

1	Name of Syllabus	C.C. in Construction Techniques (304209)																																																													
2	Max. No's of Student	25 students.																																																													
3	Duration	1 YEAR																																																													
4	Type	Full Time																																																													
5	No Of Days / Week	6 Days																																																													
6	No Of Hours /Days	7 Hrs																																																													
7	Space Required	Lab = 1000 Sq feet Class Room = 200 Sq feet TOTAL = 1200 Sq feet																																																													
8	Entry Qualification	S.S.C.																																																													
9	Objective Of Syllabus/ introduction	1. Skills to prepare plans and estimate the cost of project. 2. Skills in testing and choosing good quality building materials 3. Skills is constructions of different items like, foundations, masonry works, columns beams slabs and finishing works.																																																													
10	Employment Opportunity	Work as mason, carpenter, painter etc in construction industry. Assistants under engineers and architects. Contract jobs under contractors.																																																													
11	Teacher's Qualification	Diploma or Degree in Civil Engineering.																																																													
12	Training System	Training System Per Week <table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>18 Hours</td><td>24 Hours</td><td>42 Hours</td></tr></table>						Theory	Practical	Total	18 Hours	24 Hours	42 Hours																																																		
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BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY

THEORY PAPER – I

PART A

1. Introduction
2. Stones
3. Bricks
4. Tiles
5. Lime
6. Cement
7. Aggregates
8. Mortar
9. Concrete
10. Timber
11. Metals
12. Paints and Varnishes
13. Miscellaneous Material

DETAILED SYLLABUS :

1. Introduction

General

Scope and purpose of the subject

2. Stones

Introduction

Classification of Rocks

Geological classification

Physical classification

Common varieties of stones - their uses

Availability of important stones

Dressing of stones

Different types of surface finishes

Introduction of aggregates - grading of aggregates

3. Bricks

Composition of good brick earth

Requirements of good brick earth

Manufacture of Bricks

Field tests of good bricks

Characteristics of good bricks

Classification of Bricks as per I.S

Special purpose bricks

4. Tiles Introduction

Types of tiles, Manufacture of tiles

5. Lime

Introduction

Lime - properties and uses

Sources of lime

Slaking of lime

Quick lime

Classification of lime

6. Cement

- Chemical composition of portland cement
- Manufacture process of ordinary portland
- Field tests of cement
- Fineness test by sieving
- Consistency test
- Initial and Final setting times test
- Compressive strength test
- Types of cement

7. Aggregates

- Classification and Definition
- Types of aggregates

8. Mortars

- Definition
- Classification of Mortars
- Different proportions of mortars for various construction works
- Mixing process

9. Concrete

- Definition, purpose of concrete
- Types of concrete
- Ingredients of plain concrete
- Proportions and uses of different grades of concrete.
- Types of concrete
- Water - cement ratio
- Mixing of concrete - methods
- Batching of concrete
- Transporting of concrete - methods
- Placing of concrete
- Compaction of concrete - usage of vibrators
- Curing of Concrete - methods
- Workability of concrete –
- Slump cone test

10. Timber

- Introduction
- Defects in timber
- Common varieties of timber
- Market forms of timber
- Qualities of good timber

11. Metals

- Types and ferrous and non ferrous - definition
- Properties and uses of cast iron
- Properties and uses of wrought iron
- Properties and uses of steel.

12. Paints and Varnishes

- Introduction
- Paints and Types of paints
- Purpose of paints
- Ingredients of paint
- Characteristics of good paint
- Varnishes
- Ingredients of varnish
- Types of varnishes
- French Polish and metal polish

13. Miscellaneous Material

- Glass
- Adhesives
- Asbestos
- Linoleum
- Plaster of paris
- Fibre Reinforced concrete
- Wall Paper
- P.V.C.
- Bitumen and Tar
- Aluminium
- Plastic crete
- Fal-G Concrete

CONSTRUCTION TECHNOLOGY THEORY – I PART B

Sr.no.	Topics
1.	Introduction
2.	Foundations
3.	Masonry work
	(a) Stone Masonry
	(b) Brick Masonry
4.	Doors & Windows
5.	Lintels and sunshades
6.	Floors
7.	Roofs
8.	Stairs and Stair Cases
9.	Form work
10.	Scaffolding
11.	Surface Finishing
12.	Building services

DETAILED SYLLABUS:

1. Introduction :

Classification of Buildings as per NBC - Component parts of a building

2. Foundations :

Definition - Functions of Foundations - classification of soil - shallow and deep foundations - bearing capacity of soil - plate load test - essential requirements of good foundation - classification of foundations - special foundations - raft and grillage foundations - causes of failure of foundations and remedial measures

3. Masonry

a) Stone masonry

Definition - Material required for stone masonry - classification of stone masonry - rubble and ashlar masonry. Tools required for stone masonry - types of joints in stone masonry - supervising points to be observed in stone masonry.

b) Brick masonry

Definition - Types of brick masonry - English Bond - Flemish bond 1, 1½ 2 Brick walls - Defects in brick masonry - structures in brick masonry - tools required. - supervising points to be observed in brick masonry.

4. Doors and Windows

a) Doors and Windows

General Terms - Types of Doors - Types of windows - Fixtures and fastenings for doors and windows.

5. Lintels and sun shades

Types of Lintels - Definition of sun shade

6. Floors

General terms - Types of floors - Method of construction of Cement Concrete, Mosaic and Terrazo floors.

7. Roofs

Definition - Classification of Roofs - Pitched roofs - Types : King post, Queen Post and Steel Strusses - Roof Covering Material for pitched roofs - Flat Roof - R.C.C. roof .

8. Stairs and stair cases

Technical terms - Types of Stairs - Straight, Quarter turn, half turn, doglegged, open well, Bifurcated and spiral stairs.

9. Form Work

Requirement of Form work - Material used for Form work - Removal of Form work - Failure of Form work - Form work for - Column, Footing, columns and stairs

10. Scaffolding

Definition and types of scaffolding.

11. Surface Finishing

Plastering - purpose - Types of Plastering - Procedure of plastering - Pointing - purpose - Types of Pointing - Painting - Method of Painting new and old surfaces - wood and metal surfaces

12. Building Services

Basic Concepts of electrical wiring, house wiring various types of wires and fittings, various types of electrical switches, power plugs, distribution boards, circuit boards and earthing concepts

Basic Concepts of Sanitation and plumbing - Types of drainage pipes, pipes used in Sewage and water lines - Types of fittings used in sanitary and water line.

**BUILDING MATERIALS & CONSTRUCTION
TECHNOLOGY
PRACTICAL - I
PART A**

Sr.No.	Major Topics
1.	Identification of Construction Materials and market survey
2.	Tests on Bricks
3.	Tests on Cement
4.	Test on Concrete
5.	Study of Manufacturing/ Preparation of construction material at site / factory

DETAILED SYLLABUS:

1.0. Identification of various construction materials and their applications

- 1) Identification of various types of stones and their application in construction works :
 - Granite
 - Sand Stone
 - Marble
 - Lime Stone
 - Slate
- 2) Identification of various types of Bricks and Clay products and their application in construction works
 - Country Bricks
 - Special purpose bricks
 - Earthen ware and stoneware
 - Tiles
- 3) Identification of various types of Metals and their application in construction works
 - Cast Iron
 - Wrought Iron
 - Steel
 - Aluminum
 - Copper
- 4) Identification of various types of Timber and Wood Products and their application
 - Teak
 - Sal wood
 - Babul 18
 - Veneers
 - Plywood
 - Laminate and other boards

5) Identification of Other Miscellaneous Material and their application

- Glass
- Bitumen
- Asbestos
- Plastics
- Linoleum

2.0. Test on Bricks

Field tests on bricks

Water absorption test on bricks

Crushing strength of bricks

3.0. Tests on Cement

Field tests of Cement

Normal Consistency test

Initial and Final setting times of cement

4.0. Tests on Aggregate

Bulking of sand

Standard proctor Compaction test on soils

Percentage of voids in coarse aggregate

Percentage of voids in fine aggregate

5.0. Tests on Metals

Tension test on mild steel

Double Shear test on mild steel rod

6.0. Tests on Concrete

Preparation of cement mortar for given proportion

Workability test on concrete - slump test

Casting of cement concrete cubes and testing for compressive strength

7.0. Study of Manufacturing/Preparation of construction Materials.

Observation of manufacturing of different types of bricks in factory

Observation of manufacturing of different types of Tiles and Clay products in Factory

Observation of manufacturing of cement in factory

Observation of manufacturing of pre-cast concrete members in factory

Observation of concrete mixing methods - Hand mixing and machine mixing at site

Observation of compaction methods of concrete by tamping and using vibrators at site

**CONSTRUCTION TECHNOLOGY
PRACTICAL- I
PART B**

Sr. no.	Chapter
1.	Tools, hardware
2.	Excavation for foundation
3.	Masonry
4.	R.C.C. works
5.	Building Services
6.	Carpentry and joinery
7.	Site Visits of construction works

DETAILED SYLLABUS:

- 1) Tools hardware and fixtures used in building construction.
- 2) Earth work in excavation for foundation trenches for framed structure and load bearing structure
- 3) Masonry works :
 - Arrangement of bricks in English bond for 1 and 1 1/2 brick wall
 - Arrangement of bricks in Flemish bond for 1 and 1 1/2 brick wall
- 4) R.C.C. works :
 - Preparation of reinforcement mesh for column footing as per specifications.
 - Preparation of pre-cast lintel
 - Preparation of reinforcement cage for R.C.C. beam as per specifications.
- 5) Building Services :
 - Study and identification of plumbing material, tools for plumbing
 - Pipe cutting-jointing of PVC pipes using specials
 - Preparation of piping network for water supply using various pipes and specials.
 - Preparation of piping network for sanitary works using various pipes and specials.
 - Prevention of leakages, detection and arrest of leakages in pipe lines.
 - Identification of different electrical accessories and their use.
- 6) Carpentry and joinery :
 - Use and Setting of different tools
 - Surface Planing and Finishing
 - Making Simple Joints - Mortise, Tenon, dovetail, etc.
 - Demonstration of wood working machine.
- 7) Site visits for various activities of construction works :
 - Earth work excavations for foundation & column pits.
 - Erection of column footings and columns with concreting.
 - Laying of slab-form work, placing - Reinforcement and concreting.
 - Erection of scaffolding for different construction works like-brick masonry work, plastering etc.
 - Installation of water supply and sanitary fittings in a building.

Surveying & Estimation

SURVEYING

THEORY II

PART A

Sl.No	Major Topics
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- | | |
|----|-----------------------|
| 1. | Introduction |
| 2. | Chain Surveying |
| 3. | Compass Surveying |
| 4. | Plane Table Surveying |
| 6. | Theodolite Surveying |

DETAILED SYLLABUS

1. Introduction :

Concept of surveying - purpose of surveying - linear and angular measurements - classification of surveying. Plane and geodetic surveying classification based on instruments, engineering surveys - Reconnaissance, preliminary location survey, final location survey.

2. Chain Surveying

- Purpose and principle of chain survey - equipments and their function , Conventional signs.
- Errors in chaining
- Types of survey lines - check line-fixing of survey stations - types of survey stations
- Different operations in chain surveying - chaining on sloped ground. Principles used in chain Triangulation.
- Recording field notes - field book
- Obstacles in chain surveying.
- Calculation of Areas - Average Ordinate, Simpson, Trapezoidal methods.
- Measurement of Volume from cross sections, Spot Levels and Contours.

3. Compass Surveying

- Purpose and Principle of compass survey - description, use and working of prismatic compass.
- Concept of true meridian - magnetic meridian - Arbitrary meridian.
- Bearing - Representation of Bearing - WCB - Quadrantal Bearing. Conversion of whole circle bearing to quadrantal bearing.
- Compass traversing in field.
- Local attraction - detecting and correcting bearings
- Errors in compass surveying - natural and instrumental.

4. Plane Table Surveying

- Principle and purpose of plane table surveying, accessories used in plane table surveying - their uses.
- Methods of plane table - Radiation, Traversing, Intersection.

5. Theodolite Surveying

Principles of Theodolite Surveying - component parts, technical terms - temporary adjustments

Measurement of Horizontal angles, vertical angles

Determination of heights and distances.

**ESTIMATION
THEORY - II
PART B**

1. Introduction
2. Measurement of materials and works
3. Types of Estimates
4. Detailed and abstract estimate of buildings by different methods
5. Analysis of Rates and Specifications
6. Estimation of quantities of steel & RC.C. elements
7. Detailed estimates of
 1. Load bearing building
 2. G + 2 Framed structure building
 3. Septic tank

DETAILED SYLLABUS:

1. Introduction

- Definition of Estimation and costing Need for Estimation and costing

2. Measurement of materials and works

- Units of measurement for various items of civil engineering works
- Rules for measurement
- Different methods of taking out quantities - Centre line method - Long and short walls method

3. Types of Estimates

- Detailed Estimate - Definition - Stages of preparation - details of measurement and calculation of quantities and abstract of estimated cost
- Preliminary or approximate estimate - plinth area estimate - cubic rate estimate - estimate per unit base
- Problems in preliminary estimate

4. Detailed and abstract estimate of buildings by different methods

- Single roomed building (Load bearing type structure)
- Two roomed building (Load bearing type structure)
- Single storeyed Residential building with number of rooms (Load bearing type structure)
- Single storeyed Residential building (Framed Structure type)
- Primary School building with sloped roof
- g) Detailed estimate of compound wall and steps.

5. Analysis of Rates and Specifications

- Specifications for different items of work
- Cost of Labour - Types of labour - Standard Schedule of rates
- Lead and Lift - Leads Statement
- Preparation of Unit rates for finished items of works
- Cement Concrete in foundation
- R.C.C. Works
- Brick masonry in cement mortar

- C.R.S. masonry in cement mortar
 - Plastering in cement mortar
 - Pointing in cement mortar
 - Cement concrete flooring
 - Doors and windows - panelled and glazed
- 6. Estimation of quantities of steel of R.C.C. elements**
- R.C.C. beam
 - R.C.C. Lintel
 - R.C.C. Slab
 - R.C.C. Column footing
- 7. Detailed estimates**
- Gravel Road
 - Cement Concrete Road
 - Septic tank with Soakpit

SURVEYING PRACTICAL II PART A

Sl.No.	Topics
1.	Chain Surveying
2.	Compass surveying
3.	Plane table surveying
4.	Leveling
5.	Theodolite surveying
6.	Plotting

DETAILED SYLLABUS :

1.0. Chain Surveying

Familiarity with instruments used in chain surveying

Practicing unfolding and folding of chain

Ranging and chaining of lines with offsets to objects and recording in field book

Chain triangulation around a building covering a small area with other details, taking offsets and recording in the field book.

To prepare a layout of the given area covering buildings roads etc

2.0. Compass Surveying

Familiarity with Instruments used in compass surveying -prismatic compass

Setting up the compass - observation of bearings

Traversing with prismatic compass and chain - calculation of included angles and check.

Traversing with prismatic compass and chain - closed traverse covering the given area and recording

3.0. Plane Table Surveying

Introduction to plane table equipments and accessories

Setting of the plane table and plotting a few objects (points) by radiation method

Traversing an area by plane table

4.0. Leveling

Study of dumpy level, leveling staff

Temporary adjustments of dumpy level

Taking out levels of various points and booking in a level field book

5.0. Theodolite Surveying

Study of Theodolite

Measure of Horizontal angle between given lines

Measurement of vertical angle

6.0. Plotting

Conventional signs in surveying

Perpendicular and oblique offsets

Plotting of land survey - chain and cross staff surveying -calculation of areas

ESTIMATION PRACTICAL - II PART B

1.	Units of measurements and payments
2.	Calculation of materials
3.	Analysis of rates
4.	Preparation of detailed estimate
5.	Preparation of tender notice
6.	Preparation of contracts
7.	Taking out quantity for septic tank
8.	Preparation of specifications
9.	Estimate of door and window
	Total

DETAILED SYLLABUS :

1. Units of measurements and payments

Units of measurements and payments for different items of works.

2. Calculation of materials

P.C.C. concrete of different proportions.

Brick masonry.

Stone masonry

Plastering work

Pointing work

R.C.C. Slab

Painting work

3. Analysis of rates

Earthwork in excavation

Cement concrete in foundation

R.C.C. roof slab

Brick masonry in cement mortar

Stone masonry in cement mortar

Cement plastering

Cement pointing

White washing

Painting on woodwork

Cement concrete floor

Oil painting

1. Preparation of detailed estimate :

For residential building.

5. Preparation of Tender notice

Points included in tender notice.

Preparation of tender notice

6. Preparation of contracts

Contract – definition.

Types of contract and their preparation.

7. Taking out quantity for septic tank

8. Preparation of specifications

Foundation

Roof

Floor

R.C.C. slab

Painting

Plastering

Pointing

Brick work

Stonework

9. Estimate of door and window

Preparation of estimate for fully paneled door and fully paneled window

Applied Mechanics & Construction Management

APPLIED MECHANICS THEORY -III PART A

Sr. no.	Topic
1.	Systems of Measurements
2.	Forces and Moments
3.	Centroid and Moment of Inertia
4.	Simple Stresses and Strains
5.	Shear force and bending moment

DETAILED SYLLABUS:

1.0. Systems of Measurements and Units

S.I. and M.K.S. System

Fundamental and Derived units

Units of Physical quantities used in Civil Engineering like length, area, volume, mass, force etc.

2.0. Forces and Moments

Definition of Force, Moment, Resultant, Equilibrant and Moment of a couple

Resultant of forces at a point, parallelogram law, Triangle law of forces, polygon law of forces

Distinguish between scalar and vector quantities, co-planar and non-co-planar forces, parallel and non-parallel forces, like and unlike forces

Conditions of Equilibrium of rigid bodies

3.0. Centroid and Moment of Inertia

Definition - Centroid, First moment of area, moment of inertia, Radius of gyration

Position of centroid of Rectangle, triangle, circle, semi circle.

Determine position of centroids of simple built up sections made of rectangle, triangle, circle, semi-circle.

Determine M.I. of simple and built-up sections by applying perpendicular axes theorem

Radius of gyration, polar M.I. of solid and hollow circular sections

4.0. Simple stresses and strains

Stress and strain - tensile, compressive and shear

Mechanical properties of materials - elasticity, plasticity, ductility, brittleness, malleability, stiffness, hardness, fatigue

Stress-strain curves for ductile materials - Mild steel, elastic limit, yield point, ultimate stress, breaking stress, working stress, factor of safety.

Hooke's Law - Young's modulus of elasticity, deformation under axial load

Composite sections - effect of axial loads and due to change of temperature

Longitudinal and lateral strain - poisson's ratio - Bulk modulus, relationship between elastic constants. (proof not required)

5.0. Shear Force and Bending Moment

Types of beams - cantilevers, simply supported, over hanging -fixed and continuous beams

Calculation of S.F. and B.M. values at different sections for cantilevers, simply supported beams, over hanging beams under point loads and uniformly distributed loads - position and significance of points of contraflexure

6.0. Graphic Statics

Representation of forces graphically, bows notation

Parallelogram law of forces, resultant and equilibrants

Graphical Method of determination of centre of gravity for I,L,T Sections

CONSTRUCTION MANAGEMENT

THEORY - III

PART B

Sl.No.	Topics
1.	Introduction
2.	Construction Planning
3.	Organization
4.	Construction Labour
5.	Inspection and Quality Control
6.	Contracts
7.	Tender and Tender notice

DETAILED SYLLABUS:

1. Introduction

- Classification of construction work, stages in construction work, Construction team, Resource of Construction, Functions of Construction management.

2. Construction Planning

- Job planning, Technical Planning, Tender and Construction planning - scheduling - procurement of Labour, material and equipment - program of work - Bar chart - Critical path method - preparation of network diagram critical path method .

3. Organization

- Types of organization principles of organization Job layout - principles of storing materials

4. Construction Labour

- Types of Labour, Labour welfare, Labour Insurance Payment of wages, Minimum wages Act, Workmen Compensation Act, Contract Labour Act.

5. Inspection and Quality Control

- Introduction - Functions of Inspection Department - Major items of controls, Necessity of quality control.

6. Contracts

- Legality of Contracts - Types of Contracts - Piece work contracts item rate contract - percentage contract - merits and demerits of each contract system.

7. Tender and Tender Notice

- Necessity of Tenders - Tender notice - EMD - opening of tenders - Scrutiny of Tenders - Acceptance of tenders - Work Order - contract agreement - Conditions of Contract

Engineering drawing & Construction Management

PRACTICAL - III PART A ENGINEERING DRAWING

1. Introduction
2. Lettering and Dimensioning
3. Geometrical Construction
4. Orthographic Projection
5. Isometric Projection
6. Sections of Solids

DETAILED SYLLABUS :

1.0. Introduction

Scope and objective of the subject
Importance of engineering drawing as a communication medium
Drawing instruments and their uses
Scales : Recommended scales, reduced & enlarged
Construction of Plain, Diagonal, Vernier Scales, Scale of Chords and Proportional Scales.

2.0. Lettering and Dimensioning

Types of Lettering
Recommended sizes of letters and numbers
Single stroke letters.
Dimensioning - rules and systems of dimensioning - dimensioning a given drawing

3.0 Geometric Construction

Bisecting a line - perpendiculars - parallel lines - division of a line
Angles - bisection, trisection
Polygons - Regular polygons - circumscribed and inscribed in circles.
Conic sections - Definitions of focus, directrix, eccentricity
Construction of Ellipse by Concentric circles method.(ii) Construction of parabola by rectangular method.

4.0 Orthographic Projection

Definition - Planes of Projection- Four quadrants - Reference line.
First angle projection - Third angle projection
Conversion of pictorial views into orthographic views

5.0. Isometric Projection

Definition - Isometric axes, lines and planes
Isometric Scale - Isometric view
Drawing of isometric views of plane figures

6.0. Sections of Solids

Need for drawing sectional views - section planes - sections -true shape of a section
Sections of prisms and pyramids
Sections of cones and cylinders.

CONSTRUCTION MANAGEMENT
PRACTICAL - III
PART B

1. Preparation of payment of wages act
2. Preparation of minimum wages act
3. Preparation of contract labour act
4. Preparation of workmen compensation act
5. Visit to Light construction and report
6. Visit to Heavy construction and report
7. Visit to Industrial construction and report
8. Preparation of work order
9. Preparation of contract agreement, conditions of contract
10. Preparation of tender notice
11. Preparation of tender

DETAILED SYLLABUS :

1.0. Preparation of payment of wages act

Meaning and passing year

Fixation of act

Important points of the act

2.0. Preparation of minimum wages act

Meaning and passing year

Fixation of act

Important points of the act

3.0. Preparation of contract labour act

Meaning and passing year

Fixation of act

Important points of the act

4.0. Preparation of workmen compensation act

Meaning and passing year

Fixation of act

Important points of the act

5.0. Visit to Light construction and report

Light construction works meaning.

Detailed reports on visits done in different light construction works

6.0. Visit to Heavy construction and report

Heavy construction works meaning.

Detailed reports on visits done in different heavy construction works

7.0. Visit to Industrial construction and report

Industrial construction works meaning.

Detailed reports on visits done in different industrial construction works

8.0. Preparation of work order

Work order – meaning.

Preparation of work order form

Deposit works – meaning

9.0. Preparation of contract agreement, conditions of contract

Documents used in the contract

Contract – definition.

Preparation of conditions of contract

Preparation of contract agreement

10.0 Preparation of tender notice

Tender notice- meaning

Preparation of tender notice

11.0 Preparation of tender

Tender – definition.

Types of tender

Preparation of item rate tender and percentage rate tender.

List of Equipments :

1. Drawing table with drawing boards.
2. T.Square/Mini drafter
3. Drawing instruments set.
4. Set Square set,
5. Compass set
6. Plumb bob cross staff
7. Tapes
8. Spirit level
9. Bar bending bench
10. Bar bending tools (complete set with different diameters)
11. Survey chain (30 meters)
12. Dumpy level with stand
13. Cross staff
14. Theodolite with stand
15. Plane table with stand
16. Helmets
17. Gum boots
18. 1mt x 1 mt x 0.01 mt (Mixing tray)
19. Weighing balance
20. Trowels
21. Cement Concrete cube moulds
22. Slump cone apparatus.
23. Compressive testing Machine (100 tonnes capacity)
24. Set of sieves 80 mm, 40 mm, 20mm 10mm, 4.75 mm, 2.36 mm 1.18 mm 0.6 mm, 0.3 mm, 0.15 mm
25. Sieve Shaker for coarse aggregate. (30 cm Dia)
26. Vicat apparatus
27. I.S. Testsieve - sieve No. 90 Microns
28. Weighing Balance (wt. 50 gm - to 5 kgs)
29. Fractional weight Box
30. Table Vibrator
31. Needle vibrator
32. Drawing Models
33. Drawing Model with sections.
34. Computers
35. Electric Oven
36. Universal testing machine
37. Shear tool assembly
38. Rockwell hardness Testing Machine
39. Brinell Hardness Testing Machine (TKB - 3000 Model)
40. Brinell Microscope with light arrangement
41. Impact testing machine (Izod, Charpy)
42. Procter Mould with Metal Rammer

Reference Books :

1. Construction Materials

Construction Materials by G.J. Kulkarni

Building Materials by Rangawala

2. Surveying :

Survey I and II by B.C. Punmia

Surveying and levelling by T.P. Kanetkar

Surveying and levelling by S.K. Hussain and Nagaraj

Surveying and levelling by A. Kamala

3. Engineering Mechanics :

Engineering Mechanics — R.S. Kurmi

Engineering Mechanics — N. Srinivasulu

Engineering Mechanics — A. Kamala & AVRT sharma

Engineering Mechanics — K.L. Narsimham

Engineering Mechanics — Prasad

Engineering Mechanics — Ramamrutham

Engineering Mechanics — G. Venkateswar Rao

Engineering Mechanics Statics — Dayarathnam

4. Engineering Drawing :

Engineering drawing by — N.D. Bhatt

Engineering drawing by — B.R. Gupta

Engineering drawing by — Srinivasulu

Engineering drawing by — Gurucharan Singh

5. Building Construction :

A text book of Building Construction by — R.S. Desh Pande

A text book of Building Construction by — Rangawala

A text book of Building Construction by — Sushil Kumar

A text book of Building Construction by — S.P. Arora

6. Estimating and Costing :

Estimating and Costing by — B.N Dutta

Estimating and Costing by — Birdie

Quantity surveying by — A.K. Kamala

7. Civil Engineering Drawing :

Civil Engineering Drawing I and II by — A. Kamala

Civil Engineering Drawing 'A' Series — V.V.S. Murthy

Civil Engineering Drawing by — B.P. Vermon

8. Construction Management and Accounts :

Construction Management by — N. Srinivasulu

Construction Management and Accounts by — V.N. Vazirani

Construction Management and Planning by — B. Sengupta, H. Guha.

Construction Management and Accounts — Sharma

List of Tools and Equipments

Sr. NO.	Name	Qty.
01.	Sensitive Balance with weights	1 Set
02.	Ventilated Oven	1
03.	Slump Cone	1
04.	90 micron sieve	1
05.	Sand sieves	1
06.	Needle Vibrator	1 each
07.	Screened Vibrator	1
08.	Vicat's Apparatus	1
09.	Drilling machine	1
10.	Tile cutting machine	1
11.	Mini mixer (1/2 cement bag)	1
12.	Over Head projector with screen	1
13.	Bar Bending table	1 Set
14.	Different size of Trays	1 Set
15.	Carpenatry Vice	2
16.	G cramp	1
17.	Batching Box	2
18.	Dumpy level with staff	1
19.	Cross staff survey set	2
20.	Prismatic compass with stand	1
21.	Steel Tapes – 3m , 5m , 10m	5 Each
22.	Metallic tape – 15m , 30 m	2 Each
23.	Scale – 1 m	1
24.	Trowels	10
25.	Steel Buckets	5
26.	Iron pans	5
27.	Rammer	1
28.	Linedori Bundles	2
29.	Plumb bob	5
30.	Spirit level	5
31.	Tube level	5
32.	Spade	2
33.	Measuring Cylinder	2
34.	Pickaxe	2
35.	L square	5
36.	Scabbling hammer	2
37.	Claw hammer	2
38.	Sledge hammer	2
39.	Ball peen hammer	2
40.	Cross peen hammer	2
41.	Wooden Mallets	2
42.	Punch, point and Gauge	1 Set
43.	Spanner set	1
44.	Screw Drivers	5
45.	Aluminium Float	2
46.	Wooden Float	2
47.	Spong	2
48.	Plastering Drum machine	1
49.	Metal float	2
50.	Corner float	2

51.	Corner float	3 Each
52.	Painting Brush – 1” , 2” , 3” , 4” , 6”	2
53.	Scraping Tool	1
54.	Spray Gun	1
55.	Palti Patra	5
56.	Ratchet Brace	1
57.	Bradawal	1
58.	Gimlet	2
59.	Hand saw	2
60.	Compass saw	2
61.	Mortise chisel	2
62.	Firmer chisel	2
63.	Jack plane	5
64.	Plier	2
65.	Oil stone	2
66.	Saw setting plier	1
67.	Glass cutter	2
68.	Augar	2
69.	Marking Gauge	2
70.	Channi , Katawani	2
71.	Various dags for bar bending – 6mm , 8 mm , 10 mm , 12 mm	2 Sets
72.	Pipe vice	2
73.	Pipe Die set – ½” , 1”	1
74.	Tap wrench	1
75.	Pipe wrench	2
76.	Tennon saw	2
77.	Pincers	2
78.	Try squares	5
79.	Compass	2
