

### 3/4 B.Tech. FIFTH SEMESTER

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### BUILDING MATERIALS AND CONSTRUCTION (FREE ELECTIVE A)

Credits: 4

Lecture: 4 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

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#### Objectives:

- To get knowledge of types building materials, availability, uses and various tests for building materials.
- To know about materials that are used for protection and functional purpose.

#### Learning outcomes:

Upon completion of the course students will have:

- Knowledge regarding the usage of different building materials in the present-day construction.
- Understanding of the different construction activities in the building construction

#### UNIT – 1

##### STONES:

Classification of Stones; Qualities of a good building stone; Stone quarrying; Dressing of stones; Common building stones of India.

##### BRICKS:

General; Composition of good brick earth; Harmful ingredients in brick earth; Manufacture of bricks; Comparison between clamp burning and kiln burning; Qualities of good bricks; Classification of bricks; Size and weight of bricks; Fire – clays.

#### UNIT-II

##### LIME:

General; Some definitions; Sources of lime; Constituents of lime stones; Classification of limes; Comparison between fat lime and hydraulic lime; Manufacture of fat lime.

##### TIMBER:

Definition; Structure of a tree; Defects in timber; Qualities of good timber; Preservation of timber; Seasoning of timber; Market forms of timber.

#### UNIT -III

##### STEEL:

General; Manufacture of steel; Uses of steel; Defects in steel; Market forms of steel; Properties of mild steel; Properties of hard steel; Corrosion of ferrous metals.

##### PAINTS, VARNISHES AND DISTEMPERS:

General; Painting; Varnishing; Distempers.

#### UNIT -IV

##### ACOUSTICS OF BUILDINGS:

Technical terms; Requirements of sound effects; Factors to be considered in Acoustics of building; Sound absorbing materials; Sound insulation.

**DAMPNESS AND DAMP PROOFING:**

Introduction, Methods of preventing dampness; Damp proofing materials and their classification; Methods of providing DPC under different situations.

**UNIT-V****FOUNDATIONS:**

Introduction; Factors affecting for selection of foundations; Types of foundations; Piles and their classification; Foundation on black cotton soils.

**UNIT-VI****BRICK MASONRY:**

Technical terms; Types of bonds in brickwork and their suitability.

**STONE MASONRY:**

Technical terms; Classification of stone masonry.

**WALLS:** Classification of walls.

**UNIT – VII****FLOORS:**

Technical terms; Types of ground floors; Repair of floors

**ROOFS:**

Technical terms; Classification of roofs; Steel sloping roofs; Roof covering materials; Types of flat roofs.

**UNIT – VIII****SCAFFOLDING, SHORING, UNDER PINNING AND FORM WORK:**

Types of scaffolding; Types of shoring; Methods of underpinning; Types of formwork; Centering.

**Learning resources****Text books:**

1. Engineering Materials, (36<sup>th</sup> edition) by Rangwala, S.C., Anand Charotar Publishing House, 2009.
2. Building Construction, (10<sup>th</sup> edition) by Punmia B. C., Laxmi Publications, New Delhi, 2009.