
  - 7: TESTS FOR HIGHWAY MATERIALS
  - 8: DESIGN OF HIGHWAY PAVEMENTS
  - 9: OTHER TYPES OF PAVEMENTS
  - 10: HILL ROADS
  - 11: HIGHWAY DRAINAGE
  - 12: HIGHWAY MAINTENANCE
  - 13: HIGHWAY MAKING MACHINERIES
  - 14: TRAFFIC ENGINEERING
  - 15: HIGHWAY ARBORICULTURE AND LIGHTING
  - 16: HIGHWAY ECONOMICS
- APPENDIX 1 : TYPICAL TRAFFIC SIGNS  
APPENDIX 2 : ABBREVIATED TERMS  
INDEX

Catalogue Checklist

**HIGHWAY ENGINEERING**  
**DETAILED CONTENTS**

**Chapter 1 INTRODUCTION**

- 1-1. General
- 1-2. History of road construction
  - (1) Roman roads
  - (2) Tresaguet construction
  - (3) Metcalf construction
  - (4) Telford construction
  - (5) Macadam construction
- 1-3. Development of roads in India
  - (1) Roads in ancient India
  - (2) Roads in Mughal period
  - (3) Road development during British rule
  - (4) Road development in free India
- 1-4. Modes of transportation
  - (1) Transportation by land
  - (2) Transportation by water
  - (3) Transportation by air
- 1-5. Characteristics of road transport
- 1-6. Advantages of roads
- 1-7. Importance of roads in India
- 1-8. Requirements of an ideal road
- 1-9. Scope of highway and transportation engineering
- 1-10. Transportation in India
- 1-11. Indian Institutions for Highway at National Level
  - (1) Indian Road Congress (IRC)
  - (2) National Highway Authority of India (NHAI)
  - (3) Ministry of Road Transport and Highways (MORTH)
  - (4) Central Road Research Institute (CRRI)

**QUESTIONS 1**

**Chapter 2 HIGHWAY PLANNING AND ALIGNMENT**

- 2-1. General
- 2-2. Objects of highway planning
- 2-3. Classification of highways
  - 2-3-1. According to location and function
    - (1) National highways (NH)
    - (2) State highways (SH)
    - (3) Major district roads (MDR)
    - (4) Other district roads (ODR)
    - (5) Village roads (VR)
    - (6) Border roads
    - (7) Express highways
  - 2-3-2. Build, Operate and Transfer (BOT) projects
    - (1) Kundli–Manesar–Palwal (KMP) expressway
    - (2) Delhi–Gurgaon expressway
    - (3) Gwalior–Jhansi Highway BOT (Annuity) project
    - (4) Lucknow–Sitapur Highway
  - 2-3-3. According to traffic
    - (1) Character of traffic
    - (2) Designed speed
    - (3) Traffic density
  - 2-3-4. According to transported tonnage
- 2-4. Formulas for road lengths
  - (1) First 20-year road plan (1943-61) or Nagpur road plan
  - (2) Second 20-year road plan (1961-81) or Bombay road plan
  - (3) Third 20-year road plan (1981-2001) or Lucknow road plan
- 2-5. Saturation system
  - (1) Population
  - (2) Products
- 2-6. Highway alignment
  - (1) Easiness
  - (2) Economics
  - (3) Safety
  - (4) Shortness
- 2-7. Factors affecting highway alignment
  - (1) Availability of road building materials
  - (2) Crossings
  - (3) Geological features
  - (4) Land acquisition
  - (5) Easy grades and curves
  - (6) Obligatory points
  - (7) Proper drainage
  - (8) Traffic
  - (9) Miscellaneous
- 2-8. Planning surveys
  - (1) Economic studies
  - (2) Engineering studies
  - (3) Financial studies
  - (4) Traffic studies
- Importance of planning surveys
- 2-9. Engineering surveys
- 2-10. Reconnaissance survey

- (1) Objects of reconnaissance survey
- (2) Importance of reconnaissance survey
- (3) Information gathered in reconnaissance survey
- (4) Factors to be kept in view during reconnaissance survey
- (5) Instruments for reconnaissance survey
- 2-11. Preliminary survey
  - (1) Object of preliminary survey
  - (2) Importance of preliminary survey
  - (3) Work of preliminary survey
  - (4) Instruments for preliminary survey
- 2-12. Location survey
  - (1) Object of location survey
  - (2) Importance of location survey
  - (3) Work of location survey
  - (4) Instruments for location survey
- 2-13. Project report and drawings
  - (1) Project report
  - (2) Drawings
- 2-14. Highway re-alignment projects
- 2-15. Works of re-alignment
- 2-16. General principles of re-alignment
  - (1) Entire alignment
  - (2) Major bridges
  - (3) Over-bridges and under-bridges
  - (4) Through-traffic
  - (5) Water-logging
- 2-17. Procedure of re-alignment projects

**QUESTIONS 2**

**Chapter 3 GEOMETRICAL DESIGN OF HIGHWAYS**

- 3-1. General
- 3-2. Road structure
  - (1) Subsoil
  - (2) Subgrade
  - (3) Base
  - (4) Surfacing
- 3-3. Width of pavement or carriageway
- 3-4. Traffic separators or medians
- 3-5. Kerbs
  - (1) Class I kerbs
  - (2) Class II kerbs
  - (3) Class III kerbs
- 3-6. Road margins
  - (1) Cycle tracks
  - (2) Driveways
  - (3) Embankment slopes
  - (4) Footpaths
  - (5) Frontage roads
  - (6) Guard rails
  - (7) Parking lanes
  - (8) Shoulders
- 3-7. Width of roadway or formation
- 3-8. Right of way
- 3-9. Typical cross-sections of roads
- 3-10. Camber
  - (1) Definition
  - (2) Necessity
  - (3) Rate of camber
  - (4) Shapes of camber
  - (5) Camber boards
- 3-11. Design speed
  - (1) Class of road
  - (2) Class of terrain
- 3-12. Stopping sight distance (SSD)
  - (1) General
  - (2) Factors
  - (3) Factors affecting SSD
  - (4) Length of SSD
- 3-13. Crossing sight distance
- 3-14. Overtaking sight distance
- 3-15. Overtaking zones
- 3-16. Sight distance at intersections
  - (1) Change of speed
  - (2) Coming to stop
  - (3) Importance of roads
- 3-17. Road gradient
  - (1) Definition
  - (2) Factors affecting road gradient
  - (3) Types of gradients
- 3-18. Grade compensation on horizontal curves
- 3-19. Super-elevation
  - (1) Definition
  - (2) Advantages of super-elevation
  - (3) Calculation of super-elevation
  - (4) Minimum and maximum super-elevation
  - (5) Methods of providing super-elevation
- 3-20. Horizontal curves

**HIGHWAY ENGINEERING**  
**DETAILED CONTENTS**

- (1) Necessity
- (2) Objections to curvature
- (3) Factors affecting the design of curves
- (4) Radius of horizontal curve
- (5) Widening of pavement on horizontal curves
- (6) Types of horizontal curves

3-21. Vertical curves

- (1) Summit curves
- (2) Valley curves

QUESTIONS 3

**Chapter 4 LOW COST ROADS**

4-1. General

4-2. Classification of low cost roads

- (1) Earth roads
- (2) Kankar roads
- (3) Gravel roads
- (4) Moorum roads
- (5) Traffic bound macadam roads
- (6) Water bound macadam roads

4-3. Dust prevention

- (1) Application of road oil
- (2) Sprinkling with water
- (3) Tar or asphalt surfacing
- (4) Use of hygroscopic material

4-4. Soil stabilized roads

- (1) General
- (2) Objects of soil stabilization
- (3) Mechanics of soil stabilization

4-5. Soil stabilizers

- (1) Bituminous materials
- (2) Cementing agents
- (3) Chemical stabilizers

4-6. Methods of soil stabilization

- (1) Mechanical stabilization
- (2) Bituminous stabilization
- (3) Cement stabilization
- (4) Lime stabilization
- (5) Chemical stabilization
- (6) Miscellaneous methods of stabilization

4-7. Special problems in soil stabilization work

- (1) Choice of method of stabilization
- (2) Design of the stabilized mix
- (3) Thickness of layer

4-8. Problems of soil stabilization of roads in black cotton soil and desert sand

- (1) Stabilization of black cotton soil
- (2) Stabilization of desert sand

4-9. Soil survey

- (1) General
- (2) Stages of soil survey
- (3) Objects of soil survey

4-10. Characteristics of soil

- (1) Centrifuge moisture equivalent
- (2) Colour
- (3) Field moisture equivalent
- (4) Grain shape
- (5) Lineal shrinkage and volumetric change
- (6) Particle sizes and distribution
- (7) Plasticity
- (8) Presence of fines
- (9) Specific gravity
- (10) State of compaction

4-11. Soil classification systems

- (1) Grain or particle size classification
- (2) Textural classification
- (3) Highway research board classification of soils
- (4) Indian Standard soil classification

QUESTIONS 4

**Chapter 5 BITUMINOUS ROADS**

5-1. General

5-2. Advantages of bituminous roads

5-3. Disadvantages of bituminous roads

5-4. Bituminous materials

- (1) Asphalt
- (2) Bitumen
- (3) Cutback bitumen
- (4) Bitumen emulsion
- (5) Tar
- (6) Road oil
- (7) Primers

5-5. Methods of application of bituminous materials

- (1) Surface dressing
- (2) Prime coat
- (3) Tack coat
- (4) Seal coat
- (5) Grouting
- (6) Premix
- (7) Road-mix and travel-plant mix
- (8) Hot premix and cold premix

5-6. Construction of bituminous roads

- (1) Surface dressing with single coat
- (2) Surface dressing with two coats
- (3) Full grout surface of 50 mm and 75 mm thicknesses
- (4) Semi-grout surface of 50 mm thickness
- (5) Bitumen bound macadam
- (6) Bituminous carpet of thickness about 20 mm to 25 mm
- (7) Bituminous concrete
- (8) Sheet asphalt of 25 mm thickness

5-7. Hot Mix Asphalt (HMA) and Warm Mix Asphalt (WMA) Pavements

5-7-1. General

5-7-2. Effect of HMA on Environment

5-7-3. Advantages of reducing temperature of HMA

5-7-4. HMA Pavement with Hydrated Lime

5-7-5. Warm Mix Asphalt

5-7-6. The Future of Warm-mix Asphalt

QUESTIONS 5

**Chapter 6 CEMENT CONCRETE ROADS**

6-1. General

6-2. Advantages of cement concrete roads

6-3. Disadvantages of cement concrete roads

6-4. Comparison between bituminous concrete roads and cement concrete roads

6-5. Methods of construction of cement concrete roads

- (1) Alternate bay method
- (2) Continuous bay method
- (3) Expansion joint and strip method

6-6. Construction procedure for cement concrete roads

- (1) Preparation of subgrade and sub-base
- (2) Placing of forms
- (3) Watering the prepared subgrade or sub-base
- (4) Mixing and placing of concrete
- (5) Compaction and finishing
- (6) Belting, brooming and edging
- (7) Curing
- (8) Opening to traffic

6-7. Joints in cement concrete roads

- (1) Reasons for providing joints
- (2) Requirements of a good joint
- (3) Types of joints

6-8. Arrangements of transverse joints

- (1) Uniform spacing
- (2) Staggered spacing
- (3) Skew spacing

6-9. Design of dowel bars

6-10. Design procedure

6-11. Joint fillers and sealers

6-12. Other forms of cement concrete roads

- (1) Bonded concrete roads
- (2) Cement macadam roads
- (3) Colloidal concrete roads
- (4) Creteways
- (5) Prestressed concrete roads
- (6) R.C.C. roads
- (7) Rolled concrete roads

QUESTIONS 6

**Chapter 7 TESTS FOR HIGHWAY MATERIALS**

7-1. General

7-2. Types of road aggregates

- (1) Natural aggregates
- (2) Artificial aggregates

7-3. Requirements of a good road aggregate

- (1) Adhesion with bitumen
- (2) Cementation
- (3) Durability
- (4) Hardness
- (5) Shape
- (6) Strength
- (7) Toughness

- 7-4. Tests for road aggregates  
 (1) Abrasion test (5) Soundness test  
 (2) Crushing test (6) Specific gravity and water absorption test  
 (3) Impact test (7) Stripping value test  
 (4) Shape test
- 7-5. Functions of bituminous materials  
 (1) Binding effect (2) Cushion  
 (3) Resistance to weathering agencies  
 (4) Sealing of surface
- 7-6. Tests for bituminous materials  
 (1) Ductility test (6) Softening point test  
 (2) Flash and fire point test (7) Solubility test  
 (3) Float test (8) Specific gravity test  
 (4) Loss on heating test (9) Spot test  
 (5) Penetration test (10) Viscosity test  
 (11) Water content test

#### QUESTIONS 7

### Chapter 8 DESIGN OF HIGHWAY PAVEMENTS

- 8-1. General
- 8-2. Types of pavement  
 (1) Flexible pavements (2) Rigid pavements
- 8-3. Factors affecting the design of pavements  
 (1) Climate (4) Pavement materials  
 (2) Environment (5) Subgrade soil  
 (3) Geometry (6) Traffic
- 8-4. Design of bituminous paving mixes  
 (1) Marshall method of mix design  
 (2) Hveem method of mix design
- 8-5. Design of flexible pavements  
 (1) Group index (G.I.) method  
 (2) California bearing ratio (C.B.R.) method
- 8-6. Design of rigid pavements  
 (1) Plain concrete  
 (2) Reinforced concrete  
 (3) Continuously reinforced concrete  
 (4) Prestressed concrete
- 8-7. Design parameters for rigid pavements  
 (1) Traffic parameters  
 (2) Environmental parameters  
 (3) Foundation strength  
 (4) Foundation surface characteristics  
 (5) Characteristics of concrete  
 (6) Modulus of Elasticity and Poisson's ratio  
 (7) Co-efficient of thermal expansion  
 (8) Design of slab thickness
- 8-8. I.R.C. Recommended design procedure

#### QUESTIONS 8

### Chapter 9 OTHER TYPES OF PAVEMENTS

- 9-1. General
- 9-2. Brick pavements  
 (1) Brick and block pavement  
 (2) Vitrified brick pavement  
 (3) Brick edging
- 9-3. Stone pavements
- 9-4. Wooden block pavements  
 (1) Preparation of rigid and smooth foundation  
 (2) Laying of blocks (3) Surface dressing
- 9-5. Asphaltic block pavements
- 9-6. Cast-iron block pavements
- 9-7. Rubber block pavements

#### QUESTIONS 9

### Chapter 10 HILL ROADS

- 10-1. General
- 10-2. Importance of hill roads  
 (1) Development in stages  
 (2) Initial cost (3) Length
- 10-3. Classification of hill roads  
 (1) According to the Border Roads Organization  
 (2) According to general classification  
 (3) According to use
- 10-4. Basic principles of planning of hill roads

- (1) Construction work (4) Master plan  
 (2) Existing routes (5) Natural climatic conditions  
 (3) Intensity of traffic (6) Use of contours
- 10-5. Method of surveying  
 (1) Delay in work (4) Man-power  
 (2) Details of area (5) Remote areas  
 (3) Information
- 10-6. Alignment of hill roads
- 10-7. Geometric standards of hill roads  
 (1) Widths of carriageway, shoulder, roadway and land  
 (2) Camber  
 (3) Stopping sight distance  
 (4) Overtaking sight distance  
 (5) Gradients  
 (6) Super-elevation  
 (7) Radius of horizontal curve  
 (8) Widening at curves  
 (9) Transition curves  
 (10) Hairpin bends  
 (11) Cut slopes  
 (12) Setback distance  
 (13) Passing places  
 (14) Vertical clearance  
 (15) Lateral clearance
- 10-8. Protective works for hill roads  
 (1) Retaining walls (3) Parapet walls  
 (2) Breast walls
- 10-9. Drainage in hill roads  
 (1) Sub-surface drainage (2) Surface drainage
- 10-10. Maintenance of hill roads  
 (1) Control of avalanches  
 (2) Drainage structures  
 (3) Prevention of land slides  
 (4) Snow clearance

#### QUESTIONS 10

### Chapter 11 HIGHWAY DRAINAGE

- 11-1. General
- 11-2. Sources of water entering the road structure  
 (1) Capillary action of water  
 (2) Floods  
 (3) Rain water falling on road surface  
 (4) Rain water from surrounding area
- 11-3. Defects due to improper highway drainage
- 11-4. Requirements of good highway drainage system  
 (1) Adjoining land  
 (2) Camber  
 (3) Cross-drainage works  
 (4) Gradient  
 (5) Highest flood level  
 (6) Intercepting drains  
 (7) Side drains  
 (8) Underground sources of water  
 (9) Water-logged areas  
 (10) Water table
- 11-5. Surface drainage  
 (1) Side drains for road in embankment  
 (2) Side drains for road in cutting  
 (3) Design of side drains
- 11-6. Drainage of city or urban roads  
 (1) Catch basins (2) Inlets
- 11-7. Sub-surface drainage  
 (1) Causes of changes in moisture content  
 (2) Situations requiring sub-surface drainage  
 (3) Methods of sub-surface drainage
- 11-8. Design of filter for drainage trenches  
 (1) Permeability ratio (2) Piping ratio
- 11-9. Road construction in waterlogged areas  
 (1) Control of capillary (4) Sand drains  
 (2) Pavement thickness (5) Sub-surface drainage system  
 (3) Raising the road level

#### QUESTIONS 11

## Chapter 12 HIGHWAY MAINTENANCE

- 12-1. General
- 12-2. Causes of failure of pavements
  - (1) Failures in flexible pavements
  - (2) Failures in rigid pavements
- 12-3. Typical flexible pavement failures
  - (1) Alligator or map cracking
  - (2) Consolidation of pavement layers
  - (3) Formation of waves
  - (4) Frost heaving
  - (5) Lack of binding with the lower course
  - (6) Longitudinal cracking
  - (7) Reflection cracking
  - (8) Shear failure
- 12-4. Typical rigid pavement failures
  - (1) Mud pumping
  - (2) Scaling of cement concrete
  - (3) Shrinkage cracks
  - (4) Spalling of joints
  - (5) Structural cracks
  - (6) Warping cracks
- 12-5. Maintenance of earth roads
  - (1) Normal maintenance
  - (2) Preventive maintenance
- 12-6. Maintenance of gravel roads
  - (1) Normal repairs
  - (2) Periodical renewal
- 12-7. Maintenance of W.B.M. roads
  - (1) Fast moving vehicles
  - (2) Grinding of stones
  - (3) Hoofs of the animals
  - (1) Normal repairs
  - (2) Surface renewal
- 12-8. Maintenance of bituminous roads
  - (1) Patch repairs
  - (2) Preventing skidding of vehicles
  - (3) Reducing reflection cracking
  - (4) Stripping and ravelling
  - (5) Waves and corrugations
- 12-9. Maintenance of cement concrete roads
  - (1) Maintenance of joints
  - (2) Mud jacking
  - (3) Patch repairs
  - (4) Treatment of cracks
- 12-10. Pavement evaluation
  - (1) Poor riding quality
  - (2) Slipperiness
  - (3) Structural deterioration
  - (4) Other surface deterioration
- 12-11. Strengthening of existing pavements
- 12-12. Important principles in road improvement
  - (1) Economy of road improvement
  - (2) Use of low cost roads
  - (3) Wear of roads
- 12-13. Benefits of improved highways

### QUESTIONS 12

## Chapter 13 HIGHWAY MAKING MACHINERIES

- 13-1. General
- 13-2. Excavating equipments
  - (1) Tractor
  - (2) Bulldozer and angle-dozers
  - (3) Grader
  - (4) Scraper
  - (5) Excavators
  - (6) Dredgers
  - (7) Ripper or rooter or scarifier
  - (8) Trencher or ditcher
- 13-3. Compacting equipments
  - (1) Road rollers
  - (2) Vibratory compactors
  - (3) Earth rammers
  - (4) Jetting and pounding
- 13-4. EquipmentS for bituminous roads
  - (1) Bitumen heaters
  - (2) Bitumen mixers
  - (3) Bitumen truck mixers
  - (4) Pavers

- 13-5. EquipmentS for cement concrete roads
  - (1) Batching plant
  - (2) Concrete mixer
  - (3) Vibrating screed
  - (4) Internal vibrator
  - (5) Float
  - (6) Straight edge
  - (7) Belt
  - (8) Fibre brush
  - (9) Miscellaneous
- 13-6. Travelling plant

### QUESTIONS 13

## Chapter 14 TRAFFIC ENGINEERING

- 14-1. General
- 14-2. Objects of traffic engineering
- 14-3. Traffic surveys
  - 14-3-1. Accident survey
  - 14-3-2. Origin and destination (O & D) survey
    - (1) House interview method
    - (2) License plate method
    - (3) Postal questionnaire method
    - (4) Route interview method
    - (5) Tag-on-car method
  - 14-3-3. Parking survey
    - (1) Parking accumulation
    - (2) Parking duration
    - (3) Parking load
    - (4) Parking turnover
    - (5) Parking volume
  - 14-3-4. Spot speed survey
  - 14-3-5. Speed and delay survey
  - 14-3-6. Traffic volume survey
    - (1) Objects of traffic volume survey
    - (2) Methods of traffic volume survey
    - (3) Information collected in traffic volume survey
    - (4) Uses of traffic volume survey
- 14-4. Road accidents
  - 14-4-1. Causes of road accidents
    - (1) Defective vehicles
    - (2) Drivers
    - (3) Moving of animals
    - (4) Passengers
    - (5) Pedestrians
    - (6) Road design
    - (7) Traffic volume
    - (8) Weather
  - 14-4-2. Measures to prevent road accidents
    - (1) Educational methods
    - (2) Enforcement methods
    - (3) Engineering methods
- 14-5. Parking
  - (1) Kerb or on-street parking
  - (2) Off-street parking
- 14-6. Methods of parking
- 14-7. Traffic congestion
  - (1) General public
  - (2) Road users
  - (3) Transport personnel
- 14-8. Traffic control
- 14-9. One-way streets
  - 14-9-1. Advantages of one-way streets
    - (1) Improvement in pedestrian movements
    - (2) Improving safety
    - (3) Increasing average speed
    - (4) Increasing capacity
    - (5) Night traffic
    - (6) Reduction in accidents
    - (7) Traffic control
  - 14-9-2. Disadvantages of one-way streets
    - (1) Effect on certain types of trade
    - (2) Operational difficulties
    - (3) Safety problems
- 14-10. Road junctions or intersections
  - (1) General
  - (2) Factors in design and operation

- 14-11. Types of intersections
- 14-11-1. At-grade intersections
  - (1) All-paved or unchannelized intersections
  - (2) Channelized intersections
  - (3) Roundabouts or rotaries
- 14-11-2. Grade separations
  - (1) Direct ramp
  - (2) Semi-direct ramp
  - (3) Indirect ramp
- 14-12. Traffic control devices
- 14-12-1. Road markings
- 14-12-2. Road signs
  - (1) Purposes of road signs
  - (2) Limitations of road signs
  - (3) Design and location of road signs
  - (4) Types of road signs
- 14-12-3. Traffic signals
  - (1) Advantages of traffic signals
  - (2) Limitations of traffic signals
  - (3) Modern development
- 14-12-4. Speed breakers

#### QUESTIONS 14

### Chapter 15 HIGHWAY ARBORICULTURE AND LIGHTING

- 15-1. General
- 15-2. Highway arboriculture
- 15-3. Spacing of trees
  - (1) Distance from edge of road
  - (2) Location of trees
  - (3) Planting on both sides
- 15-4. Types of trees
- 15.5 Planting operations
  - (1) Excavation of pits
  - (2) Preparation of seedlings
  - (3) Transplanting of seedlings
  - (4) Protection of young plants
  - (5) Watering
  - (6) Numbering of trees
- 15.6. Maintenance of trees
  - (1) Disposal of dead and fallen trees
  - (2) Disposal of fruits for fruit-bearing trees
  - (3) Protection against pests
  - (4) Pruning and lopping of branches
- 15-7. Highway lighting
- 15.8. Design factors of highway lighting
  - (1) Contrast
  - (2) Glare
  - (3) Lamps
  - (4) Lateral placement of lighting poles
  - (5) Lighting layouts
  - (6) Luminaires distribution of light
  - (7) Mounting height and overhang
  - (8) Spacing of lighting units
- 15-9. Benefits of highway lighting
  - (1) Appreciation by police forces
  - (2) Increase in business
  - (3) Planning
  - (4) Recreation centres
  - (5) Reduction in night-time accident rate
  - (6) Reduction in serious crimes
- 15-10. Cost considerations of highway lighting
  - (1) Design variables
  - (2) Roadway variables

- (3) Miscellaneous variables
- (1) Design variables
- (2) Roadway variables
- (3) Miscellaneous variables

#### QUESTIONS 15

### Chapter 16 HIGHWAY ECONOMICS

- 16-1. General
- 16-2. Qualifications of an administrator
- 16-3. Economics and economy
- 16-4. Engineering economy
- 16-5. Principles of economic analysis
  - (1) Analyse all the alternatives
  - (2) Analyse with and without the proposed project
  - (3) Compare alternatives by their differences
  - (4) Consider all consequences
  - (5) Discount all costs and returns to same time period
  - (6) Disregard past investments
  - (7) Ignore the method of financing
  - (8) Use the same analysis period for each alternative
- 16-6. Application of economic analysis to highways
  - (1) Project evaluation
  - (2) Project formulation
- 16-7. Methods of economic analysis
  - (1) Equivalent uniform annual cost method (EUAC)
  - (2) Present worth of costs method (PWOC)
  - (3) Equivalent uniform annual net return method (EUANR)
  - (4) Net present value method (NPV)
  - (5) Benefit/cost ratio method (B/C)
  - (6) Rate of return method (ROR)
  - (7) Cost effectiveness method (CE)
- 16-7-1. Points to be remembered for economic analysis
- 16-7-2. Choice of method for economic analysis
  - (1) Character of the proposed project
  - (2) Experience of the analyst
  - (3) Necessity of decision maker
- 16-8. Highway costs and consequences
- 16-8-1. Highway costs
- 16-8-2. Highway consequences
  - (1) User consequences
  - (2) Non-user consequences
- 16-9. Highway finance
- 16-10. Highway administration

#### QUESTIONS 16

### Appendix A TYPICAL TRAFFIC SIGNS

- A-1. Mandatory/regulatory signs
  - (1) Stop and give way signs
  - (2) Prohibitory signs
  - (3) No parking and no stopping signs
  - (4) Speed limit and vehicle control signs
  - (5) Restriction ends sign
  - (6) Compulsory direction control and other signs
- A-2. Typical cautionary/warning signs
- A-3. Informatory signs
  - (1) Direction and place identification signs
  - (2) Facility information signs
  - (3) Other useful information signs
  - (4) Parking signs
- A-4. Traffic Lights

### Appendix B ABBREVIATED TERMS

Index