

# SENIOR SCHOOL CURRICULUM 2017-18

## CLASS–XI ELECTIVE

### ELEMENTS OF CIVIL ENGINEERING (797) THEORY

*Time: 2.5 Hours*

*Marks: 50*

#### **Unit–1: Construction Tools**

**10**

- Introduction and necessity of tools in construction, Types of tool.
- Hand Tools.
- Power Tools.
- Site Machinery.

#### **Unit–2: Construction Materials**

**15**

- Basic Structure Material.  
Bricks/Blocks/Stone/Rubble, Sand, Cement, Lime, Aggregate, Steel Bars and Binding wires, Timber, Water.
- Basic supporting Material.  
Admixtures (In Cement, Concrete etc.), Protective Coatings, Bitumen (Type &its uses), Sealing Compounds, Grouting Compounds.
- Basic Finish Material.  
Type of Tiles (Floor, Roof, Cladding & special purpose), Plaster of Paris, Paints (External & Internal), Aluminium Glazing, Doors & Windows, Glass, Sanitary Fittings, Indoor & external paints.

#### **Unit–3: Construction Plants and Equipment**

**10**

- Static Plant & Equipment.
- Tower Cranes.
- Batching Plants.
- Concert pumps.
- Mobile Plant & Equipment.
- Road Rollers.
- Pavers.

#### **Unit–4: Material Testing**

**10**

- Lab Testing.

- Test of Cement, Brick, Tiles, Water, Aggregate, Bitumen.

**Unit-5: Safety and Precautions in Construction**

5

- Personal Safety.
- Equipment Safety.
- Dos & Don'ts at Site.

**PRACTICAL**

*Time: 2.5 Hours*

*Marks: 50*

1. Identification & Uses of Hand Tools.
2. Identification & Uses of Power Tools.
3. Identification of Various Types of Steel.
4. Identification of Various Types of Timber.
5. Identification of Various Types of Glass.
6. Identification of Various Type of Aluminium Section.
7. Cutting of Plywood & Timber pieces.
8. Making Timber Surface Plane.
9. Making of Plywood & Timber Joints.
10. Silt Test for sand.
11. Test of Cement.
12. Test of Water.
13. Test of Brick.
14. Test of Tiles.
15. Test of Aggregate.
16. Test of Bitumen.
17. Thickness Measurement of Materials Using Gauges.

**CLASS-XI**

**GENERAL FOUNDATION COURSE (501)**  
**(Common for Engineering & Technology Based Courses)**

(Refer to page 7)

**CLASS-XII**

**ELECTIVE**

**CONSTRUCTION TECHNOLOGY (797)**

**THEORY**

**1. Building Construction**

**10**

- Site Selection for construction, various components of a building (sub structure and super structure with elaboration of technical terms).
- Foundations: Need and function of foundation, different types of foundations and their uses.
- Masonry: General principles of bricks masonry, types of bonds.
- Floors: Types of flooring and their uses.
- Stairs: Need and types of stairs.
- Doors and Windows, Purpose of each and their classification.

**2. Concrete Technology**

**10**

- Definition of concrete, different types of concrete and their uses, Ingredients of Concrete.
- Preparation of concrete:  
Batching, Mixing, Transportation, Placement, Compaction, Curing, Finishing.
- Properties of Concrete:  
Properties in plastic stage: workability, segregation, bleeding.
- Properties of hardened concrete: strength, durability.
- Introduction to standard concrete mixes.

**3. Formwork, Scaffolding and Steel Fixing**

**10**

- Introduction and purpose of formwork.
- Timber joints, cutting and drilling of plywood.
- Shuttering for beam, column and slab floor.
- Codal provisions on formwork.
- Introduction and purpose of scaffolding, Component parts, Types of scaffolding.
- Types of ties and their uses.
- Making and placing reinforcement for slab & foundation.
- Codal provision on steel fixing.

**4. Services & Utilities**

**10**

- Introduction to plumbing, plumbing tools and their uses.
- Water distribution system, material for service pipes, service connection, valves.
- Aim and principles of house drainage, Pipes and traps.
- Sanitary fittings.
- House wiring: Types of wires used, tools used for house wiring, Circuit diagram for tube light, bulb, fan and switches & sockets.
- Fire protection: Fire hazards, characteristics of fire resisting materials, general fire safety requirements for buildings, fire alarms, fire extinguishing equipment.

**5. Construction Work Supervision**

**10**

- Roles and responsibilities of construction work supervisor.

- Record keeping: Muster roll, measurement book, register for material receipt and issue, logbook for construction equipment.
- Site Registers: site diary, site order book, inspection register, cement register, steel register, register for approval of other materials, material requisition and issue records.
- Register for scrap material, POL records, register for construction equipment.
- Check list (Dos and Don'ts) for construction work supervision.

## **PRACTICAL**

***Time: 2.5 Hours***

***Marks: 50***

1.	Laying of bricks in different layer using English bond.	5
2.	Laying of bricks in different layer using Flemish bond.	5
3.	To determine workability of concrete by slump test.	5
4.	Test for compressive strength of concrete cubes.	5
5.	To make T-joint and dove tail joint in timber.	5
6.	Cutting of plywood in different patterns.	5
7.	Drilling in plywood.	5
8.	T- joint in service pipes.	5
9.	Wiring from MCB to switch board having a three pin socket, switches for fan and tube light.	5
10.	Making entries in the measurement book for small piece of construction work.	5

## **CLASS–XII**

### **GENERAL FOUNDATION COURSE (501)** **(Common for Engineering & Technology Based Courses)**

(Refer to page 13)

## **LIST OF TOOLS/EQUIPMENTS**

1.	Work Benches.	4 Nos.
2.	Bench Vices 100 mm.	3 Nos.
3.	Tools kit which include different types and sizes of files, try square, steel rules, hack-saw frame, hammer centre punches, chisels etc.	4 Sets
4.	Surface plates.	2 Nos.
5.	Anvil with stand, 50 kgs.	1 Nos.
6.	Vernier Calliper.	2 No.
7.	Micrometer 0-25 mm.	2 Nos.
8.	Gauge.	2 Nos.
9.	Dial Gauge set.	2 Nos.
10.	Combination set.	2 Nos.
11.	Thread Gauge.	2 Nos.

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| 12. | Feeler Gauge.  | 2 Nos. |
| 13. | Drilling Machine 12 mm (Pedestal type) with Drill Chuck and key. | 1 No.  |
| 14. | Drills of different sizes.                                       | 1 Set  |
| 15. | Vernier Micrometer.  |        |
| 16. | Material required for conducting curriculum experiments.         |        |

