

Certificate in Building Construction Technology

Concrete Technology - (SE)

| S.No | Contents | Hours |
|--------------|---|-------|
| 1 | Ingredients of concrete: Cement: hydration of cement and its basic compounds, structure of hydrated cement, C-S-H gel, heat of hydration, gel-space ratio and its significance. Aggregates: types, physical properties and standard methods for their determination. | 5 |
| 2 | Concrete : Grade of concrete, proportioning of ingredients, water content and its quality for concrete, water/cement ratio and its role, Properties of fresh concrete including workability, air content, Flow ability, Segregation, Bleeding and Viscosity etc. _ Factors affecting, methods of determination. | 5 |
| 3 | Properties of hardened concrete such as strengths, permeability, creep, shrinkage, factors influencing, Standard tests on fresh and hardened concrete as per IS code. Aggregate- cement interface, maturity concept. | 5 |
| 4 | NDT: Introduction and their importance. Application & use of Rebound Hammer, Ultra-sonic pulse velocity meter, Rebar & Cover meter, half cell potential meter, corrosion resistivity meter, core sampling. | 5 |
| 5 | Concrete mix deign (ACI, IS method), quality control for concrete. Admixture in concrete: Chemical and mineral admixtures, their types and uses: water reducers, accelerator, retarders, water-proofing plasticizers, super plasticizers, air-entraining agents. Use of fly ash and silica fume in concrete, their properties and effect. | 5 |
| Total | | 25 |

Civil Engineering Drawing - (SE)

| S.No | Contents | Hours |
|--------------|--|-------|
| 1 | <p>Building Components –</p> <ol style="list-style-type: none"> 1. Drawing of walls <ol style="list-style-type: none"> i. Brick and Stone masonry ii. Partition wall, cavity wall and cross section of external wall 2. Pointing, Arches, Lintels and Floors 3. Doors and Windows 4. Stairs, Cross section of Dog legged stairs 5. Roofs: Flat and Inclined (Steel) 6. Foundations for Masonry Structures and Framed Structures, Provision of Damp Proof Course <p>Building Planning –</p> <ol style="list-style-type: none"> 1. Development of Front Elevation and Sectional Elevation from a given plan 2. Development of Plan, Front Elevation and Sectional Elevation from line diagram | 15 |
| 2 | <ol style="list-style-type: none"> 1- To plan and draw working drawing of a Residential building with following detail. <ol style="list-style-type: none"> (a) Site plan (b) Foundation plan (c) Plan (d) Two sectional elevations (e) Front elevation (f) Furniture plan (g) Water supply and sanitary plan (h) Electric fitting plan 2- To design and draw a Primary Health Center 3- To design and draw a Primary School 4- To design and draw a Rest House 5- To design and draw a Post Office 6- To design and draw a Bank 7- To design and draw a College Library 8- To design and draw a Cinema Theatre | 15 |
| Total | | 30 |

Building Materials & Construction - (SC)

| S.No | Contents | Hours |
|--------------|--|-------|
| 1 | <p>Basic Civil Engineering Materials (Properties, Types and Uses): Stone: Compressive strength, Water absorption, Durability, Impact value, Tensile strength; Bricks: Water absorption, Compressive strength, Effloresces, Dimension and Tolerance; Tiles: Water absorption, Tolerance, Impact value and Glazing; Light weight concrete blocks.</p> | 5 |
| 2 | <p>Lime: classification as per IS, properties, standard tests and uses in construction. Fly-ash: Properties and Use in manufacturing of bricks & cement; Miscellaneous: Gypsum, Plaster of Paris, PVC materials, Paints, Varnish and Distemper.</p> | 5 |
| 3 | <p>Timber & Steel: Timber: Definitions of related terms, Classifications and Properties, Defects in Conversion of wood, Seasoning wood, Preservation, Fire proofing, Ply woods, Fiber boards; Steel: Mild steel and HYSD steel, Properties and their use, common tests on steel.</p> | 5 |
| 4 | <p>Mortar and Plaster: Mortar preparation methods: Functions and tests & their uses in various types of pointing & plastering</p> | 5 |
| 5 | <p>Foundation & Site Preparation: Purpose, types of foundation: like shallow, deep, pile, raft, grillage foundation and their suitability. Depth of foundation, Sequence of construction activity and co-ordination, site clearance, layout of foundation plan. Temporary structures: Types & methods of shoring, underpinning and scaffolding.</p> | 5 |
| Total | | 25 |

Surveying - (SC)

| S.No | Contents | Hours |
|--------------|---|-------|
| 1 | Introduction: Importance of surveying to engineers, Plane and geodetic surveying, methods of location of points, principle of surveying from whole to part, conventional signs. | 5 |
| 2 | Measurement of Distances: Different types of chains, tapes and their uses. Sources of error and precautions, corrections to tape measurements. Field problems in distance measurement. Advance techniques of distance measurements. | 5 |
| 3 | Measurement of Angles & Direction: Different types of direction measuring instruments and their uses. Reference meridians, Bearing and azimuths, magnetic declination and its variation. Use and adjustment of surveyors and prismatic compass. | 5 |
| 4 | Traversing: Different methods of traversing; chain traverse, chain & compass traverse, transit-tape traverse. Methods of computations and adjustment of traverse; transit rule, Bowditch rule, graphical method, axis method. Gales traverse table. | 5 |
| 5 | Leveling: Definitions of various terms in leveling. Different types of leveling, sources of errors in leveling curvature and refraction corrections. Temporary and permanent adjustment of dumpy and tilting levels. Computation and adjustment of levels. Profile leveling; L-Section and cross-sections. | 5 |
| Total | | 25 |