



25CE301 BUILDING MATERIALS AND CONCRETE TECHNOLOGY

Unit -I

BUILDING MATERIALS - I

Detailed Notes: Stones, Bricks, Tiles, Timber and Wood Products

1. Stones

Introduction

Stones are naturally occurring solid materials obtained from rocks and are widely used in building construction. They are one of the oldest construction materials used for foundations, walls, bridges, dams, roads, and monuments.

Classification of Building Stones

Based on Geological Formation:

Igneous Rocks – Formed by cooling of magma. Example: Granite, Basalt.

Sedimentary Rocks – Formed by deposition of sediments. Example: Limestone, Sandstone.

Metamorphic Rocks – Formed due to heat and pressure. Example: Marble, Slate.

Based on Structure:

Stratified Rocks – Have layers. Example: Sandstone.

Unstratified Rocks – No layers. Example: Granite.

Foliated Rocks – Split into thin sheets. Example: Gneiss.

Properties of Good Building Stones

High crushing strength

Durability

Hardness

Toughness

Resistance to weathering

Low water absorption

Good appearance

Quarrying of Stones

Quarrying is the process of extracting stones from natural rock beds. Common methods are digging, blasting, heating, and wedging.

Dressing of Stones

Dressing is the process of giving proper shape and smooth finish to stones for construction purposes.

Tests on Stones

Crushing strength test

Water absorption test

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Abrasion test
Impact test
Acid test

2. Bricks

Introduction

Bricks are artificial building materials made from clay by molding, drying, and burning. They are commonly used in walls, foundations, arches, and pavements.

Manufacturing Process of Bricks

Preparation of clay
Molding
Drying
Burning

Classification of Bricks

First Class Bricks – Best quality bricks used for important works.
Second Class Bricks – Slightly irregular and used for plastered works.
Third Class Bricks – Under burnt and used for temporary structures.
Fourth Class Bricks – Over burnt and used as aggregate.

Properties of Good Bricks

Uniform shape and size
Hard and durable
Free from cracks
Low water absorption
High compressive strength

Tests on Bricks

Water absorption test
Crushing strength test
Efflorescence test
Hardness test
Soundness test

3. Tiles

Introduction

Tiles are thin slabs made from clay or ceramic materials used for roofing, flooring, and wall decoration.

Types of Clay Tiles

Roofing tiles
Floor tiles
Wall tiles

Properties of Good Tiles

Hard and durable
Waterproof
Fire resistant
Good appearance

Manufacturing Process of Tiles

Preparation of clay

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Molding
Drying
Burning
Glazing

Uses of Tiles

Roofing
Flooring
Wall finishing
Decorative purposes

4. Timber and Wood Products

Introduction

Timber is wood suitable for engineering and construction purposes. It is widely used for doors, windows, furniture, and roofing works.

Classification of Timber

Exogenous Trees – Trees growing outward by annual rings. Example: Teak, Sal.

Endogenous Trees – Trees growing inward. Example: Bamboo, Cane.

Structure of Timber

Pith
Heartwood
Sapwood
Cambium layer
Bark

Defects in Timber

Knots
Shakes
Dry rot
Wet rot
Termite attack

Seasoning of Timber

Seasoning is the process of removing moisture from timber to improve strength and durability.

Methods of Seasoning

Natural seasoning
Artificial seasoning

Preservation of Timber

Preservation protects timber from fungi, insects, and decay. Methods include painting, charring, creosoting, and chemical treatment.

Engineered Wood Products

Plywood is made by gluing thin layers of wood veneers together. Particle board is manufactured using wood particles mixed with resin.

Important Questions

1. Explain classification and properties of building stones.
2. Describe quarrying and dressing of stones.
3. Explain manufacturing process of bricks.

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4. Discuss tests on bricks.
5. Explain manufacturing and uses of clay tiles.
6. Describe defects and preservation of timber.
7. Write short notes on plywood and particle board.



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