

IDEAL SCHOOL OF ENGINEERING, RETANG-752054

| DISCIPLINE: CIVIL ENGINEERING | SEMESTER: 3 RD SEM | NAME OF THE TEACHING FACULTY: ER. NIHAR RANJAN NAYAK & ER. ARPITA ROUT |
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| SUBJECT: BUILDING MATERIAL AND CONSTRUCTION TECHNOLOGY (TH-3) | No of Days/Per week class allotted: 5 Class P/W(75) | Semester From Date: 15/09/2022 To Date: 22/12/2022 No. Of Weeks: 15 |
| WEEK | CLASS DAY | THEORY TOPICS <u>PART-A (BUILDING MATERIAL)</u> |
| 1 st | 1 st | Stone : Introduction to Stone as a Building Material |
| | 2 nd | Classification of rock, uses of stone, natural bed of stone |
| | 3 rd | Qualities of good building stone And Dressing of stone |
| | 4 th | Characteristics of different types of stone and their uses. |
| | 5 th | Revision about last class Characteristics of Stone. |
| 2 nd | 1 st | Bricks :Brick earth – its composition |
| | 2 nd | Brick making – Preparation of brick earth, Moulding. |
| | 3 rd | Drying, Burning in kilns (continuous Process). |
| | 4 th | Classification of bricks, size of traditional and modular bricks. |
| | 5 th | Qualities of good building bricks |
| 3 rd | 1 st | Revision of Last week Class About Bick and its Process of Manufacturing. |
| | 2 nd | Cement, Mortar and Concrete: Cement: Types of cements, Properties of cement |
| | 3 rd | Manufacturing of cement And reminding terms like Cement, Mortar & Concrete |
| | 4 th | Importance and application of blended cement with fly ash and blast furnace |
| | 5 th | Mortar: Definition and types of mortar. |
| 4 th | 1 st | Sources and classification of sand, Bulking of sand. |
| | 2 nd | Use of gravel, morrum and fly ash as different building material. |
| | 3 rd | Concrete: Definition and composition- Water cement ratio |
| | 4 th | Workability, mechanical properties and grading of aggregates, mixing, placing, compacting and curing of concrete. |

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| | 5 th | Revision of Last Class About Water Cement Ratio and Workability of Concrete |
| 5 th | 1 st | Other Construction Materials : Timber: Classification and Structure of timber |
| | 2 nd | Seasoning of timber – Importance. |
| | 3 rd | Characteristics of good timber. |
| | 4 th | Clay products and refractory materials – Definition and Classification. |
| | 5 th | Properties and uses of refractory materials- tiles, terracotta, porcelain glazing. |
| 6 th | 1 st | Iron and Steel: Uses of cast iron, wrought iron, mild steel and tor steel. |
| | 2 nd | Revision of Last Class About Characteristics of Good Timber And Properties And Uses of Refractory Material. |
| | 3 rd | Surface Protective Materials |
| | 4 th | Composition of Paints, enamels, varnishes. |
| | 5 th | Types and uses of surface protective materials like Paints. |
| 7 th | 1 st | Revision of Last week Class about Surface Enamels and Protective Material like Paints, Varnishes. |
| | 2 nd | Types of Enamels, Varnishes, Distempers |
| | 3 rd | Types of Emulsion, French polish and Wax Polish. |
| | 4 th | Discussing the Various materials that Can be used to protect the Surface. |
| | 5 th | Some important Questions About Building Material To be Discussed. |
| 8 th | 1 st | <u>PART-B (CONSTRUCTION TERCHNOLOGY)</u> Introduction: Buildings and classification of buildings based on occupancy. |
| | 2 nd | Different components of a building. Site investigation – objectives |
| | 3 rd | Site reconnaissance and explorations |
| | 4 th | Foundations : Concept of foundation and its purpose |
| | 5 th | Types of foundations – shallow and deep. |
| | 9 th | 1 st |
| 2 nd | | Thumb rules for depth and width of foundation and thickness of concrete block. |
| 3 rd | | Deep foundations: Pile foundations-their suitability. |
| 4 th | | classification of piles based on materials |
| 5 th | | Function and method of installation. |
| | 1 st | Walls & Masonry Works: Purpose of walls |

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| 10 th | 2 nd | Classification of walls – load bearing, non-load bearing walls, retaining walls. |
| | 3 rd | Classification of walls as per materials of construction: brick, stone |
| | 4 th | Reinforced brick, reinforced concrete, precast |
| | 5 th | Hollow and solid concrete block and composite masonry walls (Concept Only). |
| 11 th | 1 st | Partition Walls : Suitability and uses of brick and wooden partition walls |
| | 2 nd | Brick masonry : Definition of different terms |
| | 3 rd | Bond – meaning and necessity: English bond for 1 and 1-1/2 Brick thick walls. |
| | 4 th | T, X and right angled corner junctions. Thickness for 1 and 1-1/2 brick square pillars in English bond |
| | 5 th | Stone Masonry |
| 12 th | 1 st | Glossary of terms –String course, corbel, cornice, block-in-course, grouting, mouldings |
| | 2 nd | Templates, throating, through stones, parapet, coping, pilaster and buttress |
| | 3 rd | Doors, Windows And Lintels: Glossary of terms used in doors and windows |
| | 4 th | Doors – different types of doors Windows – different types of windows |
| | 5 th | Purpose of use of arches and lintels. |
| 13 th | 1 st | Floors, Roofs and Stairs : Floors: Glossary of terms |
| | 2 nd | Types of floor finishes – cast-in-situ, concrete flooring(monolithic, bonded) |
| | 3 rd | Terrazzo tile flooring, cast in situ Terrazzo flooring, timber flooring (Concept only) |
| | 4 th | Roofs: Glossary of terms, Types of roofs, concept and function of flat, pitched, hipped and Sloped roofs |
| | 5 th | Stairs: Glossary of terms; Stair case, winder, landing, stringer, newel, baluster, rise, tread, width of stair case, hand rail, nosing, head room, mumty room. |
| 14 th | 1 st | Various types of stair case – straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs) |
| | 2 nd | Bifurcated stair, spiral stair, cantilever stair, tread riser stair. |
| | 3 rd | Protective, Decorative Finishes, Damp and Termite Proofing : Plastering – purpose – Types of plastering |
| | 4 th | Types of plaster finishes – Grit finish, rough cast, smooth cast. |
| | 5 th | Sand faced, pebble dash, acoustic plastering and plain plaster etc. |
| | 1 st | Proportion of mortars used for different plasters, pre plastering and curing |

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| 2 nd | Pointing – purpose –Types of pointing Painting – objectives – method of painting new and old wall surfaces, wood surface and metal surfaces – powder coating and spray painting on metal surfaces |
| 3 rd | White washing – Colour washing – Distempering – internal and external walls. Damp and Termite proofing – Materials and Methods. |
| 4 th | Concept of green building: Introduction to Energy Management and Energy Audit of Buildings. Aims of energy management of buildings. |
| 5 th | Types of energy audit , Response energy audit questionnaire, Energy surveying and audit report. |