

Maharashtra State Board of Vocational Examination, Mumbai 400 051

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|----|---|--|-------------------------------------|--------------|--------------------|---|--------|-----------|--|---------------|------------|-----|
| 1 | Name of Course | Diploma Course in Draughtsman Civil | | | | | | | | | | |
| 2 | Course Code | 304402 | | | | | | | | | | |
| 3 | Max no. of Students | 25 | | | | | | | | | | |
| 4 | Duration | 2 year | | | | | | | | | | |
| 5 | Course Type | Full Time | | | | | | | | | | |
| 6 | No. of Days per week | 6 days | | | | | | | | | | |
| 7 | No. of hours per day | 7 Hrs | | | | | | | | | | |
| 8 | Space require | Theory Class Room – 200 sqft, Lab Sub.– 1500 sqft, Lab Elective - 400 sqft Total = 2100 Sq.Ft. | | | | | | | | | | |
| 9 | Entry qualification | S.S.C. Pass | | | | | | | | | | |
| 10 | Objective of syllabus | To get Knowledge of Building Construction, To Understanding Building Drawing, To Prepare Estimate, To Prepare Building Drawing on CAD, To Prepare Other Construction Drawing | | | | | | | | | | |
| 11 | Employment opportunities | Office of Architect, Office of Consultant Civil Engineer, Office of Builder, any Civil Engineering Firm, his own practice as Draughtsman Civil | | | | | | | | | | |
| 12 | Teachers Qualification | 1) For Vocational subject - B.E.Civil 2) For Non Vocational Subject - Master Degree in Concern subject | | | | | | | | | | |
| 13 | Teaching Scheme – | | | | | | | | | | | |
| | | Sr. | Subject | Subject Code | Clock Hours / Week | | Total | | | | | |
| | | | | | Theory | Practical | | | | | | |
| 1 | English (Communication Skill) | | 90000001 | | 2 Hrs | 1 Hrs | 3 Hrs | | | | | |
| 2 | Elective – I | | | | 2 Hrs | 1 Hrs | 3 Hrs | | | | | |
| 3 | Elective – II | | | | 2 Hrs | 1 Hrs | 3 Hrs | | | | | |
| 4 | Building Material and Construction | | 30440001 | | 3 Hrs | 8 Hrs | 11 Hrs | | | | | |
| 5 | Building Drawing and CAD | | 30440002 | | 3 Hrs | 8 Hrs | 11 Hrs | | | | | |
| 6 | Construction Estimating, Costing and Accounts | | 30440004 | | 3 Hrs | 8 Hrs | 11 Hrs | | | | | |
| | | Total | | | | | | | | 42 Hrs | | |
| 14 | Internship | Two Months Summer Internship from 1 st May to 30 th June is Compulsory. | | | | | | | | | | |
| 15 | Examination Scheme – Final Examination will be based on syllabus of both years. | | | | | | | | | | | |
| | | Paper | Subject | Subject Code | Theory | | | Practical | | Total | | |
| | | | | | Duration | Max | Min | Duration | Max | Min | Max | Min |
| 1 | English (Communication Skill) | | 90000001 | | 3 Hrs | 70 | 25 | 3 Hrs | 30 | 15 | 100 | 40 |
| 2 | Elective – I | | | | 3 Hrs | 70 | 25 | 3 Hrs | 30 | 15 | 100 | 40 |
| 3 | Elective – II | | | | 3 Hrs | 70 | 25 | 3 Hrs | 30 | 15 | 100 | 40 |
| 4 | Building Material and Construction | | 30440001 | | 3 Hrs | 100 | 35 | 3 Hrs | 100 | 50 | 200 | 85 |
| 5 | Building Drawing and CAD | | 30440002 | | 3 Hrs | 100 | 35 | 3 Hrs | 100 | 50 | 200 | 85 |
| 6 | Construction Estimating, Costing and Accounts | | 30440004 | | 3 Hrs | 100 | 35 | 3 Hrs | 100 | 50 | 200 | 85 |
| | | | | | | | | | | 900 | 375 | |
| 16 | Teachers – Three Teachers per batch for vocational component. For English, Elective-I & II guest faculty on clock hour basis. | | | | | | | | | | | |
| 17 | a) For Elective I – Student can choose any one subject | | | | | b) For Elective II – Student can choose any one subject | | | | | | |
| | | Code | Subject Name | | | | | Code | Subject Name | | | |
| | | 90000011 | Applied Mathematics | | | | | 90000021 | Applied Sciences (Physics & Chemistry) | | | |
| | | 90000012 | Business Economics | | | | | 90000022 | Computer Application | | | |
| | | 90000013 | Physical Biology (Botany & Zoology) | | | | | 90000023 | Business Mathematics | | | |
| | | 90000014 | Entrepreneurship | | | | | | | | | |
| | | 90000015 | Psychology | | | | | | | | | |

Subject - Building Material and Construction

Code No – 30440001

| Theory | Practical |
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| <p>Chapter 1: Stone and Coarse Aggregate</p> <p>1.1. Classifications of Rocks 1.2. Quarrying for stone 1.3. Commonly used stones in building 1.4. Requirements of good building stone 1.5. Study of crushers for obtaining coarse Aggregate 1.6. Common sizes of coarse Aggregate used in concrete 1.7. Properties of coarse Aggregate</p> | <p>Practical</p> <p>1) Visit to Quarry to observe quarrying operations 2) Conduct Compressive strength Test on stone 3) Conduct Abrasion Test of Metal</p> |
| <p>Chapter 2: Bricks</p> <p>2.1. Study of earth (Soils) used in manufacturing of Brick 2.2. Procedure of manufacture of Bricks 2.3. Classification of Bricks 2.4. Properties of a good Brick 2.5. Other types of Brick</p> | <p>Practical</p> <p>1. Field Tests of Brick 2. Conduct Compressive Test on Brick 3. Conduct Water absorption on Brick</p> |
| <p>Chapter 3: Cement</p> <p>3.1 Grades of cement as per IS 12269 – 1987, IS 8182 - 1989 and IS 289 - 1989 3.2 Ingredients of Cement, Manufacture of Cement (only introduction) 3.3 Various Types of Cements and its uses 3.4 Effect of Cement on properties of concrete 3.5 Storing of Cement</p> | <p>Practical</p> <p>1. Field Tests of Cement 2. Determining initial & final setting time of Cement 3. Determining fineness Modulus of Cement 4. Determination of Compressive strength of cement</p> |
| <p>Chapter 4: Fine Aggregates</p> <p>4.1. Types of fine aggregates used in preparation of cement mortar and concrete 4.2. Sources of fine aggregate 4.3. Properties of River Sand 4.4. Silt content and necessity of Screening & Washing of fine Aggregates</p> | <p>Practical</p> <p>1. Sieve Analysis of Sand for finding fineness modulus 2. Finding Silt content in Sand</p> |
| <p>Chapter 5: Cement Mortar</p> <p>5.1. Ingredients of Cement Mortar 5.2. Preparation of Cement Mortar – Hand Mixing, Machine Mixing – Advantages and Disadvantages 5.3. Various Proportions of Cement Mortar 5.4. Lime Mortar, its properties and use</p> | <p>Practical</p> <p>1. Preparation of Cement Mortar 1:6</p> |
| <p>Chapter 6: Concrete</p> <p>6.1) Ingredients of Concrete 6.2) Types of Concrete Plain Cement Concrete, (PCC) and Reinforced cement concrete (RCC) 6.3) Various proportion of Concrete and its uses, Batching of concrete- Volume batching and weigh batching 6.4) Procedure for preparing concrete – Hand Mixing, Machine Mixing 6.5) Transportation of concrete, precautions to taken . 6.6) Laying of concrete & precautions to taken 6.7) Necessity of compacting of concrete, equipments used for compacting concrete 6.8) Necessity of curing, Methods of curing</p> | <p>Practical</p> <p>1) Conduct Compressive Test on Concrete (cube Test) 2) Conduct Test for Workability (slump test) 3) Conduct Compaction factor Test 4) Introduction to Non Destructive Tests on Concrete</p> |

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| 6.9) Workability - water cement ratio and its importance 6.10) Hydration of Cement 6.11) Quality of water 6.12) Finishing of concrete surface 6.13) Admixtures used in concrete and properties of such concrete 6.14) Ready mix concrete, Properties, Manufacturing and its uses 6.15) Advances in concreting such as self compacted concrete, Trimix Concrete, etc | |
| Theory | Practical |
| Chapter 7: Steel 7.1) Types of steel used in RCC as per ISI 7.2) High Tensile Steel its properties, study of IS 1786 7.3) Cover for steel as per IS 456 - 2000 7.4) Types of sections used in Steel Structure and its properties 7.5) Rolled steel Joist of different sections and its uses | Practical 1) Conduct Tensile Test on mild steel bar / HYSD Bars |
| Chapter 8: Flooring Tiles 8.1) Shahabad Tiles, Kotah Tiles, Cuddappa Tiles, Marble Tiles, Granite, its occurrence, Sources of availability and its uses 8.2) Cutting of tiles 8.3) Cement tiles, marble mosaic tiles, chequered tiles- process of manufacture, and its uses 8.4) Ceramic Tiles, process of manufacture, Normal sizes & its uses 8.5) Cement mortar Briquettes , Process of manufactures and its uses | Practical 1) Conduct Bending Test of tiles 2) Conduct Abbreviation test of tile |
| Chapter 9: Timber 9.1) Types of Timber. 9.2) Sections of Timber. 9.3) Characteristics of Good Timber. 9.4) Defects in Timber. 9.5) Decay of Timber and remedies. 9.6) Seasoning of Timber, necessity and methods. 9.7) Preservation of Timber. 9.8) Timber based Product Plywood; Block Board, Veneers, Particle wood 9.9) Finishing to Timber a) Painting b) Polishing c) Sun mica | Practical Report on Visit to a Timber Factory |
| Advance Building Materials 10.1) Study of latest materials used in Flooring, Thermal Insulation, Sound proofing, Wall finishing, structural glazing, Metal Cladding & rendering, Partitioning, and Painting | |

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| <p>Chapter 8: Reinforced Cement Concrete</p> <p>8.1) Different types of RCC members Definitions, its properties and its locations</p> <p>8.2) Ingredients of for R. C. C. Concrete</p> <p>8.3) Batching of concrete ingredients- Definition and methods, volumetric method and weight batching method of concrete mixing</p> <p>8.4) Shape and types of Reinforcing steel bars used in RCC members. Explain Terms used - Cutting of bar; Straightening of bar; Bending of bar; Hooking of bar; lapping of bar, Binding of bars, use of G.I. wire, cover for bars.</p> <p>8.5) Standard Hook length for plan M. S. bar, Standard length of “EL” for Torque steel bar</p> <p>8.6) Joints in RCC work, Necessity, Types of joints in RCC work, Construction Joint, Expansion Joint, location of joints, Material used, & Procedure of construction of Providing Joints.</p> | <p>Practical</p> <p>i) Visit to site for observing Bar bending, laying of Reinforcement bars</p> <p>ii) Observe method of providing cover, placing concrete in RCC Members</p> <p>iii) Draw Figures – RCC Bars reinforcement in column Footing, column, beam, slab, lintel, Chajja, Loft</p> <p>iv) Exercise on preparing standard Bar bending Schedule</p> <p>v) Perform bar bending and binding by using G.I. wire for forming Hook, EL, Bend, Lap, stirrups of 6 mm bar for column and beam</p> |
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Subject - Building Material and Construction - 2nd Year
Code No – 30440001

| Theory | Practical |
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| <p>Chapter 1: Foundation</p> <p>1.1) Necessity and Purpose of Foundation</p> <p>1.2) Shallow Foundation</p> <p>1.2.1) Spread Foundation</p> <p>1.2.1.1) Footing for load Bearing Structure</p> <p>1.2.1.2) Column Footing and combined Footing</p> <p>1.3) Raft Foundation</p> <p>1.4) Grillage Foundation</p> <p>1.5) Deep Foundation and its types</p> <p>1.5.1) Cast in-situ R.C.C. concrete pile</p> <p>1.5.2) Pre cast concrete piles</p> <p>1.6) Foundation in Black cotton soil, Under reamed pile</p> | <p>Practical</p> <p>1) Line out for 3 to 4 Room Load Bearing Building</p> <p>2) Line out for Framed structure</p> |
| <p>Chapter 2: Excavation</p> <p>2.1) Manual method of Excavation</p> <p>2.2) Mechanical Method of Excavation</p> <p>2.3) Machines used for excavation</p> <p>2.4) Disposal of Excavated Material</p> <p>2.5) Dewatering of trenches different methods used</p> <p>2.6) Shoring and strutting of Trenches</p> <p>3.0) Precaution while excavation, Fencing, caution signs, removing excavated material</p> | <p>Practical</p> <p>Visit to Site to study different methods of Excavation</p> |
| <p>Chapter 3: Plain cement concrete</p> <p>3.1) Mix design of concrete and uses of different mix of concrete</p> <p>3.2) Procedure of preparing concrete. Manual and machine mixing, Transporting Laying, compacting and curing of concrete</p> <p>3.3) Admixtures used in concrete</p> <p>3.4) Ready mix concrete</p> | <p>Practical</p> <p>1) Visit to site showing ingredients and process of mixing, transportation, laying, compacting and curing of concrete</p> |

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| <p>Chapter 4: Stone Masonry</p> <p>4.1) Terms used in stone masonry</p> <p>4.2) Procedure of constructing un coursed Rubble and Coursed masonry, purpose of through stone in stone masonry</p> <p>4.3) Points to be observed while constructing stone Masonry</p> | <p>Practical</p> <p>1) Construction of UCR stone masonry in foundation work, UCR stone masonry for compound wall (ht 1.2 m to 1.5 m)</p> |
| <p>Chapter 5: Brick Masonry</p> <p>5.1) Terms used in Brick Masonry.</p> <p>5.2) Construction of Brick Masonry in English bond and Flemish Bond in cement mortar, pre-construction preparation, procedure of construction, post construction precaution</p> <p>5.3) Brick Masonry stretcher bond and half brick thick masonry.</p> <p>5.4) Hollow and solid concrete block masonry</p> <p>5.5) Fixing of Door and window Frame in masonry</p> <p>5.6) Brief information of Siporex block masonry</p> <p>5.7) Brief information of Concrete Block masonry</p> | <p>Practical</p> <p>1) Construction of Burnt Brick Masonry in superstructures in English Bond / Flemish Bond</p> <p>2) Construction of concrete block masonry in superstructure</p> |
| <p>Chapter 6: Scaffolding</p> <p>6.1) Purpose and Necessity of Scaffolding</p> <p>6.2) Single and Double Scaffolding, name of parts erecting Scaffolding.</p> <p>6.3) Materials used for Scaffolding, Tubular steel scaffolding</p> | <p>Practical</p> <p>1) Erecting Single Scaffolding up to G + 1 floor</p> <p>2) Erecting Double Scaffolding up to G + 1 floor</p> |
| <p>Chapter 7: Lintels and Sills</p> <p>7.1) Necessity of lintels</p> <p>7.2) R.C.C. Lintels</p> <p>7.3) Jambs, Sills, Head cladding, its purpose, materials used and construction procedures.</p> | <p>1) Study of Laying Lintels and Sills on Construction Site</p> |
| Theory | Practical |
| <p>Chapter 8: Reinforced Cement Concrete</p> <p>8.1) Different types of RCC members Definitions, its properties and its locations</p> <p>8.2) Ingredients of for R. C. C. Concrete</p> <p>8.3) Batching of concrete ingredients- Definition and methods, volumetric method and weight batching method of concrete mixing</p> <p>8.4) Shape and types of Reinforcing steel bars used in RCC members. Explain Terms used - Cutting of bar; Straightening of bar; Bending of bar; Hooking of bar; lapping of bar, Binding of bars, use of G.I. wire, cover for bars.</p> <p>8.5) Standard Hook length for plain M. S. bar, Standard length of "EL" for Torque steel bar</p> <p>8.6) Joints in RCC work, Necessity, Types of joints in RCC work, Construction Joint, Expansion Joint, location of joints, Material used, & Procedure of construction of Providing Joints.</p> | <p>Practical</p> <p>i) Visit to site for observing Bar bending, laying of Reinforcement bars</p> <p>ii) Observe method of providing cover, placing concrete in RCC Members</p> <p>iii) Draw Figures – RCC Bars reinforcement in column Footing, column, beam, slab, lintel, Chajja, Loft</p> <p>iv) Exercise on preparing standard Bar bending Schedule</p> <p>v) Perform bar bending and binding by using G.I. wire for forming Hook, EL, Bend, Lap, stirrups of 6 mm bar for column and beam</p> |
| <p>Chapter 9: Centering and Form work</p> <p>9.1) Definitions, Different members used in Form work and centering</p> <p>9.2) Materials used in preparing centering and form work</p> <p>9.3) Procedure of Erecting Centering and form work</p> <p>9.4) Precautions while erecting centering and form for RCC work.</p> | <p>Practical</p> <p>1) Draw Sketches of form work for column, Beams, Slab, Lintel and Chajja</p> <p>2) Visit to site to study Centering and form work for abovementioned members and table formwork, Mivon formwork etc.</p> |

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| <p>Chapter 10: Pointing and Plastering</p> <p>10.1 Necessity of Pointing</p> <p>10.1.1) Materials used for Pointing</p> <p>10.1.2) Procedure of applying Pointing, preparation of surface to receive pointing, Procedure of applying pointing & post applying precautions</p> <p>10.1.3) Type of Pointing</p> <p>10.2 Necessity of Plastering</p> <p>10.2.1 Materials used for plastering</p> <p>10.2.2 Types of plaster internal wall plaster, External wall plaster, Ceiling plaster, different types of furnishings, Stucco plaster.</p> <p>10.2.3 Procedure of plastering for each of above type, Use of machines for plastering</p> <p>10.2.4 P.O.P. finish to wall</p> | <p>Practical</p> <p>1) Visit to site for observing procedure for different type of plaster work</p> <p>2) Hands on experience of applying plaster of size 3m x 3 m on internal & external wall surface</p> |
| <p>Chapter 11: Painting</p> <p>11.1. Necessity of painting, Types of paints, thinner, varnishes. Surface preparation, Use of Primers</p> <p>11.2. Anti corrosive paints, its primers, its necessity</p> <p>11.3. White Washing to walls and ceiling, Materials used, procedure for new and old surface</p> <p>11.4. Applying Dry Distemper to walls, Material, Procedure for new and old surface</p> <p>11.5. Applying Oil Bound Distemper and Emulsion, Materials used, Procedure for new and old surface</p> <p>11.6. Applying Cement Paint to External walls, Materials used, Procedure for New and old surface</p> <p>11.7. Applying Oil Paint Primer coat, procedure of applying oil paint to woodwork, steel work and walls.</p> <p>11.8. Melamine / French polish, its application on old and new wooden surfaces</p> | <p>Practical</p> <p>Hands on experience of Painting of surface with</p> <p>a) White wash 3m x 3m surface area</p> <p>b) Dry Distemper 3m x 3m surface area</p> <p>c) Oil Bound Distemper 3m x 3m surface area</p> <p>d) Cement Paint 3m x 3m surface area</p> <p>e) Oil Paint on new Steel work and old wood work</p> |
| Theory | Practical |
| <p>Stairs</p> <p>1.1) Definitions of Terms used in Stair.</p> <p>1.2) Classification of stairs based on shape and materials used for construction.</p> <p>1.3) Requirements of good stairs</p> <p>1.4) Design of stair Thumb Rules for Design of Dog legged stair</p> <p>1.5) Hand Rails Types and Fixing Procedure</p> | <p>Practical</p> <p>1) Draw neat Sketches of any 4 types of stairs</p> <p>2) Prepare design for RCC Dog-legged stair</p> <p>3) Draw its plan and sectional elevation</p> <p>4) Visit site to site for observing various type of stair</p> |
| <p>Roofs</p> <p>2.1 Definition & Purpose of Roof</p> <p>2.2 Technical Terms used in Roof</p> <p>2.3 Types of Roofs</p> <p>2.3.1 Pitched Roof</p> <p>2.3.2 Lean to Roof</p> <p>2.3.3 Couple Roof</p> <p>2.3.4. King Post Truss and Queen Post Truss</p> <p>2.3.5 Steel Trusses</p> <p>2.3.6 Roof Coverings necessity & Purpose</p> <p>2.4 Types of Roof Covering and Procedure of fixing</p> <p>a) Country Tile b) Mangalore Tile</p> <p>c) CGI sheet Roof – Size and procedure of fixing</p> <p>d) Acc sheet Roof – Type, Sizes and Procedure of fixing</p> <p>2.5 Flat Roof only R.C.C. Slab</p> | <p>Practical</p> <p>1. Draw sketch of couple Roof</p> <p>2. Draw sketch of King post and Queen post Truss.</p> <p>3. Draw Line Diagrams of steel Truss</p> <p>4. Draw sketch showing details of Joint King Post for steel Truss</p> |

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| <p>Flooring</p> <p>3.1 Definition and terms used in flooring</p> <p>3.2 Flooring at Plinth level, Plinth filling & Plinth PCC</p> <p>3.2 Types of Floor finishes and its suitability</p> <p>3.3 Procedure of Laying Tiles such as Rough Shahabad for Pavement. Cement Briquette for pavement</p> <p>3.4 Procedure of Laying polished Shahabad Tile floor.</p> <p>3.5 Procedure for Laying cement Tiles, Marble Mosaic Tile, ceramic Tiles and Marble Tiles on floors.</p> <p>3.6 Procedure for fixing PVC tiles on floors</p> <p>3.7 Skirting – Function, materials used and procedure for fixing tiles.</p> <p>3.8 Dado - Function, materials used and procedure for fixing.</p> | <p>Practical</p> <p>1. Fixing of Tiles for Pavement</p> <p>2. Fixing of Tiles in area 3mX4m</p> <p>3. Fixing Tiles for Dado</p> |
| <p>Door And Window</p> <p>4.1 Functions of Door, Functions of window</p> <p>4.2 Rules for providing Doors & windows</p> <p>4.3 Parts of a Door and Window</p> <p>4.4 Materials used in making of Door & window</p> <p>4.5 Wooden and Steel Door and Window frame</p> <p>4.6 Types of Door Shutters</p> <p>a) Fully paneled Shutter</p> <p>b) Fully glazed shutter</p> <p>c) Flush Door</p> <p>4.7 Fixtures & fastenings for Doors</p> <p>4.8 Rolling shutter, collapsible shutters, sliding doors</p> <p>4.9 Types of Windows Shutter</p> <p>a) Fully Paneled shutter</p> <p>b) Fully glazed</p> <p>c) Sliding shutters.</p> <p>d) Lowered window</p> <p>e) Steel Window</p> <p>f) Aluminum sliding windows</p> <p>4.10 Fixtures and Fastening for windows</p> <p>4.11 Grills for window</p> | <p>Practical</p> <p>1. Draw to a scale, drawing of fully paneled</p> <p>2. Draw to a scale, drawing of fully glazed window</p> <p>3. Visit to observe different types of doors and Windows</p> <p>4. Draw Sketches of commonly used fixtures for Door & windows</p> |

List of Books

Building Material

- 1] TTTI Chandigarh Civil Engg. Materials N. Delhi, McGraw Hill, 1992
- 2] Rangwala S. C. Engg. Materials Chariot or Book Publications,
- 3] Anand Gujrath Kulkarni G. J. A Textbook of engg. Materials

Building Construction

- 1] Mackay Building Construction Vol. 1 to 4 VaynStrand
- 2] Mitchell Elementary Building Construction B. T. Batsford, London
- 3] Molnar Building Construction Drafting and Design CBS Publications. Delhi
- 4] Sushil Kumar Building Construction Delhi : Standard Publishers, 1999, 18th Ed.
- 5] Arora S. P. & Bindra S. P. Building Construction Jaipur : Dhanapat rai & Sons
- 6] Rangwala S. C. Building Construction Anand : Charotar & Publishing House

Raw Material:

Sufficient Raw Material for the Syllabus Practical should be compulsorily made available to perform the practical. (e.g. Bricks, Sand, Cement, Aggregate, Lime powder, white cement, Tiles, Reinforcement Bars, Binding wire, Color, Paint, Turpentine, Brush and other such consumable raw material)

List of Tools and Equipment

A] General Class room

| Sr | Name of Item | No. |
|----|---|-----|
| 1 | Steel lockers 8 compartments with individual lockers (1980 x 910 x 480 mm) | 4 |
| 2 | Chair with writing pad | 25 |
| 3 | Steel almari with self 6.5' x 3' (18 gauge) | 2 |
| 4 | Steel table 4' x 3' | 2 |
| 5 | Teacher chair | 2 |

B] For Building Material and Construction Practical

| Sr | Name of Item | No. |
|----|---|-----|
| 1 | Compression Testing Machine 100 Ton Capacity (Hand Operated.) | 1 |
| 2 | Universal Testing Machine 40 T | 1 |
| 3 | Table Vibrator | 1 |
| 4 | Cube Mould (Small And Big) | 4 |
| 5 | Compaction Factor Test Apparatus | 1 |
| 6 | Aggregate Impact Test Apparatus | 1 |
| 7 | Shieve Shaker | 1 |
| 8 | Weighing Machine 100 Kg. | 1 |
| 9 | Small Sieve (All Type) | 1 |
| 10 | Mortar And Half Bag Concrete Mixer | 1 |
| 11 | Marble Cutter | 1 |
| 12 | High Speed Imact Drill | 1 |
| 13 | Marble Angle Grinder | 1 |
| 14 | Bench Grinder Double Ended Wheel Size 15 Cm | 1 |
| 15 | Vibratory Sand Screen | 1 |

| Sr | Name of Item | No. |
|-----------|---|------------|
| 16 | Bolster 4" (100mm) | 1 |
| 17 | Pitching Tool (Mason) | 1 |
| 18 | Chisel Mason Hammer Headed Flat 200 Mm | 10 |
| 19 | Hammer Mason (Cube) 1.5 Lbs. | 10 |
| 20 | Hammer Mason | 10 |
| 21 | Level Masons 36" (1 Metre) | 10 |
| 22 | Plumb Bob. | 10 |
| 23 | Square (Steel) 2' X 1' | 10 |
| 24 | Trowel Plastering Double Hand | 10 |
| 25 | Trowel Brick 10" | 10 |
| 26 | Tasla (Tin) Pans | 10 |
| 27 | Spade | 10 |
| 28 | Measuring Steel Tape 15 Mtr. | 5 |
| 29 | Measuring Steel Tape 30 Mtr. | 5 |
| 30 | Wooden Straight Edges For Ft. | 10 |
| 31 | Ladders 2 To 4 Mtr. | 2 |
| 32 | Sledge Hammer 10 Lbs. | 2 |
| 33 | Buckets 14 Lits. | 10 |
| 34 | Bar Bending Tools And Cutting Tools 6mm To 12 Mm | 2 set |
| 35 | Screw Driver 12 Inch | 5 |
| 36 | Pocket Steel Tape 2 Mtr. | 25 |
| 37 | Pick Axes | 5 |
| 38 | Wheel Barrow | 3 |
| 39 | Tubular Scaffolding 25 Mm Die With Coupling And Compete Fitting. | 400 RFT |
| 40 | Steel Measuring Boxes 3 Nos. (6cft C Fts), 3 Nos. (12cfts) | 6 |
| 41 | Adjustable Props Steel | 20 |
| 42 | Platform 4 Ft X 4 Ft X 6 Ft. | 2 |
| 43 | Boaning Rods | 2 |
| 44 | Spanner Sets | 1 |
| 45 | Carpenter Claw Hammer | 10 |
| 46 | Mortise Chisel 6 Mm. | 10 |
| 47 | Firmer Chisel | 10 |
| 48 | Mallet | 10 |
| 49 | Pane (Iron) | 10 |
| 50 | Handsaw 1'6" | 10 |
| 51 | Drilling Machines | 1 |
| 52 | Sieve IS No. 9 | 1 |
| 53 | Vicat' apparatus | 1 |
| 54 | Needle measuring flask | 1 |
| 55 | A set of 10 IS sieves 80mm, 40mm, 20mm, 10mm, 4.75mm, 1.18mm, 600u, 150u. | 1 each |
| 56 | Top cover & bottom pan for sieves | 1 |
| 57 | Hacksaw frame | 1 |
| 58 | BSP Tap & Die set 18,20,25 mm | 1 set |
| 59 | Pipe vice ½ " to 18" 2 each | 2 |
| 60 | Alluminum Level | 2 |
| 61 | Pipe Tube Level | 2 |

Subject - Building Drawing and CAD - 1st Year

Code No – 30440002

| Theory | Practical |
|---|---|
| A] Building Drawing | 1 Year |
| Chapter 1: Introduction to Drawing 1.1) Different Drawing Instrument and their use 1.2) Letters its types, Sizes and its use in Drawing 1.3) Convention of different lines 1.4) Giving dimensions 1.5) Scales and its uses 1.6) Study of IS 962 | Practical 1) Prepare Sheet on lettering 2) Prepare Sheet on lines 3) Prepare Sheets on Geometrical Construction 4) Prepare Sheets on Conventional Sign and Symbols |
| Chapter 2: Orthographic Projection 2.1) Introduction to orthographic projections 2.2) First Angle Projections Method 2.3) Third Angle Projections Method 2.4) Drawing orthographic Projections of simple pictorial view | Practical 1) 1 st Angle Projections ----- 2 Solids 2) 3 rd Angle Projections ----- 2 Solids |
| Chapter 3: Isometric View 3.1) Method of Preparing Isometric Views 3.2) Isometric View of Rectangular Objects 3.3) Isometric View of Circular Objects 3.4) Isometric View of Building | Practical 1) Isometric View of Rectangular Objects 2) Isometric Vies of Circular Objects 3) Isometric View of Building |
| Chapter 4: Building Drawing Dimensions and Details of Foundation C/S. DPC, Different Types of Door and Windows, Roof Trusses, Flooring C/S, Staircase, Brick Masonry, Lintel, Arches, Chajja, C/S details of RCC Chajja, Lintel, Beam, Footing, Column, Slab, Pardi, Staircase etc. | Practical Detailed Drawing of Foundation C/S. DPC, Different Types of Door and Windows, Roof Trusses, Flooring C/S, Staircase, Brick Masonry, Lintel, Arches, Chajja, C/S details of RCC Chajja, Lintel, Beam, Footing, Column, Slab, Pardi, Staircase etc. |
| Chapter 5: Building By Laws and Standard Norms 3.1) Definitions of Plot Area, Plinth Area, Built up Area, Carpet Area, Floor Space Index (FSI) 3.3) Permissible Built up Area for Residential Bldg., Public Building 3.4) Definition of Marginal Distance and their necessity, Normal Marginal Distances provided for Residential Buildings 3.5) Definition and Necessity of Building Line, Development Line 3.6) Min Dimensions for following 3.6.1) Plinth height, Sill height, Head Room in Residential Bldg, Public Buildings, Mezzanine floor, Basements and stilts for car parking 3.7) Minimum Dimensions of: Living Room, Bed Room, Master Bed Room, W.C. Bath, Toilet. 3.7.1) Min. Width for passage and Balcony 3.8) Rules for Window Opening 3.9) Min. width of step and Landing, Head Room, Thumb Rules for fixing Rise and Tread. 3.9.1) Permissible Height of Pardi, of Building as per FSI and Road Width | Practical 1) Student to Draw for A Residential. Bungalow (Load Bearing) i.e. minimum 2 Bedrooms (one Bed room with attached Toilet), 1Hall, 1Kitchen, Veranda, Staircase, Toilet block, and Car Parking. a) Plan, b) Elevation c) Two sections d) Schedule of door and window e) Site plan, f) Area statement, g) Construction notes. h) Schedule of finishes |

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| <p>Chapter 6: Development of Line Plan of a Building</p> <p>4.1) Symbols and notations as per BIS 696 in Civil Engg. Drawing.</p> <p>4.2) Preparing Line Plan of Building, necessity of preparing line plan.</p> <p>4.3) Development of Plan of Residential Building having living Room, Kitchen Room, Bed Room, Bath room and w.c. with slab. Draw to scale – Plan, Elevation Sections in 3 directions</p> <p>4.4) Working drawings and its necessity.</p> | <p>2) Draw tracing of above drawing</p> <p>3) Prepare ammonia sheet</p> <p>4) Prepare a working drawing for Staircase, Toilet block and kitchen</p> |
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Subject - Building Drawing and CAD - 2nd Year

Code No – 30440002

| Theory | Practical |
|--|--|
| B] Computer Fundamental | 6 Month |
| <p>1] Fundamentals Of Computer</p> <p>Introduction</p> <p>Components of PC</p> <p>The system Unit</p> <p>Front part of system Unit</p> <p>Back part of system Unit</p> <p>CPU</p> <p>Memory of computer</p> <p>Monitor</p> <p>Mouse, Keyboard Disk, Printer, Scanner, Modem,</p> <p>Video, Sound cards, Speakers</p> | <p>List of Practical</p> <p>1. Working with Windows 2000 desktop ,start icon, taskbar, Recycle Bin, My Computer icon ,The Recycle Bin and deleted files Creating shortcuts on the desktop</p> <p>2. The Windows 2000 accessories, WordPad – editing an existing document, Use of Paint – drawing tools</p> <p>The Calculator, Clock</p> <p>3. The Windows Explorer window, concept of drives, folders and files? Folder selection techniques, Switching drives, Folder creation, Moving or copying files, Renaming, Deleting files and folders</p> <p>4. Printing, Installing a printer driver, Setting up a printer, Default and installed printers, Controlling print queues, Viewing installed fonts, The clipboard and 'drag and drop', Basic clipboard concepts Linking vs. embedding,</p> |
| <p>2] Introduction To Windows 2000/Xp</p> <p>Working with window Desktop</p> <p>Components of window Menu bar option</p> <p>Starting window Getting familiar with desktop</p> <p>Moving from one window to another</p> <p>Reverting windows to its previous size</p> <p>Opening task bar buttons into a windows</p> <p>Creating shortcut of program</p> <p>Quitting windows</p> | <p>5. Moving through a Word document menu bar and drop down menus toolbars</p> <p>6. Entering text into a Word 2000 document, selection techniques Deleting text</p> <p>7. Font formatting keyboard shortcuts</p> <p>8. Paragraph formatting Bullets and numbering</p> <p>9. Page formatting What is page formatting? Page margins Page size and orientation Page breaks, Headers and footers</p> <p>10. Introducing tables and columns</p> |

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| <p>3] GUI Based Editing, Spreadsheets, Tables & Presentation Application Using MS Office 2000 & Open Office.Org Menus Opening, menus, Toolbars, standard toolbars, formatting toolbars & closing Quitting Document , Editing & designing your document Spreadsheets Working & Manipulating data with Excel Changing the layout Working with simple graphs Presentation Working With PowerPoint and Presentation</p> | <p>11. Printing within Word 2000 Print setup Printing options Print preview 12. Development of application using mail merge Mail merging addresses for envelopes Printing an addressed envelope and letter 13. Creating and using macros in a document 14. Creating and opening workbooks Entering data 15. Navigating in the worksheet Selecting items within Excel 2000 Inserting and deleting cells, rows and column Moving between worksheets, saving worksheet, workbook</p> |
| <p>4] Introduction To Internet What is Internet Equipment Required for Internet connection Sending &receiving Emails Browsing the WWW Creating own Email Account Internet chatting</p> | <p>16. Formatting and customizing data 17. Formulas, functions and named ranges 18. Creating, manipulating & changing the chart type 19. Printing, Page setup, Margins Sheet printing options, Printing a worksheet 20. * Preparing presentations with Microsoft Power Point. Slides and presentations, Opening an existing presentation , Saving a presentation</p> |
| <p>5] Usage of Computer System in various Domains Computer application in Offices, books publication data analysis ,accounting , investment, inventory control, graphics, database management, Instrumentation, Airline and railway ticket reservation, robotics, artificial intelligence, military, banks, design and research work, real-time, point of sale terminals, financial transaction terminals.</p> | <p>21. Using the AutoContent wizard ,Starting the AutoContent wizard, Selecting a presentation type within the AutoContent wizard Presentation type Presentation titles, footers and slide number 22. Creating a simple text slide, Selecting a slide Layout Manipulating slide information within normal and outline view, Formatting and proofing text, Pictures and backgrounds, drawing toolbar, AutoShapes, Using clipart, Selecting objects, Grouping and un-grouping objects, The format painter</p> |
| | <p>23. Creating and running a slide show, Navigating through a slide show, Slide show transitions, Slide show timings. Animation effects 24. Microsoft Internet Explorer 5 & the Internet Connecting to the Internet The Internet Explorer program window, The on-line web tutorial Using hyper links, Responding to an email link on a web page 25. Searching the Internet, Searching the web via Microsoft Internet Explorer, Searching the Internet using Web Crawler, Searching the Internet using Yahoo, Commonly used search engines</p> |

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| <p>6] Information technology for benefits of community Impact of computer on society Social responsibilities Applications of IT Impact of IT Ethics and information technology Future with information technology</p> | <p>26. Favorites, security & customizing Explorer Organizing Favorite web sites Customizing options – general, security, contents, connection, programs, advanced 27. * Using the Address Book Adding a new contact Creating a mailing group, Addressing a message, Finding an e-mail address 28. Using electronic mail, Starting Outlook Express Using the Outlook Express window, Changing the window layout, Reading file attachment, Taking action on message-deleting, forwarding, replying 29. Email & newsgroups, Creating and sending Emails Attached files, Receiving emails, Locating and subscribing to newsgroups, Posting a message to a newsgroup 30. Chatting on internet, Understating Microsoft chat environment, Chat toolbar</p> |
| <p>C] Computer Aided Designing and Drafting</p> | <p>6 Month</p> |
| <p>1.0 CAD Software Meaning, various CAD software available in the market AutoCAD, Felix Cad, Auto Civil, 3D Max; etc.) Starting up of CAD, CAD Window, Tool bar, Drop down menu, Command window, Saving the drawing. Introduction of Graphic screen.</p> | <p>Practical related Creating New file, Closing Drawing, Saving Drawing, Startup Methods, Modes in AutoCAD, Use of Function Keys, Use of Keyboard and Mouse in AutoCAD Practice.</p> |
| <p>2.0 CAD Commands WCS icon, UCS icon, co-ordinates, drawing limits, grid, snap, ortho features. All Drawing commands, line, circle, polyline, multiline, ellipse, polygon etc. All Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc. Working with Layers, Block, hatches, fills, dimensioning, text etc.</p> | <p>Practice on Small Drawing Objects using Commands in Draw Menu Practice of Editing command on above drawing objects, Dimensioning Drawing, Creating Title block, Area Statement and Schedule of Opening using Text in AutoCAD,</p> |
| <p>3.0 Use of Cad software for practice of: Generation of line plan, Detailed Plan, elevation, section, site plan, Area statement and print commands Generation of 3D view using 3D Modeling commands and 3d Operation commands, Creating 3D of Building Introduction to Auto desk Architect , 3D Max</p> | <p>Drawing Plan, Elevation, Section, Site Plan in AutoCAD Creating 3D Model of Building and Generating required 3D view from all sides. Other CAD Practical based on the Theory.</p> |

List of Books

Building Drawing

- 1] Malik, R.S. & Meo G.S. Civil Engg Drawing Delhi: New Asian Publishing
- 2] Shah P. J. Engg. Drawing – 1 Ahmedabad : D. J. Shah Publishing
- 3] Bhat N. D. Engg. Drawing Anand : Charotor
- 4] Gurucharan Singh Civil Engg. Drawing Delhi : Standard Publishers
- 5] Sane Y.S Building planning
- 6] Shaha Kale & Patki Building Drawing
- 7] Mackay W. B. IS962 Beuro of standards India (ISI)

Computer Fundamental

- 1] Vikas Gupta Comdex Computer Course Kit First Dreamtech
- 2] Henry Lucas Information Technology for management 7Th Tata Mc-Graw Hills
- 3] B.Ram Computer Fundamentals Architecture and Organisation Revised 3rd New Age International Publisher

CAD Books

- 1] Reference Manual of AutoCAD AutoDesk
- 2] Reference Manual of Felix cad Felix CAD
- 3] Reference Manual of Intel CAD
- 4] Reference Manual of Auto Civil
- 5] Reference Manual of 3D-Max

List of Tools and Equipment

A] General Class room

| Sr | Name of Item | No. |
|----|---|-----|
| 1 | Steel lockers 8 compartments with individual lockers (1980 x 910 x 480 mm) | 4 |
| 2 | Chair with writing pad | 25 |
| 3 | Steel almari with self 6.5' x 3' (18 gauge) | 2 |
| 4 | Steel table 4' x 3' | 2 |
| 5 | Teacher chair | 2 |

B] For Building Drawing Practical

| Sr | Name of Item | No. |
|----|---------------------|-----|
| 1 | Drawing Board | 25 |
| 2 | Drawing Table | 25 |
| 3 | Mini Drafter | 25 |
| 4 | Triangular Scale | 10 |
| 5 | Glass board 8' x 4' | 2 |

C] For Computer Fundamental and CAD Practical

| Sr | Name of Item | No. |
|----|--|------|
| 1 | Computer System P4 with accessories Complete with license OS. compatible for- to run AutoCAD 2010 and Windows 7 OS. | 5+1 |
| 2 | Plotter- HP Design Jet 500 latest model | 1 |
| 3 | Scanner | 1 |
| 4 | Computer table | 5+2 |
| 5 | Chair for computer | 10+2 |
| 6 | Laser Printer | 1 |
| 7 | AutoCAD 2010 or above Software | 1 |
| 8 | M. S. Office Software | 1 |

Subject - Construction Estimating, Costing and Accounts - 1nd Year

Code No – 30440004

| Practical | Theory |
|---|--|
| <p>OTHER CONSTRUCTIONS -</p> <p>Road : Introduction to roads, general principals of alignment. Classification and construction of different types of roads.</p> | <p>Cross section showing the different types of roads.</p> |
| <p>Railway - Indian Railways their gauges construction of permanent ways. Different rail sections. Use of stone blast in railways track. Use and type of slippers types of signals, fixtures & fastening in Railways Tracks including base plates and fish plates.</p> | <p>Drawing typical cross-sections of railway tracks embankment layout plans of railway platforms, Marshaling yards sliding, loop lines. Signaling points & crossing. Electric Railways tracks.</p> |
| <p>Bridges : Introduction to bridges , component parts of a bridge. Classification of culverts (IRC). Bridges, types , location of a bridge. Tunnels, rules used for the sizes of different members.</p> | <p>Preparing drawing of a masonry culvert and take out various quantities of items of work and prepare abstract of cost. Preparing drawing of an arched bridge.</p> |
| <p>1. Introduction on Water Resources Engineering.</p> <p>2. Definition of terms used in irrigation and hydrology like duty delta, intensity of irrigation, hydrograph, peak flow, run off, catchments area, C.C.A., Rabi, Kharif etc.</p> <p>3. Storage / diversion structures, definitions: types of dam- masonry, concrete and composite dams, gravity dams, arch and buttress dams, earth and rock fill dams</p> <p>a) Reservoir- types of Reservoirs viz. single purpose and multi purpose, area/ capacity curves of Reservoir.</p> <p>b) Canals : Canals class- fixation of canals and distribution system canal structures viz. head regulators, cross-regulators, canal outlet, escape, etc. drawing of canal alignment including longitudinal and cross-sections of canals with the given data. Types of cross drainage works viz. aqueducts. Super passage, siphon, legal crossing, irrigation, culvert inlets and outlets general description. Element of water power development and various civil engineering structure of hydro-electric schemes i.e. forebay. Penstock, turbines, power house, etc.</p> | <p>Drawing of different types of irrigation structures viz. dams, barrages, wire etc. with the help of given sketch and data. Longitudinal section of distributaries at different R.D. types of outlets and regulators .</p> |

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| Introduction – terms used in public health engineering. System of sanitation- house plumbing, sanitary fittings etc. | Preparation of drawings showing various pipe joints for under ground drainage, method of sanitary fittings in multi-storied building. Manholes and septictank. Preparation of drawings showing various pipe joints for under ground drainage, method of sanitary fittings in multi-storied building. Manholes and septictank. |
| Introduction to R..C.C. uses, materials proportions and form work including bending of bars and construction reference to ISI code. Reinforced brick work. Materials used for R.C.C. , construction selection of materials course aggregate, fine aggregate cement water, reinforcement characteristics. Method of mixing concrete hand and machine, slump test. | Drawing details of R.C.C. members. Rectangular beams, lintel chajjas, slap, stair including column with footing and continuous columns showing disposition of reinforcement, preparing bar bending, schedules. Method of floor and roof finishing. |
| Forms of rivets, proportions. Types of riveted joints. | Drawing forms of rivet heads and types of riveted joints. |
| Introduction to structural drafting and arrangements of drawing standard in practice to represent thread nuts, bolts and structural steel sections. Reference to ISI code. | Drawing the various standard steel sections and built up sections used for girders and stanchion including compound columns and street standard connections to girders types of sheets piles, steel through etc. |

Subject - **Construction Estimating, Costing and Accounts - 2nd Year**

Code No – 30440004

| Theory | Practical |
|---|--|
| Introduction Meaning of Term Estimating, costing Types of Estimate 1.2.1. Approximate Estimate 1.2.2 Details Estimate | Practical 1. Reading of Building Drawing for measurement 2. Filling of Measurement Sheet |
| Approximate Estimate 2.1 Definition of approximate estimate 2.2 Uses of Approximate Estimate 2.3 Preparing Approximate Estimate for Building Methods of preparing Approximate Estimate for Buildings 2.3.1 Plinth Area Method 2.3.2 Cubical Unit 2.3.3 Service Unit 2.3.4 Bay Unit | Practical 1. Preparing approximate estimate of a building using approximate method. |
| Detail Estimate 3.1 Definition of Detail Estimate 3.2 Uses of Detail Estimate 3.3 Data required to prepare detailed estimate 3.4 Procedure of preparing detailed estimate of any work 3.4.1 Taking out quantities and entering the data in measurement sheet and completing abstract sheet. 3.4.2 Abstracting using Abstract sheet | Practical 1. Preparation of Detail Estimate of a Residential Building (Load Bearing Structure) 2. Details estimate of septic Tank 3. Details estimate of sump well Note: No. 1 is Compulsory and any one out of 2 and 3 |

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| <p>3.5 List of items with their unit of measurement.</p> <p>3.6 Definition of contingencies, work charge establishment</p> <p>3.7 Provisions in details estimate for sanitary, water supply, Electrification.</p> <p>3.8 Types of Estimates, Detail Estimate, Revised Estimate, Supplementary Estimate, Annual report and Maintenance Estimate, Special Report Estimate, Additions and Alteration Estimate.</p> <p>3.10 Procedure of calculating Quantities for excavation, Foundation concrete, Foundation & plinth Masonry, Super Structure Masonry using</p> <p>i) Long wall – Short Wall method</p> <p>ii) Center Line Method</p> <p>3.11 Rules for Deduction in concrete, Masonry, Pointing & Plastering, Painting,</p> <p>3.12 Multiplying factor related to oil painting</p> | |
| <p>Chapter No. 4: Working out of quantities of Steel for R.C.C work</p> <p>12.1 Division of R.C.C work into concrete Steel and Form work</p> <p>12.2 Study of Reinforced steel for Bar diameter, its weight,</p> <p>12.3 Calculating Length and weight of steel for</p> <p>12.3.1 Straight bar with hook or EI at ends</p> <p>12.3.2 Bent up bar with hook or EL at ends</p> <p>12.3.3 Stirups</p> <p>12.4 preparing Bar bending schedule and calculating Steel for: Footing, Column, Lintel, Beam, Slab, Chajja, Staircase etc</p> | <p>Practicals</p> <p>1) Calculating Quantity of concrete & Steel for 2 to 3 room RCC Building or Hall.</p> |
| <p>Chapter No. 5: Modes of Measurements</p> <p>4.1 Points Considered while fixing unit of measurement</p> <p>4.2 Modes of measurements of item of work as per IS 1200</p> <p>4.3 Desired Accuracy of measurement</p> | |
| <p>Chapter No. 6: Rate Analysis</p> <p>5.1 Meaning of Term Rate Analysis</p> <p>5.2 Necessity of Rate Analysis</p> <p>5.3 Factors affecting Rate analysis</p> <p>5.4 Rates of Material and Labor as per DSR.</p> <p>5.5 Definition of Task work and factors affecting it. Task work for Excavation, Brick Masonry, Plastering, Wood work, centering & formwork, Steel work for RCC, Plain Concrete and RCC</p> <p>5.6 Methods of payment to labor.</p> <p>5.7 Transportation of material and its effect on rate analysis, Lead & lift</p> <p>5.8 Preparing Rate Analysis of minimum 10 items, such As Excavation, Brick Masonry, Plastering, Wood work, Centering & formwork, Steel work for RCC, Plain Concrete and RCC</p> <p>5.9 Standard schedule of Rate.</p> | <p>Practicals :</p> <p>1. Collecting Market Rates and DSR rates for minimum 20 building materials and 10 categories of labors</p> <p>2. Preparation of Rate analysis for at least 5 items of Building work.</p> |

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| <p>Chapter 7: Specifications</p> <p>6.1 Necessity of Specification</p> <p>6.2 Points to be observed while framing specifications</p> <p>6.3 Types of Specifications General, Details, Standard and manufactures Specifications</p> <p>6.4 Writing detailed Specifications of minimum 5 important items of building work</p> <p>6.5 Study of Standard specification Book from organizations such as PWD, MHADA, CIDCO etc.</p> | <p>Practicals :</p> <p>Preparation of Specification for 5 items.</p> |
| <p>Chapter 8 : Tender Document & Tender Notice</p> <p>8.1 List of Tenders document</p> <p>8.2 Necessity of Tender</p> <p>8.3 Points to be observed while framing Tender Notice</p> <p>8.4 Drafting of Tenders Notice</p> <p>8.5 Explanation of Terms: Earned Money, Security Deposit, Validity Period, Right for Rejection of one or all tenders</p> <p>8.6 Corrigendum to Tenders Notice</p> <p>8.7 Procedure of Submitting filled Tender</p> <p>8.8 Opening of Tender, Scrutiny of Tender</p> <p>8.9 Comparative Statement, Finalizing Tender</p> <p>8.10 Work order</p> <p>8.11 Rejection of all tenders</p> <p>8.12 Rejection of Lowest Tenders</p> <p>8.13 Unbalanced Tender, Ring formation, Negotiations</p> <p>8.14 Point to be observed by contractor while filling a tender.</p> | <p>Practical:</p> <p>Prepare set of full tender documents for Estimate prepared in second semester</p> <ol style="list-style-type: none"> 1. Tender Notice 2. Tender Form 3. General Directions to Contractor 4. Schedule A 5. Schedule B 6. Schedule C 7. General terms and conditions of contract 8. Special conditions of contract 9. Specifications |
| <p>Chapter 9 : Conditions of Contract</p> <p>9.1 Contract - Definition, its necessity and types</p> <p>9.2 General Conditions of contract</p> <p>9.2.1 Special conditions of contract</p> <p>9.2.2 Contract Drawing</p> <p>9.2.3 Bill of Quantity</p> <p>9.2.4 site possession for execution</p> <p>9.2.5 Inspection of Materials</p> <p>9.2.6 Inspection of completed item of works</p> <p>9.2.7 Water charges and Light Charges</p> <p>9.2.8 Working on Holiday</p> | <p>Practical:</p> <ol style="list-style-type: none"> 1. Study of contract conditions |
| <p>9.2.9 Extension of Time Limit</p> <p>9.2.10 Termination of Contract</p> <p>9.2.11 Subletting of work</p> <p>9.2.12 Suspension of work</p> <p>9.2.13 Extra Item</p> <p>9.2.14 Payment to contractor</p> <p>9.2.15 Clearance of file & Completion Certificate</p> <p>9.2.16 Defects Liability Period</p> <p>9.2.17 Price Escalation Clause</p> <p>9.2.18 Adherence to labor laws</p> <p>9.2.19 Arbitration</p> <p>9.3 Reward / Penalty clause</p> | |

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| <p>Chapter 10: Payment to Contractors</p> <ul style="list-style-type: none"> 10.1 Modes of Payment to contractor 10.1.1 Interim payments and its necessity 10.2 Types of interim payment 10.2.1 Advance payment 10.2.2 Secured Advance Payment 10.2.3 On Account Payment 10.3 Final Payment 10.4 First & final Payment 10.5 Retention Money and its Necessity 10.6 Reduced Rate Payment 10.7 Petty advance 10.8 Mobilization Advance 10.9 Measurement Book 10.10 Indent Invoice 10.11 Recoveries | |
| <p>Chapter 11:</p> <p>Procedure of Execution of work in P.W.D.</p> <ul style="list-style-type: none"> 11.1 Organization set up of PWD 11.2 PWD procedure of initiating work, Administrative Approval, Technical Sanction, Expenditure section, Budget Provision 11.3 Methods of Executing work 11.3.1 Contract Method 11.3.2 Departmental Method, Nominal Muster Roll 11.3.3 Rate List Method 11.3.4 Piece Work Method 11.3.5 Day Work Method | |

List of Books

Estimating and Costing

- 1] B. S. Patil Estimating and Costing
- 2] Estimation and costing for civil engg. Dutta 2004 UBSPD Delhi
- 3] Estimation and costingspecialisation & valuation Chakraborti,M 2004 Author -
- 4] A textbook on Estimation and costing and accounting Kohli,D.D. 2005 S.Chand Mumbai

List of Tools and Equipment

A] General Class room

| Sr | Name of Item | No. |
|-----------|---|------------|
| 1 | Steel lockers 8 compartments with individual lockers (1980 x 910 x 480 mm) | 4 |
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| 4 | Steel table 4' x 3' | 2 |
| 5 | Teacher chair | 2 |
