

## **CONSTRUCTION MATERIALS AND TECHNOLOGY**

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### **SYLLABUS**

#### **UNIT I: STONES, BRICKS AND CONCRETE BLOCKS**

Stone as building material, Criteria for selection, Tests on stones, Deterioration and preservation of stonework. Bricks, Classification, Manufacturing of clay bricks, Tests on bricks, Compressive strength, Water absorption, Efflorescence, Bricks for special uses, Refractory bricks. Concrete blocks, Types, Hollow and solid blocks, Lightweight concrete blocks, Applications.

#### **UNIT II: LIME, CEMENT, AGGREGATES AND MORTAR**

Types, Preparation of lime mortar, Applications. Cement, Ingredients, Manufacturing process, Types and grades, Properties: hydration, compressive and tensile strength, soundness, consistency, setting time. Fine aggregates, River sand, crushed stone sand (M and P-Sand), Properties. Coarse aggregates, Crushing strength, impact strength, flakiness and elongation index, abrasion resistance, Grading. Mortar, Cement and lime mortars, Uses and proportions.

#### **UNIT III: TIMBER, METALS AND OTHER MATERIALS**

Timber, Market forms, Industrial timber, Plywood, Laminated panels. Metals, Steel, Aluminum, Composition, properties, Market forms, Mechanical treatment, Aluminum composite panels. Surface finishes, Paints, Varnishes, Distempers, Bituminous products. Sealants for joints, Insulating materials, Acoustic and thermal insulation, Fire protection, Damp proofing, Ventilation, Air conditioning.

#### **UNIT IV: CONSTRUCTION TECHNOLOGY AND CONSTRUCTION PRACTICES**

Masonry construction, Brick and stone masonry. Formwork, Centering, shuttering, Scaffolding, Shoring, Underpinning. Construction joints, Contraction, construction and expansion joints. Plastering, Pointing, Cavity and diaphragm walls.

#### **UNIT V : ADVANCED MATERIALS**

Advanced Materials, Glass, Solar Panels - Ceramics, Clay products, Refractories, Fibre reinforced plastics, Fibre textiles, Geomembranes, Geotextiles. Composite materials, Types, Laminar composites, Applications in construction.

#### **UNIT VI : CONSTRUCTION EQUIPMENT AND PLANNING**

Construction Equipment, Selection for Earthwork, Concreting – Material Handling, Dewatering and Pumping, Construction Planning.

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# **C O N T E N T S**

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