Lesson Plan of Fluid Mechanics

3rd Sem Civil Engineering

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W W | Period | Theory Portion | W W | Practical |
| I | 1 | Introduction  Fluids: Real and ideal fluids  Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics | I,II | To verify Bernoulli’s Theorem |
|  | 2 | Properties of Fluids  Mass density, specific weight, specific gravity, viscosity, surface tension | III,IV | To find out venturimeter coefficient |
|  | 3 | Cohesion, adhesion and capillarity, vapour pressure and compressibility | V,VI | To determine coefficient of velocity (Cv), Coefficient of discharge (Cd) Coefficient of contraction (Cc) of an orifice and verify the relation between them |
| II | 1 | Hydrostatic Pressure  Pressure, intensity of pressure, pressure head, Pascal's law and its applications | VII,VIII, | To perform Reynold's experiment |
|  | 2 | Total pressure, resultant pressure, and centre of pressure | IX,X,XI | To verify loss of head in pipe flow due to  Sudden enlargement  Sudden contraction  Sudden bend |
|  | 3 | Total pressure and centre of pressure on horizontal, vertical and inclined plane surfaces of rectangular | XII,XIII | Demonstration of use of current meter and pitot tube |
| III | 1 | Total pressure and centre of pressure on horizontal, vertical and inclined plane surfaces of triangular, trapezoidal shapes | XVI,XV | To determine coefficient of discharge of a rectangular notch and triangular notch. |
|  | 2 | Total pressure and centre of pressure on horizontal, vertical and inclined plane surfaces of circular |  |  |
|  | 3 | Simple Numerical Problems |  |  |
| IV | 1 | Measurement of Pressure  Atmospheric pressure |  |  |
|  | 2 | Measurement of Pressure  gauge pressure |  |  |
|  | 3 | Measurement of Pressure  vacuum pressure and absolute pressure. |  |  |
| V | 1 | Piezometer, simple manometer and differential manometer, Bourden gauge and dead weight pressure gauge. |  |  |
|  | 2 | Fundamentals of Fluid Flow  Types of Flow: Steady and unsteady flow |  |  |
|  | 3 | Fundamentals of Fluid Flow  Types of Flow: laminar and turbulent flow |  |  |
| VI | 1 | Fundamentals of Fluid Flow  Types of Flow: uniform and non-uniform flow |  |  |
|  | 2 | Discharge and continuity equation (flow equation) {No derivation},Simple numerical problems |  |  |
|  | 3 | Types of hydraulic energy: Potential energy |  |  |
| VII | 1 | Types of hydraulic energy: kinetic energy |  |  |
|  | 2 | Types of hydraulic energy: pressure energy |  |  |
|  | 3 | Bernoulli's theorem; statement and description (without proof of theorem),Simple numerical problems |  |  |
| VIII | 1 | Flow Measurements  Brief description with simple numerical problems of:Venturimeter and orificemeter |  |  |
|  | 2 | Brief description with simple numerical problems of : Pitot tube |  |  |
|  | 3 | Brief description with simple numerical problems of : Orifices and mouthpieces |  |  |
| IX | 1 | Brief description with simple numerical problems of: Current meters |  |  |
|  | 2 | Brief description with simple numerical problems of: Notches and weirs |  |  |
|  | 3 | Flow through Pipes: Definition of pipe flow; Reynolds number |  |  |
| X | 1 | laminar and turbulent flow – explained through Reynold's experiment |  |  |
|  | 2 | Critical velocity and velocity distributions in a pipe for laminar flow |  |  |
|  | 3 | Head loss in pipe lines due to friction, sudden expansion and sudden contraction |  |  |
| XI | 1 | entrance, exit, obstruction and change of direction (No derivation of formula), Simple numerical problems |  |  |
|  | 2 | Hydraulic gradient line and total energy line |  |  |
|  | 3 | Pipes in series and parallel |  |  |
| XII | 1 | Water hammer phenomenon and its effects (only definition and description) |  |  |
|  | 2 | Flow through open channels: Definition of an open channel |  |  |
|  | 3 | Flow through open channels: uniform flow and non-uniform flow |  |  |
| XIII | 1 | Discharge through channels using Chezy's formula (no derivation) |  |  |
|  | 2 | Discharge through channels using Manning's formula (no derivation) |  |  |
|  | 3 | Most economical channel sections (no derivation, only simple numerical problems) Rectangular |  |  |
| XIV | 1 | Most economical channel sections (no derivation, only simple numerical problems) Trapezoidal |  |  |
|  | 2 | Most economical channel sections (no derivation, only simple numerical problems) Trapezoidal |  |  |
|  | 3 | Head loss in open channel due to friction |  |  |
| XV | 1 | Hydraulic Pumps: Hydraulic pump |  |  |
|  | 2 | Hydraulic Pumps: reciprocating pump |  |  |
|  | 3 | Hydraulic Pumps: centrifugal pumps (No numericals and derivations) (may be demonstrated with the help of working models) |  |  |

Lesson Plan of Applied Mechanics

3rd Sem Civil Engineering

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W W | Period | Theory Portion | W W | Practical |
| I | 1 | Introduction  Concept of engineering mechanics definition of mechanics, statics, dynamics | I,II | Verification of the polygon law of forces using Gravesand’s apparatus |
|  | 2 | Application of engineering mechanics in practical fields. | III,IV | To verify the forces in different members of jib crane. |
|  | 3 | Different systems of units (FPS, CGS, MKS and SI) and their conversion from one to another e.g. density, force, pressure, work, power, velocity, acceleration( Simple Numerical Problems) | V,VI | To verify the reaction at the supports of a simply supported beam. |
|  | 4 | Different systems of units (FPS, CGS, MKS and SI) and their conversion from one to another e.g. density, force, pressure, work, power, velocity, acceleration( Simple Numerical Problems) | VII,VIII | To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane. |
| II | 1 | Fundamental Units and Derived Units | IX,X | To find the mechanical advantage, velocity ratio and efficiency of a screw jack. |
|  | 2 | Concept of rigid body, scalar and vector quantities | XI | To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel. |
|  | 3 | Laws of forces  Definition of force, Bow’s Notations | XII | To find mechanical advantage, velocity ratio and efficiency of single purchase crab. |
|  | 4 | Types of force: Point force/concentrated force & Uniformly distributed force, effects of force | XIII | To find out center of gravity of regular lamina |
| III | 1 | Types of force: Point force/concentrated force & Uniformly distributed force, effects of force | XIV | To find out center of gravity of irregular lamina. |
|  | 2 | Characteristics of a force. Different force systems | XV | To determine coefficient of friction between three pairs of given surface. |
|  | 3 | Principle of transmissibility of forces |  |  |
|  | 4 | law of super-position |  |  |
| IV | 1 | Composition and resolution of coplanar concurrent forces, resultant force |  |  |
|  | 2 | Method of composition of forces |  |  |
|  | 3 | laws of forces, triangle law of forces, polygon law of forces - graphically, analytically, resolution of forces |  |  |
|  | 4 | Free body diagram |  |  |
| V | 1 | Equilibrant force and its determination |  |  |
|  | 2 | Lami's theorem  [Simple problems on above topics] |  |  |
|  | 3 | Moment: Concept of moment |  |  |
|  | 4 | Moment of a force and units of moment |  |  |
| VI | 1 | Varignon's theorem (definition only) |  |  |
|  | 2 | Principle of moment and its applications (Levers – simple and compound, steel yard, safety valve, reaction at support) |  |  |
|  | 3 | Principle of moment and its applications (Levers – simple and compound, steel yard, safety valve, reaction at support) |  |  |
|  | 4 | Principle of moment and its applications (Levers – simple and compound, steel yard, safety valve, reaction at support) |  |  |
| VII | 1 | Parallel forces (like and unlike parallel force), calculating their resultant |  |  |
|  | 2 | Concept of couple, its properties and effects |  |  |
|  | 3 | General conditions of equilibrium of bodies under coplanar forces |  |  |
|  | 4 | General conditions of equilibrium of bodies under coplanar forces |  |  |
| VIII | 1 | Position of resultant force by moment  [Simple problems on the above topics] |  |  |
|  | 2 | Friction: Definition and concept of friction |  |  |
|  | 3 | Types of friction, force of friction, Limiting Friction. |  |  |
|  | 4 | Laws of static friction |  |  |
| IX | 1 | Coefficient of friction |  |  |
|  | 2 | Angle of friction, angle of repose. |  |  |
|  | 3 | Equilibrium of a body lying on a horizontal plane, equilibrium of a body lying on a rough inclined plane. |  |  |
|  | 4 | Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force: Acting along the inclined plane |  |  |
| X | 1 | Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force: At some angle with the inclined plane |  |  |
|  | 2 | Ladder friction |  |  |
|  | 3 | Advantages and Disadvantages of friction |  |  |
|  | 4 | Methods of increasing/decreasing the force of friction.[Simple problems on the above topics] |  |  |
| XI | 1 | Centre of Gravity : Concept |  |  |
|  | 2 | Definition of centroid of plain figures and centre of gravity of symmetrical solid bodies |  |  |
|  | 3 | Difference between centroid and C.G. |  |  |
|  | 4 | Determination of centroid of plain and composite lamina using moment method only, centroid of bodies with removed portion |  |  |
| XII | 1 | Determination of centroid of plain and composite lamina using moment method only, centroid of bodies with removed portion |  |  |
|  | 2 | Determination of center of gravity of solid bodies - cylinder, cube, cuboid and sphere; composite bodies and bodies with portion removed |  |  |
|  | 3 | Determination of center of gravity of solid bodies - cylinder, cube, cuboid and sphere; composite bodies and bodies with portion removed[Simple problems on the above topics] |  |  |
|  | 4 | Simple Machines: Definition of Simple and compound machine (Examples) |  |  |
| XIII | 1 | Simple Machines: Definition of Simple and compound machine (Examples) |  |  |
|  | 2 | Definition of load, effort, velocity ratio |  |  |
|  | 3 | Mechanical advantage and efficiency of ­a machine and their relationship |  |  |
|  | 4 | law of machines |  |  |
| XIV | 1 | Definition of ideal machine, reversible and self locking machine |  |  |
|  | 2 | Effort lost in friction |  |  |
|  | 3 | Load lost in friction |  |  |
|  | 4 | Determination of maximum mechanical advantage and maximum efficiency |  |  |
| XV | 1 | System of pulleys (first, second, third system of pulleys) |  |  |
|  | 2 | Determination of velocity ratio, mechanical advantage and efficiency |  |  |
|  | 3 | Working principle and application of wheel and axle, Weston’s Differential Pulley Block , simple screw jack, worm and worm wheel, single and double winch crab. Expression for their velocity ratio and field of their application [Simple problems on the above topics] |  |  |
|  | 4 | Working principle and application of wheel and axle, Weston’s Differential Pulley Block , simple screw jack, worm and worm wheel, single and double winch crab. Expression for their velocity ratio and field of their application [Simple problems on the above topics] |  |  |

###### Lesson Plan of Surveying – I

3rd Sem Civil Engineering

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W W | Period | Theory Portion | W W | Practical |
| I | 1 | Introduction: Basic principles of surveying | I,II,III | Chain surveying:  Ranging a line, Chaining a line and recording in the field book, Taking offsets- perpendicular and oblique (with a tape only), Setting out right angle with a tape.  Chaining of a line involving reciprocal ranging, Chaining a line involving obstacles to ranging, Chain Survey of a small area |
|  | 2 | Concept and purpose of surveying, measurements-linear and angular, units of measurements | IV,V | Compass Surveying:  Study of prismatic compass, Setting the compass and taking observations, Measuring angles between the lines meeting at a point |
|  | 3 | Instruments used for taking these measurements | VI,VII,VIII,IX | Levelling:  Study of dumpy level and levelling staff, Temporary adjustments of various levels, Taking staff readings on different stations from the single setting and finding differences of level between them, To find out difference of level between two distant points by shifting the instrument, Longitudinal and cross sectioning of a road/railway/canal, Setting a gradient by dumpy and auto-level |
| II | 1 | Classification based on surveying instruments | X,XI,XII, XIII | Plane Table Surveying:  Study of the plane table survey equipment, Setting the plane table, Marking the North direction, Plotting a few points by radiationmethod,Orientation by-Trough compas  - Back sighting, Plotting few points by intersection, radiation and resection method, Traversing an area with a plane table (at least five lines) |
|  | 2 | Chain surveying: Purpose and principles of Chain Surveying | XIV,XV | Layout of Buildings (from given drawing of two room residential building) by use of surveying instruments. |
|  | 3 | Chain surveying: Introduction |  |  |
| III | 1 | Chain surveying: Advantages and disadvantages |  |  |
|  | 2 | Chain surveying: Direct and indirect ranging |  |  |
|  | 3 | Chain surveying:Offsets and recording of field notes |  |  |
| IV | 1 | Chain surveying: Obstacles in Chain Surveying |  |  |
|  | 2 | Chain surveying: Errors in Chain Surveying and their correction. |  |  |
|  | 3 | Compass surveying: Purpose of compass surveying |  |  |
| V | 1 | Compass surveying: Use of prismatic compass: Setting and taking observations |  |  |
|  | 2 | Compass surveying: Concept of following with simple numerical problems: Meridian - Magnetic and true, Arbitrary |  |  |
|  | 3 | Compass surveying: Concept of following with simple numerical problems: Bearing - Magnetic, True and Arbitrary |  |  |
| VI | 1 | Compass surveying: Concept of following with simple numerical problems: Whole circle bearing and reduced bearing |  |  |
|  | 2 | Compass surveying: Concept of following with simple numerical problems: Fore and back bearing |  |  |
|  | 3 | Compass surveying: Concept of following with simple numerica problems: Magnetic dip and declination |  |  |
| VII | 1 | Compass surveying: Local attraction - causes, detection, errors and corrections |  |  |
|  | 2 | Compass surveying: Local attraction - Problems on local attraction, magnetic declination and calculation of included angles in a compass traverse (Simple Numerical Problems) |  |  |
|  | 3 | Levelling: Purpose of levelling |  |  |
| VIII | 1 | Levelling: , concept of a level surface, horizontal surface, vertical surface, datum, reduced level and bench marks |  |  |
|  | 2 | Levelling: Identification of various parts of Dumpy level and use of Dumpy level, Engineer’ level |  |  |
|  | 3 | Levelling: Auto level: advantages and disadvantages use of auto level. |  |  |
| IX | 1 | Levelling: Concepts of line of collimation, axis of the bubble tube, axis of the telescope and vertical axis |  |  |
|  | 2 | Levelling: Levelling staff: single piece, folding, invar precision staff, telescopic |  |  |
|  | 3 | Levelling: Temporary adjustment and permanent adjustment of dumpy level by two peg method. |  |  |
| X | 1 | Levelling: Concept of back sight, foresight, intermediate sight, change point, to determine reduce levels |  |  |
|  | 2 | Levelling: Level book and reduction of levels by: Height of collimation method |  |  |
|  | 3 | Levelling: Level book and reduction of levels by: Rise and fall method |  |  |
| XI | 1 | Levelling: Arithmetic checks, problem on reduction of levels, fly levelling, check leveling and profile levelling (L-section and X-section) |  |  |
|  | 2 | Levelling:Errors in levelling, permissible limits, reciprocal leveling. Numerical problems |  |  |
|  | 3 | Levelling: Computations of Areas of regular figures and irregular figures. |  |  |
| XII | 1 | Levelling: Simpson’s rule: prismatic formula and graphical method use of planimeter for computation of areas, numerical problems |  |  |
|  | 2 | Plane Table Surveying: Purpose of plane table surveying, equipment used in plane table survey |  |  |
|  | 3 | Setting of a plane table:  Centering |  |  |
| XIII | 1 | Setting of a plane table:  Levelling |  |  |
|  | 2 | Setting of a plane table:  Orientation |  |  |
|  | 3 | Methods of plane table surveying: Radiation |  |  |
| XIV | 1 | Methods of plane table surveying:  Intersection |  |  |
|  | 2 | Methods of plane table surveying:  Traversing |  |  |
|  | 3 | Methods of plane table surveying:  Resection |  |  |
| XV | 1 | Concept of Two point and Three point problems (Concept only) |  |  |
|  | 2 | Errors in plane table survey and precautions to control them. |  |  |
|  | 3 | Testing and adjustment of plane table and alidade |  |  |

Lesson Plan of CONSTRUCTION MATERIALS

3rd Sem Civil Engineering

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W W | Period | Theory Portion | W W | Practical |
| I | 1 | Building Stones:  Classification of Rocks: (General Review)  Geological classification: Igneous, sedimentary and metamorphic rocks | I,II,III | To identify the stones used in building works by visual examination |
|  | 2 | Classification of Rocks: (General Review)  Chemical classification; Calcareous, argillaceous and siliceous rocks | IV,V,VI | To determine the crushing strength of bricks |
|  | 3 | Classification of Rocks: (General Review)  Physical classification: Unstratified, startified and foliated rocks | VII,VIII,IX | To determine the water absorption of bricks and efflorescence of bricks |
|  | 4 | General characteristics of stones – Marble, Kota stone, Granite, Sand, Trap, Basalt stone, Lime stone and Slate | X,XI,XII | To identify various types of timbers such as: Teak, Sal, Chir, Shisham, Deodar, Kail & Hollock by visual examination only |
| II | 1 | Requirements of good building stones | XIII,XIV,  XV | The students should submit a report work on the construction materials, covering water proofing material, cements, steel, paints and timber products available in the local market. They will also show the competitive study based upon the cost, brand name, sizes available in the local market. |
|  | 2 | Identification of common building stones |  |  |
|  | 3 | Various uses of stones in construction |  |  |
|  | 4 | Quarrying of stones by blasting and its effect on environment |  |  |
| III | 1 | Bricks and Tiles:  Introduction to bricks |  |  |
|  | 2 | Raw materials for brick manufacturing and properties of good brick making earth |  |  |
|  | 3 | Manufacturing of bricks |  |  |
|  | 4 | Preparation of clay (manual/mechanically) |  |  |
| IV | 1 | Moulding: hand moulding and machine moulding brick table; drying of bricks, burning of bricks, types of kilns (Bull's Trench Kiln and Hoffman's Kiln) |  |  |
|  | 2 | Process of burning, size and weight of standard brick; traditional brick, refractory brick, clay-flyash bricks, sun dried bricks, only line diagram of kilns |  |  |
|  | 3 | Classification and specifications of bricks as per BIS: 1077 |  |  |
|  | 4 | Testing of common building bricks as per BIS: 3495 |  |  |
| V | 1 | Compressive strength, water absorption – hot and cold water test, efflorescence, Dimensional tolerance, soundness |  |  |
|  | 2 | Tiles:Building tiles; Types of tiles-wall, ceiling, roofing and flooring tiles |  |  |
|  | 3 | Tiles:Ceramic, terrazo and PVC tiles, : their properties and uses, |  |  |
|  | 4 | Tiles:Vitrified tiles, Paver blocks, interlocking tiles |  |  |
| VI | 1 | Stacking of bricks and tiles at site |  |  |
|  | 2 | Cement: Introduction, raw materials |  |  |
|  | 3 | Flow diagram of manufacturing of cement |  |  |
|  | 4 | Various types of Cements |  |  |
| VII | 1 | Uses and testing: Ordinary portland cement, rapid hardening cement, low heat cement, white and coloured cement, portland pozzolana cement |  |  |
|  | 2 | Uses and testing: Ordinary portland cement, rapid hardening cement, low heat cement, white and coloured cement, portland pozzolana cement |  |  |
|  | 3 | Properties of cement |  |  |
|  | 4 | Timber and Wood Based Products: Identification |  |  |
| VIII | 1 | Uses of different types of timber: Teak, Deodar, Shisham, Sal, Mango, Kail, Chir, Fir, Hollock, Champ |  |  |
|  | 2 | Market forms of converted timber as per BIS Code |  |  |
|  | 3 | Seasoning of timber: Purpose |  |  |
|  | 4 | Methods of seasoning as per BIS Code |  |  |
| IX | 1 | Properties of timber and specifications of structural timber |  |  |
|  | 2 | Defects in timber, decay in timber |  |  |
|  | 3 | Preservation of timber and methods of treatment as per BIS |  |  |
|  | 4 | Other wood based products, their brief description of manufacture and uses: laminated board, gypsum board, block board, fibre board, hard board, sunmica, plywood, veneers, nu-wood and study of the brand name and cost of the wood based products available in the market, Cement Panel Board, Moulded Doors. |  |  |
| X | 1 | Paints and Varnishes: Introduction |  |  |
|  | 2 | Paints and Varnishes: purpose and use of paints |  |  |
|  | 3 | Paints and Varnishes: Types, ingredients |  |  |
|  | 4 | Paints and Varnishes: properties and uses of oil paints, water paints and cement paints |  |  |
| XI | 1 | Covering capacity of various paints |  |  |
|  | 2 | Types, properties and uses of varnishes |  |  |
|  | 3 | Trade name of different products. |  |  |
|  | 4 | Metals: Ferrous metals: Composition |  |  |
| XII | 1 | Metals: Properties and uses of cast iron, mild steel, HYSD steel, high tension steel as per BIS. |  |  |
|  | 2 | Metals: Properties and uses of cast iron, mild steel, HYSD steel, high tension steel as per BIS. |  |  |
|  | 3 | Commercial forms of ferrous, metals |  |  |
|  | 4 | Aluminium & Stainless Steel. |  |  |
| XIII | 1 | Miscellaneous Materials: Plastics – Introduction |  |  |
|  | 2 | Uses of various plastic products in buildings such as doors, water tanks and PVC pipes |  |  |
|  | 3 | Fibre Sheets and their size and uses |  |  |
|  | 4 | Types and uses of insulating materials for sound and thermal insulation |  |  |
| XIV | 1 | Construction chemicals like water proofing compound, epoxies, polymers |  |  |
|  | 2 | Construction chemicals like water proofing compound, epoxies, polymers |  |  |
|  | 3 | Water proofing, termite proofing and fire resistance materials – types and uses |  |  |
|  | 4 | Water proofing, termite proofing and fire resistance materials – types and uses |  |  |
| XV | 1 | Materials used in interior decoration works like POP |  |  |
|  | 2 | Methods of doing POP, PVC paneling |  |  |
|  | 3 | Eco friendly materials for construction of buildings |  |  |
|  | 4 | Eco friendly materials for construction of buildings |  |  |

Lesson Plan of BUILDING CONSTRUCTION

3rd Sem Civil Engineering

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W W | Period | Theory Portion | W W | Practical |
| I | 1 | Introduction: Definition of a building | I,II | Demonstration of tools and plants used in building construction |
|  | 2 | Classification of buildings based on occupancy | III,IV | To prepare Layout of a building: two rooms building with front verandah |
|  | 3 | Different parts of a building | V,VI,VII | To construct brick bonds (English bond only) in one, one and half and two brick thick: (a) Walls for L, T and cross junction (b) Columns |
|  | 4 | Foundations: Concept of foundation and its purpose | VIII | Demonstration of following items of work at construction site by: Timbering of excavated trenching |
| II | 1 | Types of foundation-shallow and deep | IX | Demonstration of following items of work at construction site by: Laying damp proof courses |
|  | 2 | Shallow foundation - constructional details of: Spread foundations for walls, min. depth criteria, thumb rules for depth and width of foundation and thickness of concrete block, stepped foundation for masonry pillars and concrete columns | X | Demonstration of following items of work at construction site by: Construction of masonry walls |
|  | 3 | Introduction to deep foundation and their types | XI | Demonstration of following items of work at construction site by:  Laying of tile flooring on an already prepared lime concrete base |
|  | 4 | Earthwork: Layout/setting out for surface excavation, cutting and filling | XII | Demonstration of following items of work at construction site by:  Plastering and pointing exercise |
| III | 1 | Earthwork: Excavation of foundation, trenches, shoring, timbering and de- watering | XIII | Demonstration of following items of work at construction site by:  Constructing RCC work |
|  | 2 | Walls: Purpose of walls | XIV | Demonstration of following items of work at construction site by: Pre-construction and post construction termite treatment of building and woodwork |
|  | 3 | Classification of walls - load bearing, non-load bearing, dwarf wall, retaining, breast walls and partition walls | XV | Demonstration of following items of work at construction site by:  Interlocking tiles |
|  | 4 | Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls |  |  |
| IV | 1 | Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls |  |  |
|  | 2 | Partition walls: Constructional details, suitability and uses of brick and wooden partition walls |  |  |
|  | 3 | Scaffolding, construction details and suitability of mason’s brick layers and tubular scaffolding, shoring, underpinning |  |  |
|  | 4 | Masonry: Brick Masonry: Definition of terms like header, stretcher, queen closer, king closer, frog and quoin, course, bond, facing, backing, hearting, jambs, reveals, soffit, plinth, pillars and pilasters |  |  |
| V | 1 | Bond – meaning and necessity; English, flemish bond and other types of bonds |  |  |
|  | 2 | Construction of brick walls –methods of laying bricks in walls,Precautions observed in the construction of walls |  |  |
|  | 3 | Methods of bonding new brick work with old (toothing, raking, back and block bonding), Expansion and contraction joints |  |  |
|  | 4 | Mortars: types, selection of mortar and its preparation |  |  |
| VI | 1 | Stone Masonry: Glossary of terms – natural bed, bedding planes, string course, corbel, cornice, block in course grouting, moulding, templates, corner stone, bond stone, throating, through stone, parapet, coping, pilasters and buttress |  |  |
|  | 2 | Stone Masonry: Types of stone masonry: rubble masonry - random and coursed; Ashlar masonry, principles to be observed in construction of stone masonry walls |  |  |
|  | 3 | Arches and Lintels: Meaning and use of arches and lintels: |  |  |
|  | 4 | Glossary of terms used in arches and lintels - abutment, pier, arch ring, intrados, soffit, extrados, voussoirs, springer, springing line, crown, key stone, skew back, span, rise, depth of an arch, haunch, spandril, jambs, bearing, thickness of lintel, effective span |  |  |
| VII | 1 | Arches: Types of Arches - Semi circular, segmental, elliptical and parabolic, flat, inverted and relieving, Stone arches and their construction,Brick arches and their construction |  |  |
|  | 2 | Lintels: Purpose of lintel, Materials used for lintels, Cast-in-situ and pre-cast lintels,  Lintel along with sun-shade or chhajja |  |  |
|  | 3 | Doors, Windows and Ventilators: Glossary of terms with neat sketches |  |  |
|  | 4 | Classification based on materials i.e. wood, metal and plastic and their suitability for different situations. Different type of doors- panel door, flush door, glazed door, rolling shutter, steel door, sliding door, plastic and aluminium doors |  |  |
| VIII | 1 | Classification based on materials i.e. wood, metal and plastic and their suitability for different situations. Different type of doors- panel door, flush door, glazed door, rolling shutter, steel door, sliding door, plastic and aluminium doors |  |  |
|  | 2 | Window – Panel window, glazed windows (fixed and openable) ventilators, sky light window, Louveres shutters, plastic and aluminium windows |  |  |
|  | 3 | Door and window frames – materials and sections, fixtures and fasteners, hold fasts |  |  |
|  | 4 | Damp Proofing and Water Proofing: Dampness and its ill effects on bricks, plaster, wooden fixtures, metal fixtures and reinforcement, damage to aesthetic appearance, damage to heat insulating materials, damage to stored articles and health |  |  |
| IX | 1 | Sources of dampness - moisture penetrating the building from outside e.g. rainwater, surface water, ground moisture. Moisture entrapped during construction i.e. moisture in concrete, masonry construction and plastering work etc. Moisture which originates in the building itself i.e. water in kitchen and bathrooms etc. |  |  |
|  | 2 | Sources of dampness - moisture penetrating the building from outside e.g. rainwater, surface water, ground moisture. Moisture entrapped during construction i.e. moisture in concrete, masonry construction and plastering work etc. Moisture which originates in the building itself i.e. water in kitchen and bathrooms etc |  |  |
|  | 3 | Damp proofing materials and their specifications: rich concrete and mortar, bitumen, bitumen mastic, polymer coating, use of chemicals |  |  |
|  | 4 | Damp proofing of basement, Ground floors, plinth and walls, water storage tank, kitchen, W.C., roof. |  |  |
| X | 1 | Floors: Glossary of terms-floor finish, topping, under layer, base course, rubble filling and their purpose |  |  |
|  | 2 | Types of floor finishes - concrete flooring, ceramic tile flooring, stone (marble and kota) flooring. Wooden flooring |  |  |
|  | 3 | Special emphasis on level/slope/reverse slope in bathrooms, toilets, kitchen, balcony and staircase |  |  |
|  | 4 | Roofs: Types of roofs, concept of flat, pitched and arched roofs |  |  |
| XI | 1 | Glossary of terms for pitched roofs - batten, eaves, facia board, gable, hip, lap, purlin, rafter, rag bolt, valley, ridge, rain water gutter, anchoring bolts |  |  |
|  | 2 | False ceilings using gypsum, plaster boards, cellotex, fibre boards |  |  |
|  | 3 | Stairs: Glossary of terms: Staircase, winders, landing, stringer, newel, baluster, riser, tread, width of staircase, hand-rail, nosing |  |  |
|  | 4 | Classification of staircase on the basis of material – RCC, timber, steel, Aluminium |  |  |
| XII | 1 | Planning and layout of staircase: Relations between rise and tread |  |  |
|  | 2 | Determination of width of stair, landing etc |  |  |
|  | 3 | Various types of layout - straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs), bifurcated stair, spiral stair |  |  |
|  | 4 | Various types of layout - straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs), bifurcated stair, spiral stair |  |  |
| XIII | 1 | Surface Finishes: Plastering - classification according to use and finishes like plain plaster, grit finish, rough cast, pebble dashed, concrete and stone cladding etc., dubbing, proportion of mortars used for different plasters, |  |  |
|  | 2 | Techniques of plastering and curing |  |  |
|  | 3 | Pointing - different types of pointing and their methods |  |  |
|  | 4 | Painting - preparation of surface, primer coat and application of paints on wooden, steel and plastered wall surfaces |  |  |
| XIV | 1 | Application of white washing, colour washing and distempering, polishing, application of cement and plastic paints |  |  |
|  | 2 | Selection of appropriate paints/finishes for interior and exterior surfaces |  |  |
|  | 3 | Importance of preparation of surfaces such as hacking, grooving etc before application of surface finishes |  |  |
|  | 4 | Importance of preparation of surfaces such as hacking, grooving etc before application of surface finishes |  |  |
| XV | 1 | Anti Termite Measures as per IS 6.313-I-III: Anti Termite Treatment to Foundation, Masonary, RCC, Floors, Junction of walls and Floors. |  |  |
|  | 2 | Anti Termite Measures as per IS 6.313-I-III: Anti Termite Treatment to Foundation, Masonary, RCC, Floors, Junction of walls and Floors |  |  |
|  | 3 | Treatment to wooden joinery |  |  |
|  | 4 | Treatment to existing building |  |  |

Lesson Plan of BUILDING DRAWING

3rd Sem Civil Engineering

|  |  |  |
| --- | --- | --- |
| W W | Period | Practical |
| I, II | 1,2,3 | Details of spread footing foundations, load bearing and non-load bearing wall for given thickness of walls with the help of given data or rule of the thumb, showing offsets, position of DPC. The details of the concrete and brick apron have to be shown in the drawing. |
| III | 1,2,3 | Plans of ‘T’ and Corner junction of walls of 1 Brick, 1-1/2 Brick and 2 brick thick in English bond |
| IV | 1,2,3 | Drawing plan, elevation of arches: circular arch, segmental arch |
| V | 1,2,3 | Elevation, sectional plan and sectional side elevation of flush door, glazed door, panelled door with wire gauge shutter. |
| VI | 1,2,3 | Elevation, sectional plan and sectional side elevation of flush door, glazed door, panelled door with wire gauge shutter. |
| VII | 1,2,3 | Drawing plan, elevation of a small building by measurement and foundation detail and sectional elevation. |
| VIII | 1,2,3 | Drawing detailed plan, elevation and section of a two room residential building from a given line plan, showing details of foundations, roof and parapet |
| IX | 1,2,3 | Drawing detailed plan, elevation and section of a two room residential building from a given line plan, showing details of foundations, roof and parapet |
| X | 1,2,3 | Drawing detailed plan, elevation and section of a two room residential building from a given line plan, showing details of foundations, roof and parapet |
| XI | 1,2,3 | Drawings of following floors  Cement concrete floors on ground and at first floor  Wooden flooring, Bonded cement concrete flooring, Ceramic/vitrified tile flooring |
| XII | 1,2,3 | Drawing of flat roof, showing the heat/thermal insulation provisions |
| XIII | 1,2,3 | Drawing details of damp proofing arrangement of roofs and walls as per BIS Code. Show the rain water drainage arrangement also. |
| XIV | 1,2,3 | Drawing Damp Proofing details in basement of buildings**.** |
| XV | 1,2,3 | Drawing Damp proofing details in water/soil retaining structures**.** |