

## **BUILDING MATERIALS, PLANNING & CONSTRUCTION**

Lectures : 4 Periods/Week  
Semester End Exam. : 3 Hours

Sessional marks : 40  
Semester End Exam. Marks : 60

Credits : 4

### **Course Objectives:**

- To teach the basics involved in selection of good quality building materials for construction.
- To demonstrate various types of masonry works including types of bonds and their finishing.
- To give knowledge about various building elements and their specifications.
- Effectively deals with the types of form work and rehabilitation work of building.
- Presents the basics of planning strategies, building bye laws and acoustics of building.

### **Course Outcomes:**

- Students will be able to get knowledge about various building materials.
- Students can select required masonry work and bond for the construction.
- Students will gain knowledge regarding acoustics of building.
- Students can understand how to plan a building following building rules and bye laws aesthetically.
- Students are able to know how to use the form work, scaffolding and shoring before and after construction.

## **UNIT – I**

### **Clay bricks**

Brick clay, Preparation of bricks, Types of bricks, Dimensions of bricks, Weight of bricks, Storing of bricks, Brick substitutes, Classification of bricks, Tests for bricks

### **Timber**

Classification of trees, Structure of wood, seasoning and conversion of timber, Market forms of timber, Defects of timber, Treatment of timber, Classification of timber

### **Glass**

Manufacture and Classification, Treatment of glass, Uses of glass, testing for quality, Characteristics and Performance of glass, Glass fibre

### **Plastics**

Classification of plastics, Properties of plastics, Fabrication of plastic articles, some plastics in common use, Reinforced plastics

## **UNIT –II**

### **Paints**

Types of paints, Composition of paints, Considerations in choosing paints, Paints commonly used in buildings

### **Brick Masonry**

Terms used in brickwork, Mortars to be used, bonding of bricks, Method of laying bricks

### **Plastering**

Specifications for cement plastering, plastering method, Specifications for plastering with cement mortar

### **UNIT –III**

#### **Stairs and lifts**

Terminology used in stairs, Types of stairs, Reinforced concrete stairs, lifts

#### **Acoustics**

Basic theory, Reverberation and echos, Sound isolation, Acoustical materials, Recommendations for different types of buildings

#### **Shoring, Underpinning, Scaffolding and Formwork**

Shoring, Types of shores; Underpinning - Pit method, Pile method; Scaffolding -Types of scaffolding; Formwork for columns, beams, slabs

### **UNIT –IV**

#### **An Approach to Planning**

Site planning; Space requirement–Establishing areas for different units, Furniture requirements, Roominess, Flexibility, Sanitation, Lighting, Ventilation, Space for equipment for air-conditioning, Space for machinery etc.; Flow diagram and line plan–Grouping, Circulation, Orientation, Aspect and prospect, Privacy, Elegance and economy; Climatic considerations; Architectural composition–Unity, Mass composition, Contrast, Proportion, Scale, Accentuation and rhythm, Materials for the exterior and Expression; Colour.

#### **Building Rules and Bye–Laws**

Zoning regulations; Regulations regarding layouts or sub-divisions; Building regulations; Rules for special type of buildings; Calculation of plinth, floor and carpet area; Floor space index.

#### **Building Elements**

Conventional signs; Guidelines for staircase planning; Guidelines for selecting doors and windows; Terms used in the construction of door and window; Specifications for the drawing of door and window

#### **NOTE:**

*Two questions of 12 marks each will be given from each unit out of which one is to be answered. Twelve questions of one mark each will be given from entire syllabus which is a compulsory question.*

#### **TEXT BOOKS:**

1. Building Materials by P.C. Vergese, 1<sup>st</sup> Edition, PHI, 2009.
2. Building construction by P.C. Vergese, 1<sup>st</sup> Edition, PHI, 2009.
3. Building planning, designing and scheduling by Gurucharan Singh, Standard book House, 2006.

#### **REFERENCE BOOKS**

1. Building Materials by ML Gambhir and N Jamwal, 1st Edition, Tata McGraw-Hill, 2011.
2. Building construction by BC Punmia et al., 10<sup>th</sup> Edition, Laxmi Publications, 2008.
3. Building Drawing by M.G. Shah, C.M. Kale and S.Y. Patki, Tata McGraw-Hill, New Delhi, 2009.
4. Planning and Designing Buildings by Yashwant S. Sane, Allied Book Stall, Pune.

