**17CE1202 - BUILDING CONSTRUCTION**

**(Civil Engineering)**

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| **Course category** | Engineering Science | **Credits** | 3 |
| **Course Type** | Theory | **Lecture - Tutorial - Practical** | 3 - 0 - 0 |
| **Prerequisite** | Building Materials | **Sessional Evaluation** | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course**  **Objectives** | 1. To learn various types of building and their components. 2. To explain different types of masonries and their applications. 3. To describe various types of lintels and arches. 4. To select suitable type of flooring, staircases, doors and windows. 5. To explain different special treatment for buildings. 6. To be aware of engineering green building technology. | |
| **Course Outcomes** | CO1 | Understand with various types of buildings, components of a building and foundation. |
| CO2 | Understand various types of masonry construction. |
| CO3 | Understand the various types of openings in buildings. |
| CO4 | Understand the various types of floors, roofs, and their construction practices. |
| CO5 | Know various special treatments for fire, thermal and acoustic insulation. |
| CO6 | Understand the principles and concept of Green building technology. |
| **Course Content** | **UNIT – I**  **INTRODUCTION:** Types of buildings – Components of a building – Design loads – Types and uses of shallow and deep foundations.  **UNIT – II**  **MASONRY CONSTRUCTION :**  **Stone Masonry:** Technical terms – Lifting appliances – Joints – Types – Random (un-coarsed) rubble – Coarsed rubble – Dry rubble masonry – Ashlar masonry – Ashlar fine – chamfered fine – Supervision.  **Brick masonry:** Technical terms – Bonds in brick work-English bond – Single & Double Flemish bond – Garden wall bond.  Raking bond – Dutch bond – Defects – Comparison of brick masonry and stone masonry.  **Composite masonry:** Stone facing with brick backing – Brick facing with concrete backing – Hollow concrete blocks and construction.  **Cavity walls:** Brick cavity walls – Position of cavity at foundation – Roof and at opening levels.  **Lintels & Arches:** Lintels – Types – Construction. Arches: Technical terms – Types – Brick arches – Rough – Axed – Stone arches – Flat – Semicircular.  **Introduction to plain and reinforced concrete: construction**: Merits and demerits.  **UNIT – III**  **DOORS AND WINDOWS :**  **Doors:** Location – Technical terms – Size – Types – Construction – Suitability.  **Windows:** Factors affecting selection of size – Shape – Location and no. of windows – Types – Construction – Suitability – Fixtures and fastenings.  **Ventilators:** Ventilators combined with window – Fan light.  **Stairs and Staircases:** Definition – Technical terms – Requirements of good stair – fixing of going and rise of a step – Types of steps – Classification – Example –Stair planning – Elevators – Escalators.  **UNIT – IV**  **FLOORINGS :** Introduction – Essential requirements of a floor – Factors affecting selection of flooring material – Types of ground floors – Brick – Flag stone – tiled cement concrete – Granolithic – Terrazzo – Marble – Timber flooring – Upper floor - Timber – Timber floor supported on RSJ flag stone floor resting on RSJ – jack arch floor – Reinforced concrete floor – Ribbed floor – Pre-cast concrete floor.  **Roofs and roof coverings:** Introduction – Requirements of good roof technical terms – Classification – Types of roof coverings for pitched roof. A.C. sheet roofs – Fixing of A.C. sheets – Laying of big six sheets – G.I. Sheets roofs – slates – Flat roof –advantages – Disadvantages – Types of flat terraced roofing.  **Wall finishes:** Plastering- Objectives of plastering – Requirements of good plaster – Types of mortars for plastering – Terms used in plastering work tools used in plastering – Types of pointing.  **Temporary works:** Formwork – Stripping of form work – Timbering in Trenches – Types of scaffolding – Shoring and under pinning.  **UNIT – V**  **SPECIAL TREATMENTS:**  **Fire Resistants:** Characteristics of fire resisting materials – Fire resisting – Properties of common building materials (brick – stone, Tiles, glass).  **Thermal insulators:** Thermal insulating materials – Methods of thermal insulation.  **Acoustical construction:** Introduction – Characteristics of audible sound – Behavior of sound in enclosure – Reflection of sound – Reverberation and absorption.  **UNIT – VI**  **GREEN BUILDING:** Principles – Concepts – Case study. | |
| **Textbooks**  **& Reference books** | **TEXT BOOKS:**   1. Building Construction by Dr. B. C. Punmia. 2. Building Construction by Gurucharan Singh. 3. Building Construction by Sushil Kumar.   **REFERENCE BOOKS:**   1. Building Construction by S. C. Rangwala. 2. Building Construction by P.C Varghese, Prentice -Hall of India, New Delhi. 3. Indian Standard Institution, National Building Code of India, ISI, 1984, New Delhi. | |