

1. **Engineering Drawing**
 - 1.1 Unit, Dimension and their conversion with special reference to SI system
 - 1.2 Elementary idea of drawing (object); Building drawings
 - 1.3 Drafting techniques and methods in common practice
 - 1.3.1 Different types of lines and effects
 - 1.3.2 Vertical line, horizontal line & inclined line (thick, thin, dark, light)
 - 1.3.3 Representation of different materials: stone, timber, glass, metal, brick, concrete, sand, earth, tile, plaster
 - 1.3.4 Dimensioning : element to element, centre to centre and overall dimensioning
 - 1.4 Measured Drawing
 - 1.4.1 Methods of measurement of horizontal and vertical dimensions
 - 1.4.2 Sectional measurements
 - 1.4.3 Scales: choice, use and conversion
 - 1.5 Working Drawing
 - 1.5.1 Significance of detailing in terms of accuracy of estimation, bill of quantities and construction supervision
 - 1.5.2 Structural working drawings and structural detail: column, beam, slab, foundation, and other structural elements
2. **Estimating, Costing and Supervision**
 - 2.1 Purpose of estimating
 - 2.2 Methods of estimate
 - 2.3 Types of estimates (preliminary estimate, approximate quantity estimate, detailed estimate, revised estimate)
 - 2.4 Standard estimate formats of government of Nepal
 - 2.5 Rate analysis and Norms
 - 2.6 Estimating items of construction works
 - 2.7 Estimate of civil works, and site development work
 - 2.8 Specifications: purpose, types and necessity
 - 2.9 Concept and purpose of property valuation
 - 2.10 Supervision
3. **Engineering Survey**
 - 3.1 Basics of surveying, its importance and types
 - 3.2 Scale, plans, maps
 - 3.3 Conventional signs and system of field booking of surveying
 - 3.4 Basics of Chain, Compass, Plane table, Levelling and Theodolite
4. **Construction Materials**
 - 4.1 Rocks/stone: types of rocks, their characteristics & properties of good stone
 - 4.2 Aggregates (fine & coarse)
 - 4.3 Cement : Different types of cement and its properties; Admixtures
 - 4.4 Metal and alloys
 - 4.5 Brick: types of bricks & sizes of bricks available in Nepal
 - 4.6 Lime and Surkhi: types, properties and its uses
 - 4.7 Mortar: types, properties and its uses along with proportions
 - 4.8 Paints and varnishes : constituents, types and its uses
 - 4.9 Floor finishes-punning, tiles, mosaic, clay, concrete, vinyl, marble, flagstones, wooden boarding, parquet

स्थानीय तह अन्तर्गतका प्राविधिक तर्फ इन्जिनियरिंग सेवा, सिभिल समूह, चौथो तह, असिस्टेण्ट सब-इन्जिनियर पदको प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

- 4.10 Wall finishes : plasters (cement, lime and mud), punning and cladding (wooden, stone, tiles, marbles)
- 4.11 Roofing materials
5. **Construction Technology**
 - 5.1 Description and Objectives
 - 5.2 Types of construction works
 - 5.2.1 Masonry works; Concrete works; Flooring works; Finishing works
 - 5.2.2 Construction of building components
 - 5.2.3 Earthquake Resistant Building Construction
 - 5.2.4 Temporary constructions
 - 5.2.5 Rural technology and alternative energy
 - 5.3 Concrete technology and management
 - 5.3.1 Constituents of cement concrete (cement, aggregate, water, admixture)
 - 5.3.2 Grading of aggregates
 - 5.3.3 Water cement ratio
 - 5.3.4 Workability and strength of concrete
 - 5.3.5 Concrete mix, laying, pouring, and compaction
 - 5.3.6 Reinforcement laying
 - 5.3.7 Formwork
 - 5.3.8 Curing of concrete
 - 5.3.9 Storage and management of construction material
 - 5.3.10 Record keeping at construction site (daily work done, manpower mobilized, material storage)
 - 5.3.11 Construction safety
 - 5.3.12 Scheduling tool (bar chart)
6. **Building Services**
 - 6.1 Water supply, Types of storage (underground, overhead), types of water supply pipes and its fitting
 - 6.2 Septic tank, soak pit, vents, manhole, types of sewerage pipes
 - 6.3 General principle of electrical installation and distribution, types of wiring systems (surface, conceal), safety precautions (earthing, lightening arrestors)
 - 6.4 Lighting : General principle of lighting & Lighting fixtures
7. **Local Infrastructures**
 - 7.1 **Roads and Bridges** : Types of roads and bridges; Development of road network in Nepal; Layout and construction of trails, rural roads and motorable roads; Cross drains (bridges, culverts, causeways) and Side drains for roads; Retaining walls; Road signs and Traffic signals; and River training works
 - 7.2 **Irrigation** : Need for irrigation; Methods of irrigation; Head works and canal network; operation and maintenance of irrigation system
 - 7.3 **Water Supply** : Community based water supply system; Selection of water source with adequate quantity; Water demand analysis; operation and maintenance of water supply
8. **General information about legislations**
 - 8.1 नेपालको सविधान (भाग १, २, ३, १७ र १८ तथा अनुसूचीहरू) (The Constitution of Nepal (From Parts 1, 2, 3, 17 & 18, and Schedules))
 - 8.2 स्थानीय सरकार सञ्चालन ऐन, २०७४ मा पूर्वाधार विकास सम्बन्धी व्यवस्था (Local Government Operation Act, 2074 (related to local infrastructures development))