

Building Materials

UNIT I CLASSICAL BUILDING MATERIALS

STONE: Formation & Classification – Characteristics of good stone – Characteristics and Uses of granite, lime stone, sand stone, marble, and kottah.

BRICKS: Methods of Brick Manufacturing - Characteristics of Good Bricks – Classification of Bricks and their Uses – Different Sizes and Shapes of Bricks and their Uses.

CLAY TILES: Tile Manufacturing – Various Types of Tiles and their Uses.

LIME: Source of Lime, Classification of Lime, Various Stage of Lime, Characteristics of Lime, Types and Uses.

UNIT II CEMENT, MORTAR, CONCRETE

CEMENT: Composition of ordinary Portland cement-functions of cement ingredients – Characteristics - Types of Cement and Uses – Grades of cement (33, 43 and 53) - Setting time of cement - White and Colored Cements – Storage of cement.

MORTAR: Characteristics of mortar - Types of Mortar using Lime, Cement, Mud, - Composite mortars using fly ash and surkhi - Proportions and Uses.

CONCRETE: Characteristics of Concrete – Types of concrete using lime and cement - P.C.C, R.C.C. - Proportion of Cement concrete – Composite Concrete - Water Cement ratio and strength of Concrete - Mixing, Laying, Curing and Admixtures. Hollow concrete block and Paver blocks

UNIT III TIMBER AND GLASS:

TIMBER: Characteristics of Timber - Classification of Timber - Defects of Timber and their Causes - Seasoning, Preservation and Fire-Proofing of Timber - Common Varieties used in construction. Wood based Products and Uses (Veneering, Laminate, Plywood, block board, batten board, particle board). Bamboo – characters and uses in building industry.

GLASS: Types of Glass and Uses – Glass blocks - Definition of Curtain wall – Purpose of Curtain walls - Structural Glazing.

UNIT IV PROTECTIVE AND DECORATIVE FINISHES

Painting: Paints-Base, Vehicle, pigments, Solvent, Drier and Fillers. Preparation of various Paints and their Uses - Ready mix Paints - Cement, White wash, Colour wash, Oil Bound Distempers, Enamel, and Plastic Emulsion Paints- Defects in Painting, Painters Putty (solignum), Plaster Putty, Varnish, Lacquer, Epoxy Resin. Finishes for Granite, Marble, Mosaic, Wooden and Vitreous Tile – Anti skid and Anti stain measures, Anti- Termite and pest control Treatments.

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For Questions, Notes, Syllabus & Results

UNIT V MISCELLANEOUS MATERIALS:

THERMAL AND ACOUSTIC MATERIALS – Thermocole, Cork, Glass Wool, Fiber boards and Patented Insulating Materials- Gypsum board

PLASTICS – Classification and Uses - PVC, Fiber Reinforced Plastics (FRP), Ultra PVC sections.

METALS - MS (Powdered Coated and Painted), Stainless Steel, Aluminum (Anodized and Powdered Coated) – Types and Uses Introduction to NANO materials – Vermiculate – Artificial sand – Recycled Aggregates.

WATER PROOFING AND DAMP PROOFING MATERIALS: Various types of water proofing materials - Properties and functions- Various types of damp proofing materials - Properties and functions.

REFERENCES

1. A Text book of Civil Engineering Materials - Aggarwal & Arora
2. Building Materials - S.C. Rangwala
3. Materials of Construction - R.C. Smith
4. Building Materials - N.K.R. Moorthy
5. Materials of Construction - B.N. Das
6. Text book of Engineering Materials - S.L. Chawla