

## **BUILDING MATERIAL AND CONSTRUCTION**

**Code: CE303**

**Contact: 3L + 1 T**

**Credits: 4**

Module I [13]

**Bricks:** Classification, Characteristics of good bricks, Ingredients of good brick earth, Harmful substance in brick Earth, Different forms of bricks, Testing of bricks as per BIS. Defects of bricks.

**Aggregates:** Classification, Characteristics, Deleterious substances, Soundness, Alkali – aggregates reaction, Fine aggregates, Coarse aggregates, Testing of aggregates

**Lime:** Impurities in limestone, Classification, Slaking and hydration, Hardening, Testing, Storage, Handling

### **Cement & Concrete:**

**Cement:** OPC: Composition, PPC, Slag cement, Hydration, setting time

**Concrete:** Types, ingredients, W/C ratio, Workability, Different grades in cement concrete, Tests on cement concrete

Module II [10]

**Mortars:** Classification, Uses, Characteristics of good mortar, Ingredients. Cement mortar, Lime mortar, Lime cement mortar, special mortars

**Wood and Wood Products:** Classification of Timber, Structure, Characteristics of good timber, Seasoning of timber, Defects in Timber, Diseases of timber, Decay of Timber, Preservation of Timber Testing of Timber, Veneers, Plywood, Fibre Boards, Particle Boards, Chip Boards, Black Boards, Button Board and Laminated Boards, Applications of wood and wood products

**Paints, Enamels and Varnishes:** Composition of oil paint, characteristic of an ideal paint, preparation of paint, covering power of paints, Painting: Plastered surfaces, painting wood surfaces, painting metal Surfaces. Defects, Effect of weather, enamels, distemper, water wash and colour wash, Varnish, French Polish, Wax Polish

**Miscellaneous Materials:** Gypsum: Classification, Plaster of Paris, Gypsum wall Plasters, Gypsum Plaster Boards, Adhesives, Heat and sound insulating materials, Geosynthetics

## **Building Construction**

Module III [10]

**Foundations: Function of Foundations, Essential requirement of good foundation, Different types of shallow and deep Foundations**

**Brick masonry: Definitions, Rules for bonding, Type of bonds – stretcher bond, Header bond, English bond, Flemish Bond, Comparison of English Bond and Flemish Bond (one and one and half brick thick wall)**

**Wall, Doors and Windows: Load bearing wall, Partition wall, Reinforced brick wall Common types of doors and windows of timber and metal**

Module IV [9]

**Stairs: Technical Terms, Requirements of good stair, Dimension of steps, Classification, Geometric design of a dog legged stair case**

**Flooring:** Components of a floor, selection of flooring materials, Brick flooring, Cement concrete flooring, mosaic, marble, Terrazzo flooring, Tiled roofing

**Plastering and Pointing:** Plastering with cement mortar, Defects in plastering, pointing, white washing, colour washing, Distemping,

**Roofs:** Types, Pitched roofs and their sketches, Lean – to roof, King Post – Truss, Queen post truss and Simple steel Truss, Roof Covering materials: AC sheets GI sheet

**References**

1. Building Materials, S.K. Duggal
2. Building Materials, P.C. Varghese PHI
- 3 Engineering Materials, S.C. Rangwala
- 4 Concrete Technology, M. S. Shetty
- 5 Concrete Technology, A.M. Neville & J.J.Brooks Pearson Education
- 6 Building Construction, B.C. Punmia
- 7 Building Construction and Foundation Engineering, Jha and Sinha