

# **ARCHITECTURAL ASSISTANTSHIP/ ARCHITECTURE**

## **(DIPLOMA STANDARD)**

**SUBJECT CODE: 323**

### **UNIT – I: ENGINEERING MECHANICS**

Simple Stresses and Strain – Stress and Strain – Modulus of Elasticity / Elastic constants – Application of stress and strain in engineering field – Behaviour of ductile and brittle material – Loads – Shear Force and Bending Moment – Geometrical properties of sections – Centroid – Moment of Inertia – Stress in Beams and Shafts – Stresses in Beams due to bending – Stress in shafts due to torsion – Pin Jointed Frames - Analytical Method – Graphical Method.

### **UNIT – II: BUILDING MATERIALS & CONSTRUCTION**

Properties, characteristics, strengths, manufacturing, components & applications of materials & methods of construction & detailing for the following:

Stone – Brick & Clay Products – Lime – Cement – Timber – Concrete – Ferrous and Non-Ferrous Metals – Glass – Plastics – Asphalt, Sealants & Adhesives – Protective and Decorative Coatings – Water Proofing and Damps Proofing Materials – Rural Building Materials(Bamboo, Soil, etc.).

### **UNIT – III: HISTORY & THEORY OF ARCHITECTURE**

#### **History of Architecture**

Egyptian Architecture – Greek Architecture – Roman Architecture – Early Christian & Byzantine Architecture – Gothic Architecture – Renaissance Architecture.

Indian Architecture – Indus Valley Civilization, Buddhist Architecture, Hindu Architecture – Islamic Architecture in India.

Modern Architecture, Post Modernism, Deconstructivism Contemporary World Architecture.

#### **Theory of Architecture**

Definition of Architecture – Architecture as satisfying functional, aesthetic & psychological human needs.

Elements of Architecture – Form, Space, Light, colour, etc.

Principles of Architecture – Proportion, Balance, Scale, Symmetry, etc.

#### **UNIT – IV: STRUCTURAL ENGINEERING**

Slope and Deflection of Beams – Propped Cantilevers – Fixed Beams – Arches – Continuous Beams – Theorem of Three Moments – Continuous Beams – Moment Distribution Method – Columns and Struts – Combined Bending and Direct Stresses – Earth Pressure and Retaining Walls – Working Stress Method Design of Beams for Flexure by L.S.M – Design of T-Beams and Continuous Beams by L.S.M – Design of Beams for Shear by L.S.M – Design of Oneway Slabs by L.S.M - Design of Twoway Slabs by L.S.M - Design of Staircases by L.S.M - Design of Columns by L.S.M - Design of Column Footings – Design of Simple Beams – Design of Tension Members – Design of Compression Members – Design of Welded Connections.

#### **UNIT – V: ENVIRONMENTAL ENGINEERING**

Sources of Water – Collections and Conveyance of Water – Quality of Water – Treatment of Water – Distribution System – Appurtenances and Maintenance of Water Lines – Collections and Conveyance of Sewage – Treatments and Disposal – Environmental Pollution and Control – Industrial Waste Water Treatment and Solid Waste Disposal – Land, Water & Air Pollution.

#### **UNIT – VI: BUILDING SERVICES**

Water Supply & Sewage Disposal, Mechanical Systems – Pumps & Motors, Electrical Systems – Generation & Distribution, Ventilation & Lighting, Air Conditioning – Principles, systems & applications, Vertical Transportation systems, Fire Hazards, Safety & Design Regulations, Acoustics.

#### **UNIT – VII: SITE SURVEY & PLANNING**

Chain Surveying – Compass Surveying – Plane Table Surveying – Levelling – Theodolite – Contouring – Minor Instruments.

Site Drawings – Site marking, Importance & procedures for making site drawings & dimensioning.

#### **UNIT – VIII: SPECIFICATION & ESTIMATION**

Stages of Detailed Estimate – Measurements & Material Requirement – Specification & Report Writing – Approximate Estimates – Areas and Volumes – Data – Valuation – Detailed Estimate.

### **UNIT – IX: TOWN PLANNING**

Town Planning Principles – Road and Street Planning – Housing – Economy, Society, Environment and Transport Policy and Planning – Town Planning Rules, Building Bye-Laws & Development Control Rules.

### **UNIT – X: COMPUTER AIDED DRAFTING & VISUALIZATION**

2D & 3D Drafting & Visualization - Using AutoCAD, etc– Setting limits and creating entities like LINE, ARC, CIRCLE etc – Editing the drawing with edit commands like TRIM, FILLET, COPY, MOVE etc., Creating 2D building working drawings.

Visualization using SKETCH UP, 3DMAX, etc.

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