AMSV11 DESIGN OF R.C STRUCTURES

UNIT-1 DESIGN PHILOSOPHIES

1.1 Introduction, Working Stress Method, Ultimate Load Method, Limit State Method,
1.2 Limit State Method Vs Working Stress Method, Building Code,
1.3 Accuracy Of Computations, Type Of Construction

UNIT-2 SINGLY REINFORCED STRUCTURE

2.1 Bending Of Beams, Cracked Concrete Stage, Ultimate Strength Stage, Assumptions,
2.2 Moment Of Resistance, Modes Of Failure,
2.3 Minimum And Maximum Tension Reinforcement, Effective Span

UNIT-3 DOUBLY REINFORCED SECTIONS

3.1 Types Of Problem, Stress In Compression Reinforcement, Design Steps,
3.2 Minimum And Maximum Reinforcement, Design Tables, Flanged Beams,
3.3 Effective Width Of Flange

UNIT-4 SHEAR AND DEVELOPMENT LENGTH

4.1 Shear Stress, Diagonal Tension, Shear Reinforcement, Spacing Of Shear Reinforcement,
4.2 Development Length, Anchorage Bond, Flexural Bond

UNIT-5 TORSION

5.1 Introduction, torsional stiffness of homogeneous sections, torsional stiffness of R.C. Sections,
5.2 Torsional reinforcement, distribution of torsion reinforcement, torsion in beams curved in plan

UNIT-6 TYPES OF FLOOR

6.1 One-Way Slab Systems, Two-Way Slab Systems, Flat Slab Systems, Flat Plate Systems, Grids.

UNIT-7 COLUMNS AND WALLS

7.1 Effective height of a column, assumptions, minimum eccentricity, short column under axial compression, requirements for reinforcement, columns with helical reinforcement,
7.2 Short columns under axial load and uniaxial bending, construction of design charts, short columns under axial load and biaxial bending, slender columns,
7.3 Walls, construction of design charts, reinforcement in walls, corbels, truss analogy, detailing of reinforcement.
7.4 RETAINING OF WALLS, forces on retaining walls, stability requirements, proportioning of cantilever walls, development length, loads on the heel, rear counterforts,

UNIT-8 TYPES OF STAIRS

8.1 Common types of stairs, central-wall type stairs, central-column type stairs, slab less stairs, helicoidally stairs, free-standing stairs

UNIT-9 DESIGN OF TANKS

9.1 Roofs, ring beam, floors, walls of rectangular tanks, walls of circular tanks, shear force,

9.2 Steel ladder, base slab, cover to reinforcement , joints, design and detailing of joints, spacing of joints ,

UNIT-10 MASONARY BUILDINGS

10.1Introduction, Brick Wall Design Under Vertical Loads

UNIT-11 FOUNDATIONS

10.1Introduction, minimum foundation depth., shallow foundations, use of plinth beams,

10.2 Brick wall design under horizontal loads, resistance to earthquake forces by wall boxed in plan, deep foundations

Reference books:

1. Design of Reinforced Concrete Structures by P Dayaratnam
2. Advanced Reinforced Concrete Designby P C Varghese