# STATE BOARD OF TECHNICAL EDUCATION, BIHAR

**Scheme of Teaching and Examinations for**

## III SEMESTER DIPLOMA IN CIVIL ENGINEERING / CIVIL (RURAL) ENGINEERING

**( Effective from Session 2016-17 Batch )**

**THEORY**

| Sr. No. | SUBJECT | SUBJECT CODE | TEACHING SCHEME | EXAMINATION-SCHEME | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Periods per Week | Hours of Exam. | Teacher's Assessment (TA) Marks A | Class Test (CT) Marks B | End Semester Exam.(ESE) Marks C | Total Marks (A+B+C) | Pass Marks ESE | Pass Marks in the Subject | Credits |
| 1. | Applied Mathematics (Common) | 1600301 | 04 | 03 | 10 | 20 | 70 | 100 | 28 | 40 | 03 |
| 2. | Surveying | 1615302 | 03 | 03 | 10 | 20 | 70 | 100 | 28 | 40 | 03 |
| 3. | Building Construction | 1615303 | 03 | 03 | 10 | 20 | 70 | 100 | 28 | 40 | 03 |
| 4. | Building Drawing | 1615304 | 03 | 04 | 10 | 20 | 70 | 100 | 28 | 40 | 03 |
| 5. | Concrete Technology | 1615305 | 03 | 03 | 10 | 20 | 70 | 100 | 28 | 40 | 03 |
| | | Total :- | **16** | | | | **350** | **500** | | | |

**PRACTICAL**

| Sr. No. | SUBJECT | SUBJECT CODE | TEACHING SCHEME | EXAMINATION-SCHEME | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Periods per Week | Hours of Exam. | Practical (ESE) | | Total Marks (A+B) | Pass Marks in the Subject | Credits |
| | | | | | Internal(A) | External(B) | | | |
| 6. | Surveying Lab | 1615306 | 04 | 04 | 15 | 35 | 50 | 20 | 01 |
| 7. | Building Construction Lab | 1615307 | 03 | 04 | 15 | 35 | 50 | 20 | 01 |
| **Total :-** | | | **07** | | | | **100** | | |

**TERM WORK**

| Sr. No. | SUBJECT | SUBJECT CODE | TEACHING SCHEME | EXAMINATION-SCHEME | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Periods per Week | Marks of Internal Examiner (X) | Marks of External Examiner (Y) | Total Marks (X+Y) | Pass Marks in the Subject | Credits |
| 8. | Surveying (TW) | 1615308 | - | 07 | 18 | 25 | 10 | 01 |
| 9. | Building Drawing (TW) | 1615309 | 02 | 15 | 35 | 50 | 20 | 01 |
| 10. | Concrete Technology (TW) | 1615310 | 02 | 07 | 18 | 25 | 10 | 01 |
| 11. | Development of Life Skills-II | 1615311 | 03 | 07 | 18 | 25 | 10 | 02 |
| 12. | Professional Practice-III | 1615312 | 03 | 07 | 18 | 25 | 10 | 02 |
| **Total :-** | | **10** | | | | **150** | | |
| **Total Periods per week Each of duration One Hour** | | **33** | | Total Marks = | | **750** | | **24** |

# APPLIED MATHEMATICS (COMMON)

| Subject Code | Theory | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1600301 | No. of Periods Per Week | | | Full Marks | : | 100 | 03 |
| | L | T | P/S | ESE | : | 70 | |
| | 04 | — | — | TA | : | 10 | |
| | — | — | — | CT | : | 20 | |

| Contents :Theory | | Hrs/week | Marks |
|---|---|---|---|
| **Unit -1** | **INTEGRATION:**<br><br>1.1 Definition of integration as anti-derivative. Integration of standard function.<br>1.2 Rules of integration (Integrals of sum, difference, scalar multiplication).<br>1.3 Methods of Integration.<br>1.3.1 Integration by substitution<br>1.3.2 Integration of rational functions.<br>1.3.3 Integration by partial fractions.<br>1.3.4 Integration by trigonometric transformation.<br>1.3.5 Integration by parts.<br>1.4 Definite Integration.<br>1.4.1 Definition of definite integral.<br>1.4.2 Properties of definite integral with simple problems. | 10 | **20** |
| | 1.5 **Applications of definite integrals.**<br>1.5.1 Area under the curve. Area bounded by two curves,<br>1.5.2 Volume of revolution.<br>1.5.3 Centre of gravity of a rod, plane lamina.<br>1.5.4 Moment of Inertia of uniform rod, rectangular lamina<br>1.5.5 Theorems of parallel and perpendicular axes. | 08 | **10** |
| **Unit -2** | **DIFFERENTIAL EQUATION**<br><br>2.1 Definition of differential equation, order and degree of differential equation. Formation of differential equation for function containing single constant.<br>2.2 Solution of differential equations of first order and first degree such as variable separable type, reducible to Variable separable, Homogeneous, Nonhomogeneous, Exact, Linear and Bernoulli equations.<br><br>2.3 **Applications of Differential equations.**<br>**2.3.1 Rectilinear motion (motion under constant and variable acceleration)**<br>2.3.2 Simple Harmonic Motion. | 10 | 10<br><br>**08** |
| **Unit – 3** | **PROBABILITY DISTRIBUTION**<br><br>3.1 Binomial distribution.<br>3.2 Poisson's distribution.<br>3.3 Normal distribution<br>3.4 Simple examples corresponding to production process. | 08 | **10** |

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| **Unit – 4** | **NUMERICAL METHODS**<br><br>**4.1 Solution of algebraic equations**<br>Bisection method.<br>Regulafalsi method.<br>Newton – Raphson method.<br><br>**4.2 Solution of simultaneous equations containing 2 and 3 unknowns**<br>Gauss elimination method.<br>Iterative methods- Gauss seidal and Jacobi's methods. | 06<br><br>06 | 06<br><br>06 |
| | Total | 48 | 70 |

**Text / Reference Books :-**

| Titles of the Book | Name of Authors | Name of the Publisher | |
|---|---|---|---|
| Mathematics for polytechnic | S. P. Deshpande | Pune Vidyarthi Griha Prakashan, Pune | |
| Calculus: single variable | Robert T. Smith | Tata McGraw Hill | |
| Advanced Mathematics for Engineers and Scientist | Murray R Spiegel | Schaum outline series McGraw Hill | |
| Higher Engineering Mathematics | B. S. Grewal | Khanna Publication, New Dehli | |
| Introductory Methods of Numerical analysis | S. S. Sastry | Prentice Hall Of India New Dehli | |
| Numerical methods for Engg. 4th ed. | Chapra | Tata McGraw Hill | |
| Numerical methods for scientific & engineering computations | M. K. Jain & others | Wiley Eastern Publication. | |

# SURVEYING (CIVIL ENGINEERING GROUP)

| Subject Code | Theory | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1615302 | No. of Periods Per Week | | | Full Marks | : | 100 | 03 |
| | L | T | P/S | ESE | : | 70 | |
| | 03 | — | — | TA | : | 10 | |
| | — | — | — | CT | : | 20 | |

## Contents : Theory

| Name of the Topic | | Hrs/week | Marks |
|---|---|---|---|
| **Unit -1** | **TYPES OF SURVEY**<br>DEFINITION. OBJECTS OF SURVEYING,. PRINCIPLES OF SURVEYING. USES OF SURVEY, CLASSIFICATION OF SURVEYING.<br>PRIMARY –PLAIN, GEODETIC.<br>SECONDARY – BASED ON INSTRUMENTS, METHOD, OBJECT, NATURE OF FIELD. | **04** | **06** |
| **Unit -2** | **Chain & Cross Staff Survey**<br>2.1 PRINCIPLE OF CHAIN SURVEY .STUDY AND USE OF INSTRUMENTS FOR LINEAR MEASUREMENTS – CHAIN, TAPE, RANGING ROD, ARROWS, PEGS , CROSS STAFF , OPTICAL SQUARE , LINE RANGER.<br>2.2 RANGING –DIRECT AND INDIRECT RANGING<br>CHAINING – PLAIN AND SLOPING GROUNDS.<br>Chain Triangulation – Survey Station and their Selections, Survey lines, Check lines, Tie lines, base line. Taking offsets .long and short offset, degree of offset.<br>OBSTACLES IN CHAINING.<br>2.3 CHAIN & CROSS STAFF SURVEY FOR FINDING AREA OF A FIELD ( NUMERICAL PROBLEMS )<br>ERRORS IN CHAIN SURVEYING & APPLYING CORRECTIONS FOR CHAIN & TAPE (NUMERICAL PROBLEMS).<br>CONVENTIONAL SIGNS RELATED TO SURVEY. | **08** | **14** |
| **Unit – 3** | **COMPASS SURVEY**<br>3.1 PRINCIPLE OF COMPASS SURVEY.<br>BEARING OF LINES – MERIDIAN –TRUE, MAGNETIC, AND ARBITRARY. BEARING –FORE BEARING, BACK BEARING, WHOLE CIRCLE BEARING, QUADRANTAL BEARING SYSTEM AND REDUCED BEARING, CONVERSION OF BEARINGS, FINDING INCLUDED ANGLES FROM BEARINGS.<br>3.2 PRISMATIC COMPASS – COMPONENT, CONSTRUCTION AND USE.<br>3.3 LOCAL ATTRACTION, CAUSES, PRECAUTIONS TO BE TAKEN TO AVOID AND CORRECTION OF BEARINGS AFFECTED DUE TO LOCAL ATTRACTION, CALCULATION OF INCLUDED ANGLES.<br>3.4 TRAVERSING – OPEN TRAVERSE, CLOSED TRAVERSE, CHECK ON OPEN AND CLOSED TRAVERSE. GRAPHICAL ADJUSTMENT FOR CLOSING ERROR.<br>3.5 NUMERICAL PROBLEMS ON CALCULATION OF BEARINGS, ANGLES AND LOCAL ATTRACTION. | **12** | **16** |

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| **Unit – 4** | **Levelling**<br>4.1 Definitions – Level surface, Level line, horizontal line, Vertical line, Datum surface , Reduced level, Bench mark and its types .<br>4.2 DUMPY LEVEL –COMPONENTS, CONSTRUCTION, LINE OF SIGHT, LINE OF COLLIMATION, BUBBLE TUBE AXIS, LEVELLING STAFF – TELESCOPIC AND FOLDING TYPE .FORESIGHT, BACK SIGHT, INTERMEDIATE SIGHT, CHANGE POINT, HEIGHT OF COLLIMATION .<br>FUNDAMENTAL AXES AND THEIR RELATIONSHIP<br>4.3 RECORDING IN LEVEL BOOK. TEMPORARY ADJUSTMENTS OF DUMPY LEVEL.<br>4.4 METHOD OF REDUCTION OF LEVELS – HEIGHT OF INSTRUMENT METHOD AND RISE AND FALL METHOD. ARITHMETICAL CHECKS, NUMERICAL PROBLEMS, COMPUTATION OF MISSING READINGS.<br>4.5 CLASSIFICATIONS OF LEVELLING - SIMPLE, DIFFERENTIAL, PROFILE, CROSS SECTIONAL, FLY AND CHECK LEVELLING.<br>4.6 STUDY AND USE OF TILTING LEVEL & AUTO LEVEL.<br>4.7 SOURCES AND ERRORS IN LEVELLING, PRECAUTIONS AND DIFFICULTIES FACED IN LEVELLING. | **16** | **20** |
| **Unit – 5** | **CONTOURING**<br>5.1 DEFINITIONS – CONTOUR, CONTOUR INTERVAL, HORIZONTAL EQUIVALENT.<br>5.2 CHARACTERISTICS OF CONTOURS .METHOD OF LOCATING CONTOURS. INTERPOLATION OF CONTOURS. ESTABLISHING GRADE CONTOURS.<br>5.3 USES OF CONTOUR MAPS.<br>INTERPRETATION OF TYPICAL CONTOUR SHEETS. | **04** | **08** |
| **Unit – 6** | ***AREA AND VOLUME MEASUREMENTS***<br>CONSTRUCTION AND USE OF POLAR PLANIMETER FOR MEASUREMENT OF AREA AND SIMPLE NUMERICAL PROBLEMS. | **04** | **06** |
| | STUDY AND USE OF DIGITAL PLANIMETER .CONCEPT OF COMPUTATION OF VOLUME BY TRAPEZOIDAL AND PRISMOIDAL FORMULAE.(NO NUMERICAL PROBLEMS) | | |
| | **TOTAL** | **48** | **70** |

**Text / Reference Books:-**

| Titles of the Book | Name of Authors | Name of the Publisher |
|---|---|---|
| Surveying and Levelling | N.N.BASAK | Tata Mc Graw-Hill |
| SURVEYING AND LEVELLING PART I AND II | T .P. Kanetkar & S. V, Kulkarni | PUNE VIDHYARTHI GRIHA Prakashan |
| SURVEYING AND LEVELLING VOL. I AND II | Dr. B. C. Punmiya | Laxmi Plublication |
| TEXT BOOK OF SURVEYING | S.K.Husain, M.S. Nagaraj | S. Chand and company |
| SURVEYING AND LEVELLING VOL. I AND II | S. K. Duggal | TATA MC GRAW-HILL |
| PLANE SURVEYING | A.M.Chandra | NEW AGE INTERNATIONAL PUBLISHERS |

# BUILDING CONSTRUCTION (CIVIL ENGINEERING GROUP)

| Subject Code 1615303 | Theory | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| | No. of Periods Per Week | | | Full Marks | : | 100 | 03 |
| | L | T | P/S | ESE | : | 70 | |
| | 03 | — | — | TA | : | 10 | |
| | — | — | — | CT | : | 20 | |

## CONTENTS : THEORY

| | Name of the Topic | Hrs/week | Marks |
|---|---|---|---|
| Unit -1 | **BUILDING COMPONENTS AND MATERIALS**<br>**1.1 BUILDING COMPONENTS AND TYPES OF STRUCTURE**<br>BUILDING COMPONENTS & THEIR FUNCTION.<br>SUBSTRUCTURE – FOUNDATION, PLINTH.<br>SUPERSTRUCTURE – WALLS, SILL, LINTEL, DOORS & WINDOWS,<br>FLOOR, ROOF, PARAPET, BEAMS, COLUMNS.<br>TYPES OF STRUCTURES – LOAD BEARING STRUCTURES, FRAMED STRUCTURES, COMPOSITE STRUCTURES.<br>**1.2 MASONRY MATERIALS**<br>A) BUILDING STONES- CLASSIFICATION OF ROCKS, REQUIREMENT OF GOOD BUILDING STONE, DRESSING OF STONES, QUARRYING OF STONES ,ARTIFICIAL OR CAST STONES<br>B) BRICKS– CONVENTIONAL BRICKS , STANDARD BRICKS COMPOSITION OF CLAY BRICK, STRENGTH OF BRICKS, PROPORTIONS OF BURNT CLAY BRICKS , TESTING OF BRICKS , SPECIAL BRICKS ,HOLLOW BLOCKS , FLY ASH BRICKS.<br>C) MORTARS – CLASSIFICATIONS, LIME MORTAR, CEMENT MORTAR, SPECIAL MORTARS. FUNCTIONS OF MORTAR, PROPORTIONS, PROPERTIES OF MORTAR AND TESTS FOR MORTAR.<br>**1.3 TIMBER BASED MATERIAL**<br>USE OF TIMBER, CHARACTERISTICS OF GOOD TIMBER, DEFECTS IN TIMBER, PLYWOOD, PARTICLE BOARD ,VENEER, SUN MICA , FORE MICA, NUWOOD, ARTIFICIAL TIMBER, RUBBER WOOD.<br>**1.4 MISCELLANEOUS MATERIALS**<br>GLASS, PLASTIC, FIBERS, ALUMINIUM, STEEL , GALVANIZED IRON, ASPHALT BITUMEN ETC .MICRO SILICA, PVC, CPVC, PPF.<br>WATERPROOFING AND TERMITE PROOFING MATERIALS, ADMIXTURES IN CONCRETE, BONDING AGENTS, EPOXY RESINS, POLISHING MATERIALS ETC | 06 | 10 |
| Unit -2 | **CONSTRUCTION OF SUBSTRUCTURE**<br>**2.1 JOB LAYOUT**<br>SITE CLEARANCE, PREPARING JOB LAYOUT, LAYOUT FOR LOAD BEARING STRUCTURE AND FRAMED STRUCTURE BY CENTER LINE AND FACE LINE METHOD, PRECAUTIONS WHILE MARKING LAYOUT ON GROUND .<br>**2.2 EARTHWORK**<br>EXCAVATION FOR FOUNDATION, TIMBERING AND STRUTTING EARTHWORK FOR EMBANKMENT MATERIAL FOR PLINTH FILLING. TOOLS AND PLANTS USED FOR EXCAVATION AND EARTHWORK.<br>**2.3 FOUNDATION**<br>TYPES OF FOUNDATION – OPEN FOUNDATIONS, SHALLOW FOUNDATION, STEPPED FOUNDATION, ISOLATED AND COMBINED COLUMN FOOTING, RAFT FOUNDATION, DEEP FOUNDATION AND PILE FOUNDATION.<br>PUMPING METHOD OF DEWATERING, COFFERDAMS.<br>BEARING CAPACITY OF FOUNDATION SOIL, UNDER REAMED PILE FOUNDATION. | 06 | 12 |

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| **Unit -3** | **CONSTRUCTION OF SUPERSTRUCTURE**<br>3.1 **STONE MASONRY**<br>TERMS USED IN STONE MASONRY – FACING, BACKING, HEARTING, THROUGH STONE, CORNER STONE.<br>UNCOURSED RUBBLE MASONRY, COURSED RUBBLE MASONRY, POINT TO BE OBSERVED IN CONSTRUCTION OF STONE MASONRY, MORTARS FOR STONE MASONRY, TOOLS AND PLANTS USED FOR STONE MASONRY, COL-GROUT MASONRY.<br>3.2 **BRICK MASONRY**<br>COMMON TERMS USED IN BRICK MASONRY, REQUIREMENTS OF GOOD BRICKWORK, BONDS IN BRICK MASONRY, ENGLISH, FLEMISH, STRETCHER AND HEADER BONDS ONLY.<br>BRICK LAYING ,LINE LEVEL AND PLUMB OF BRICKWORK, STRIKING AND RAKING OF JOINTS, LEAD AND LIFT, PRECAUTIONS IN BRICK MASONRY, TOOLS AND PLANTS USED IN BRICK MASONRY .<br>COMPARISON BETWEEN BRICK AND STONE MASONRY. HOLLOW CONCRETE BLOCK MASONRY, COMPOSITE MASONRY ,<br>CAVITY WALL- PURPOSE AND CONSTRUCTION.<br>3.3 **DOORS AND WINDOWS**<br>Doors -Components and construction of panelled doors, battened doors, flush doors, collapsible doors, rolling shutters, Revolving doors, Glazed doors. Sizes of door.<br>Windows -Component and construction of fully panelled, partly panelled and glazed, glazed wooden, steel, Aluminum windows, sliding windows, louvered window, ventilators, cement grills. Protective treatment for doors and windows, fixtures and fastenings for doors and window.<br>SILL, LINTEL AND WEATHER SHED - FUNCTIONS, TYPES AND CONSTRUCTION .<br>3.4 **VERTICAL COMMUNICATION**<br>MEANS OF VERTICAL COMMUNICATION – STAIR CASE, ELEVATOR OR OF GOOD STAIRCASE, TYPES OF STAIRCASE, FABRICATED STAIR.<br>3.5 **SCAFFOLDING AND SHORING**<br>PURPOSE, TYPES OF SCAFFOLDING, PROCESS OF ERECTION AND DISMANTLING. PURPOSE AND TYPES OF SHORING, UNDERPINNING, SAFETY PRECAUTIONS. | **20** | **24** |
| **Unit -4** | ***4. Building Finishes***<br>4.1 **FLOORS AND ROOF**S<br>FLOOR FINISHES- SHAHABAD , KOTA, MARBLE, GRANITE ,KADAPPA, CERAMIC TILES ,VITRIFIED , MOSAIC TILES ,CHEQUERRED TILES, GLAZED TILES ,PAVEMENT BLOCKS , CONCRETE FLOORS, TREMIX FLOOR, SKIRTING AND DADO.<br>PROCESS OF LAYING- PROCESS OF LAYING AND CONSTRUCTION, FINISHING AND POLISHING OF FLOORS.<br>ROOFING MATERIALS – AC SHEETS ,G.I. SHEETS, PLASTIC SHEETS, FIBRE SHEETS, MANGALORE TILES ETC. STEEL TRUSSES. R.C.C. SLAB<br>4.2 **WALL FINISHES**<br>PLASTERING – NECESSITY OF PLASTERING, SINGLE COAT PLASTER DOUBLE COAT PLASTER , NEERU FINISHING AND POP, SPECIAL PLASTERS STUCCO PLASTER , PLASTER BOARD AND WALL CLADDINGS. PRECAUTION TO BE TAKEN WHILE PLASTERING. DEFECTS IN PLASTER.<br>POINTING – NECESSITY AND PROCEDURE OF POINTING.<br>PAINTING – NECESSITY, SURFACE PREPARATION, METHOD OF APPLICATION, SELECTING SUITABLE PAINTING MATERIAL, WHITE WASH AND COLOUR WASH. | 16 | 24 |
| **Unit -5** | **5. BUILDING MAINTENANCE**<br>5.1 **CRACKS**<br>CAUSES AND TYPES OF CRACKS, IDENTIFICATION AND REPAIR OF CRACKS. GUNITING AND GROUTING, USE OF EPOXY AND CRACK FILLS. | | |

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| | 5.2 **SETTLEMENT**<br>SETTLEMENT --CAUSES AND REMEDIAL MEASURES<br>PLINTH PROTECTION – NECESSITY AND MATERIALS USED.<br>5.3 **DEMOLITION**<br>NECESSITY, METHOD OF DEMOLITION-HAND DEMOLITION, MACHINE DEMOLITION, CONTROLLED BLASTING DEMOLITION, PRECAUTIONS DURING DEMOLITION.<br>5.4 **REBARING TECHNIQUES**<br>NECESSITY AND EQUIPMENT FOR REBARING TECHNIQUES | | |
| | **TOTAL** | **48** | **70** |

| **Text /Hand Books:-** | | |
|---|---|---|
| **Titles of the Book** | **Name of Authors** | **Name of the Publisher** |
| Construction Materials | D.N. Ghose | Tata McGraw-Hill |
| Building materials | Amarjit Agrawal | New India Publication |
| Building materials | S. K. Duggal | New Age International |
| Engineering materials | Sharma | PHI Publication |
| Building Construction | S. P. Arora and Bindra | Dhanpat Rai Publication |
| Building Construction | S. C. Rangawala | Charotar Publication |
| Building Construction | Sushil Kumar | Standard Publication |
| Building Construction | B. C. Punmia | Laxmi Publication |
| Building Construction | S.K. Sharma | Tata McGraw-Hill |
| Civil Engineering materials | TTTI ,Madras | TTTI ,Madras |
| Building Construction | Dr.Janardan Zha | Khanna Publication |
| A to Z of Building Construction | Mantri Construction | Mantri Publication |
| Building Construction Vol. I to IV | W. B. Mackay | Longman(ELBS) |
| PWD Handbooks for<br>-Materials<br>- Masonry<br>-Building<br>-Plastering and Pointing<br>- Foundation | All India Council for Technical Education | All India Council for Technical Education |
| Practical Civil Engineering Handbook | Khanna | Khanna Publication |

# BUILDING DRAWING (CIVIL ENGINEERING GROUP)

| Subject Code | Theory | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1615304 | No. of Periods Per Week | | | Full Marks | : | 100 | 03 |
| | L | T | P/S | ESE | : | 70 | |
| | 03 | — | — | TA | : | 10 | |
| | — | — | — | CT | : | 20 | |

## CONTENTS : THEORY

| | Name of the Topic | Hrs/week | Marks |
|---|---|---|---|
| **Unit -1** | **1 Conventions**<br>1.1 Conventions as per IS:962-1967 and other practices<br>2 Types of Lines – Visible line, Centerline, Hidden line, Section line, Dimension line, Extension line, Pointers, Arrow heads or dots.<br>2.1 Symbols – Materials used in construction, building components<br>**3** Reading of available ammonia prints of residential buildings. | **04** | **03** |
| **Unit -2** | **Planning Of Building**<br>2.1 Principles of planning of Residential and Public building.<br>2.2 Space requirements and norms for various units of Residential and Public building.<br>Rules and byelaws of local governing authorities for construction.<br>2.3 Drawing of line plans for Residential and Public building. | **06** | **14** |
| **Unit – 3** | **Types Of Drawing**<br>3.1 Development of line plan<br>3.2 Elevation<br>3.3 Section<br>3.4 Site plan<br>3.5 Location Plan<br>3.6 Foundation plan<br>3.7 Area statement and other details.<br>3.8 Measured Drawing and its significance<br>3.9 Submission Drawing and Working Drawing | **26** | **45** |
| **Unit – 4** | **Perspective Drawing**<br>4.1 Definition, Necessity, Principles of Perspective Drawing, Terms used in perspective drawing<br>4.2 Two point perspective view of a small object like pedestal, step block, small single storied building with flat roof etc. | **12** | **08** |
| | **Total** | **48** | **70** |

**Text /Reference Books:-**

| Titles of the Book | Name of Authors | Name of the Publisher |
|---|---|---|
| Text Book of Building Drawing | Shah, Kale, Patki | - |
| Elements of Building Drawing | D. M. Mahajan | Pune Vidyarthi Griha Prakashan |
| Planning and Design of Building. | Y. S. Sane | - |
| Civil Engineering Drawing | Malik & Mayo | New Asian Publishers New Delhi |
| Civil Engg. Drawing & House Planning | B.P. Verma | Khanna Publishers, Delhi |
| Bulding Planning & Drawing | S.S Bharikatti M.V. Chitawadegi | I.K International Publishing House. |

# CONCRETE TECHNOLOGY (CIVIL ENGINEERING GROUP)

| Subject Code | Theory | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1615305 | No. of Periods Per Week | | | Full Marks | : | 100 | 03 |
| | L | T | P/S | ESE | : | 70 | |
| | 03 | — | — | TA | : | 10 | |
| | — | — | — | CT | : | 20 | |

**CONTENTS : THEORY**

| Name Of The Topic | | Hrs/week | Marks |
|---|---|---|---|
| **Unit -1** | **Properties of Cement:**<br>1.1 Physical properties of Ordinary Portland cement (OPC), determination and test on OPC ,Hydration of cement, physical properties of cement – fineness, standard consistency, initial & final setting times, compressive strength & soundness, different grades of opc 33, 43 , 53 & their specification of physical properties as per relevant I. S. codes. Adulteration of cement (field test), storing cement at site, effect of storage of cement on properties of cement / concrete.<br>1.2 Types of Cement<br>Physical properties, specifications as per relevant IS codes & field application of the following types of cement<br>i) Rapid hardening cement<br>Ii) Low heat cement<br>Iii) Pozzolana Portland cement<br>Iv) Sulphate resisting cement<br>Vi) Blast furnace slag cement<br>Vii) White cement | **06** | **10** |
| **Unit -2** | **Properties of Aggregates :**<br>2.1 Properties of fine aggregates :<br>Concept of size, shape, surface texture, strength, specific gravity, bulk density , water absorption, surface moisture, soundness, bulking impurities<br>2.2 Determination of fineness modulus & grading zone of sand by sieve analysis, determination of silt content in sand & their specification as per IS 383<br>2.3 Bulking of sand, phenomenon of bulking, its effect on concrete mix proportion.<br>2.4 Properties of coarse aggregates :<br>Concept of size, shape, surface texture, water absorption, soundness, specific gravity & bulk density<br>2.5 Determination of fineness modulus of coarse aggregate by sieve analysis, grading of Coarse Aggregates<br>2.6 Determination of crushing value, impact value & abrasion value of coarse aggregate, flakiness index & elongation index of coarse aggregate and their specification. | **08** | **15** |

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| **Unit – 3** | **Properties of Concrete:**<br>3.1 **Introduction to concrete -**<br>Definition of concrete, necessity of supervision for concreting operation, different grades of concrete (ordinary concrete, standard concrete & high strength concrete as per provisions of IS 456- 2000), minimum grade of concrete for different exposure conditions, minimum grade of concrete for R.C.C., water retaining structure & in sea water construction, durability of concrete.<br>3.2 **Water cement ratio**<br>Definition of w/c ratio, Duff Abraham w/c law, significance of w/c ratio, selection of w/c ratio for different grades of concrete prepared from different grades of OPC as per graphs specified in IS 10262 -1982, maximum w/c ratio for different grades of concrete for different exposure conditions.<br>3.3 **Properties of fresh concrete**<br>Definition of workability, factors affecting workability of concrete. Determination of workability of concrete by slump cone test, compaction factor test, vee bee consistometer & flow table tests. Range values of workability requirement for different types of concrete works, cohesiveness, segregation, harshness, bleeding.<br>3.4 **Properties of hardened concrete**<br>Definition of compressive strength, durability, impermeability, elastic properties of concrete, modulus of elasticity of concrete.<br>Creep, factors affecting creep, shrinkage, factors affecting shrinkage<br>***3.5 CONCRETE MIX DESIGN***<br>Objectives of mix design, list of different method of mix design ,study of mix design procedure by I.S. method as per I.S. 10262-1982 ,determination of design mix proportion by mass for M 20 grade of concrete using I.S. Method for given data ( such as grading zone of sand, proportion of 20 mm & 10 mm metals, specific gravities of cement, sand & aggregate , water absorption of sand & aggregate, compacting factor and exposure condition).<br>3.6 **Testing of concrete**<br>Significance of testing, determination of compressive strength of concrete cubes at different ages, interpretation & co-relation of test results<br>3.7 **Non- destructive testing of concrete**<br>Importance of NDT, methods of NDT - rebound hammer test & ultrasonic pulse velocity test, working principle of rebound hammer and factor affecting the rebound index, specification for deciding the quality of concrete by ultrasonic pulse velocity as per I.S. 13311 ( part 1 & 2 ).<br>Determination of rebound index & compressive strength of concrete by rebound hammer test as per I.S. 13311, determination of quality of concrete by ultrasonic pulse velocity test | **12** | **15** |

| | | | |
|---|---|---|---|
| **Unit – 4** | **Quality Control of Concrete:**<br>4.1 Batching, Different Types of Mixers & Vibrators<br>Volume & weight batching, volume batching for nominal mixes & weight batching for design mix concrete, types of mixers ( tilting & non-tilting type) Different types of vibrators - needle vibrator, surface vibrator, table vibrator, principle & application of each type of vibrator<br>4.2 Formwork : formwork for concreting, different types of formworks for different works such as beams, slabs, columns, well foundation, materials used for formwork, requirement of good formwork, stripping time for the removal of formwork as per I.S. 456- 2000 provisions for different structural members.<br>4.3 Transportation, placing, compaction & finishing of concrete: Modes of transportation of concrete , precautions to be taken during transportation and placing of concrete in formwork compaction of concrete, methods of compaction, care to be taken during compaction, purpose of finishing, types of finishing & methods of application ( surface treatment, expose aggregate finish, applied finish, coloured finish), requirement of good finish.<br>4.4 Curing of concrete : definition of curing, necessity of curing, different methods of curing and their application ( spraying water, membrane curing, steam curing, curing by infra red radiations, curing by wet gunny bags, ponding methods).<br>4.5 Waterproofing of concrete & joints in concrete construction: Importance & need of waterproofing, methods of waterproofing & materials used for waterproofing, types of joints, joining old & new concrete, methods of joining, materials used for filling joints. | **12** | **16** |
| **Unit – 5** | **Extreme weather concreting & chemical Admixture in concrete :**<br>5.1Extreme weather concreting<br>Effect of cold weather on concrete, effect of hot weather on concrete, precautions to be taken while concreting in hot & cold weather condition.<br>5.2 Chemical admixture in concrete<br>Properties & application for different types of admixture such as accelerating admixtures, retarding admixtures, water reducing admixture, air entraining admixture & super plasticizers. | **05** | **07** |
| **Unit – 6** | **Properties of Special Concrete:**<br>Properties, Advantages & Limitation of the following types of Special concrete<br>i) Ready mix Concrete<br>ii) Reinforced Concrete<br>iii) Prestressed Concrete<br>iv) Fiber Reinforced Concrete<br>v) Precast Concrete<br>vi) High performance Concrete | **05** | **07** |
| | **Total** | **48** | **70** |

| Text /Reference Books:- | | |
|---|---|---|
| **Titles of the Book** | **Name of Authors** | **Name of the Publisher** |
| Concrete Technology | M. L. Gambhir | Tata Mc Graw . Hill Publishing Co. Ltd. New Delhi |
| Concrete technology | A. M. Neyille & J J Brooks | Pearson Education ( Singapore ) Pyt. Ltd. New Delhi |
| Concrete technology | M. S. Shetty | S. Chand Publication |
| Text book of Concrete technology | P. D. Kulkarni | M. H. Ghosh and Phull publication |
| Chemical | H.R. Rixom | Powells' Books |
| Admixtures for concrete | | |

# *SURVEYING (CIVIL ENGG. GROUP) LAB*

| Subject Code | Practical | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1615306 | No. of Periods Per Week | | | Full Marks | : | 50 | 01 |
| | L | T | P/S | ESE | : | 50 | |
| | — | — | 04 | Internal | : | 15 | |
| | — | — | — | External | : | 35 | |

## *CONTENTS : PRACTICAL*

**SKILLS TO BE DEVELOPED:**

**INTELLECTUAL SKILLS:**

1) IDENTIFY THE DIFFERENT INSTRUMENTS FOR LINEAR MEASUREMENT AND LEVELLING
2) RECORD AND OBSERVING NECESSARY OBSERVATION WITH THE SURVEY INSTRUMENTS
3) CLASSIFY AND DISCRIMINATING VARIOUS TYPES OF SURVEY INSTRUMENTS.
4) IDENTIFY THE ERRORS OF THE SURVEY INSTRUMENTS.

**MOTOR SKILLS:**

1. MEASURE DISTANCES, BEARINGS AND FINDING REDUCED LEVELS WITH SURVEY INSTRUMENTS.
2. PREPARE DRAWING USING SURVEY DATA.
3. PREPARE CONTOUR MAP OF A GIVEN TERRAIN/TOPOGRAPHY.
4. MEASURE AREA OF AN IRREGULAR SHAPE FIGURE WITH PLANIMETER.

**INSTRUCTIONS:**

1) GROUP SIZE FOR SURVEY PRACTICAL WORK SHOULD BE MAXIMUM 6 STUDENTS.
2) EACH STUDENT FROM A GROUP SHOULD HANDLE THE INSTRUMENT INDEPENDENTLY TO UNDERSTAND THE FUNCTION OF DIFFERENT COMPONENTS AND USE OF THE INSTRUMENT.
3) DRAWING, PLOTTING SHOULD BE CONSIDERED AS PART OF PRACTICAL.
4) ONE FULL DAY PER PROJECT IS REQUIRED FOR CARRYING OUT PROJECT WORK.

- **Practical SHALL CONSIST OF RECORD OF ALL PRACTICAL AND PROJECTS IN FIELD BOOK AND DRAWING OF PROJECT WORK ON FULL IMPERIAL SIZE DRAWING SHEETS.**

1) MEASUREMENT OF DISTANCES WITH CHAIN & TAPE ON GROUND WITH DIRECT OR INDIRECT RANGING.
2) CONSTRUCTION AND USE OF OPTICAL SQUARE AND OPEN CROSS STAFF FOR SETTING OUT PERPENDICULAR AND RUNNING A SURVEY LINE FOR LOCATING DETAILS .
3) MEASUREMENT OF AREA BY CHAIN AND CROSS STAFF SURVEY.
4) USE OF PRISMATIC COMPASS AND OBSERVING FORE BEARING AND BACK BEARING.
5) MEASURING FORE BEARING AND BACK BEARING OF 5-6 SIDE CLOSED POLYGON. IDENTIFYING STATIONS AFFECTED BY LOCAL ATTRACTION AND CALCULATION OF CORRECTED F.B. & B.B.
6) MEASURING FORE BEARING AND BACK BEARING FOR AN OPEN TRAVERSE (5 TO 6 SIDED). CALCULATE DIRECT ANGLES BETWEEN SUCCESSIVE LINES.
7) USE OF DUMPY LEVEL, TEMPORARY ADJUSTMENTS AND TAKING READING ON LEVELLING STAFF. RECORDING READINGS IN FIELD BOOK.
8) DIFFERENTIAL LEVELLING PRACTICE, REDUCTION OF LEVEL BY H.I. METHOD.
9) DIFFERENTIAL LEVELLING PRACTICE, REDUCTION OF LEVEL BY RISE & FALL METHOD.
10) CARRYING BENCH MARK FROM ONE POINT TO ANOTHER POINT ABOUT 200 M BY FLY LEVELLING WITH TILTING LEVEL.
11) USE OF AUTO LEVEL AND TAKING OBSERVATION.
12) MEASUREMENT OF AREA OF IRREGULAR FIGURE BY POLAR PLANIMETER
13) MEASURING AREA ENCLOSED BY CLOSED CONTOURS ON CONTOUR MAP PREPARED EARLIER, BY SIMPLE DIGITAL PLANIMETER

# BUILDING CONSTRUCTION LAB

| Subject Code 1615307 | Practical | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| | No. of Periods Per Week | | | Full Marks | : | 50 | 01 |
| | L | T | P/S | ESE | : | 50 | |
| | — | — | 03 | Internal | : | 15 | |
| | — | — | — | External | : | 35 | |

## CONTENTS: PRACTICAL

SKILLS TO BE DEVELOPED:-

1. **INTELLECTUAL SKILLS:-** STUDENTS WILL BE ABLE TO
   - A) IDENTIFY COMPONENTS OF A BUILDING.
   - B) DIFFERENTIATE AND IDENTIFY TYPES OF BUILDING MATERIALS.
   - C) SELECT APPROPRIATE MATERIAL FOR BUILDING CONSTRUCTION.
   - D) SUPERVISE THE BUILDING CONSTRUCTION ACTIVITIES.

2. **MOTOR SKILLS :-** STUDENTS WILL BE ABLE TO.
   - a) MARK LAYOUT OF BUILDING ON THE GROUND.
   - b) CHECK AND MARK VARIOUS LEVELS IN BUILDING.

.

**LIST OF PRACTICALS:**

1. PREPARING FOUNDATION PLAN AND MARKING ON GROUND LAYOUT OF LOAD BEARING STRUCTURE BY FACE LINE METHOD FROM THE GIVEN PLAN OF THE BUILDING.
2. PREPARING FOUNDATIONS PLAN AND MARKING ON GROUND LAYOUT OF FRAMED STRUCTURE BY FACE LINE METHOD FROM THE GIVEN PLAN OF THE BUILDING.
3. CHECKING AND TRANSFERRING LINE AND LEVEL OF PLINTH, SILL, LINTEL, FLOORING, SLAB LEVEL OF A BUILDING AND WRITING REPORT OF THE PROCESS.
4. CHECKING VERTICALITY (PLUMB LINE) OF FORMWORK FOR COLUMN, BEAM AND WALL AT CONSTRUCTION SITE AND WRITING REPORT OF THE PROCESS.
5. LAYING AND CONSTRUCTING THE PROCESS OF CONSTRUCTION OF BRICKWORK AND REPORT WRITING OF THE PROCESS.
6. OBSERVING THE PROCESS OF PAINTING IN RESIDENTIAL / PUBLIC BUILDING AND WRITING A REPORT WITH REFERENCE TO PROCESS AND TYPE OF PAINT SELECTED.
7. OBSERVING AND WRITING REPORT OF THE PROCESS OF PLASTERING.
8. OBSERVING AND WRITING REPORT OF THE PROCESS OF WATER PROOFING OF TERRACE OR BASEMENT.
9. OBSERVING THE MODELS, SPECIMEN OF BUILDING MATERIALS KEPT IN THE MODEL ROOM FOR FEW BUILDING ITEMS AND WRITING A REPORT FOR ANY FIVE MODELS/MATERIALS.

# SURVEYING (TW)

| Subject Code 1615308 | Term Work | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| | No. of Periods Per Week | | | Full Marks | : | 25 | 01 |
| | L | T | P/S | Internal | : | 07 | |
| | — | — | — | External | : | 18 | |

## CONTENTS :TERM WORK

### *SURVEYING PROJECTS:-*

1) **CHAIN & COMPASS TRAVERSE SURVEY** – A SIMPLE CLOSED TRAVERSE OF 5-6 SIDES ENCLOSING A BUILDING. CALCULATION OF INCLUDED ANGLES, LOCATING DETAILS AND PLOTTING THEM ON A 1 SIZE IMPERIAL DRAWING SHEET.
2) **BLOCK CONTOURING** – A BLOCK OF 100 X 150M WITH SPOT LEVELS AT 10X10M PLOTTING THE CONTOURS ON A-1 SIZE IMPERIAL DRAWING SHEET WITH A CONTOUR INTERVAL 0F 1M.
3) **PROFILE LEVELLING SURVEY** – RUNNING A LONGITUDINAL SECTION FOR A LENGTH OF 500 M FOR A ROAD /CANAL /RAILWAY ALIGNMENT. CROSS SECTION SHALL BE TAKEN SUITABLY. PLOTTING PLAN, L- SECTION AND CROSS SECTION ON A1 SIZE IMPERIAL DRAWING SHEET.

***BIS/ International Codes of Practice:-***

| Sr. No. | Title |
|---|---|
| 01 | National Building Code |
| 02 | BIS 962-1973 Code of Architectural and Building Drawing |
| 03 | BIS 1256-1967 Code for Building Byelaws |
| 04 | BIS 1038- 1983 Steel Doors, Windows and Ventilators |

**SOFTWARE:**

| | | |
|---|---|---|
| | 01 | Super Civil CD |

# BUILDING DRAWING (TW)

| Subject Code | Term Work | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1615309 | No. of Periods Per Week | | | Full Marks | : | 50 | 01 |
| | L | T | P/S | Internal | : | 15 | |
| | — | — | 02 | External | : | 35 | |

## Contents : Term Work

**Skills to be developed:**

**Intellectual Skills:**

1. Read and interpret the building drawings
2. Plan residential and public buildings
3. Apply the building rules, regulations and byelaws.

**Motor Skills:**

1. Prepare line plans of Residential and Public Buildings
2. Prepare Detailed Plans, Elevations, Sections and other working drawings for the buildings.

| S.No | **Term Work / Assignments :** Following exercises should be drawn on full imperial size drawing sheets. |
|---|---|
| 1 | • Drawing various types of lines, lettering and symbols of materials, doors and windows etc. used in construction on Full Imperial size drawing sheet. |
| 2 | • Drawing the lines plans of following buildings on Full Imperial size **graph paper.**<br>• Residential Building ( Min. three rooms )<br>• Public Building – School building, Primary health center / Hospital building, Bank, Post Office, Hostel building etc.(At least four) |
| 3 | • Measured Drawing of an existing residential Building (Load bearing/ Framed structure Type ) , showing Plan , Elevation, Sections, Construction notes, Schedule of openings, Site Plan, Area statement etc . |
| 4 | • Submission Drawing of two storied residential building (Framed structure type ) showing Plans , Elevation, Sections, Foundation Plan ,construction notes, Schedule of openings, Site Plan ,Area statement etc. |
| 5 | • Working drawing of above drawing sheet preferably one plan, section through stair case to scale 1:50 |
| 6 | • Two point perspective view of a building drawn in submission drawing. |
| 7 | • Tracing of a submission drawing prepared at Sr. No.4 above. |
| 8 | • Ammonia print of submission drawing prepared at Sr. No.4 above. |

# CONCRETE TECHNOLOGY (TW)

| Subject Code | Term Work | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| 1615310 | No. of Periods Per Week | | | Full Marks | : | 25 | 01 |
| | L | T | P/S | Internal | : | 07 | |
| | — | — | 02 | External | : | 18 | |

## Contents : Term Work

***Skill to be developed:***

**Intellectual Skills:**

1. Analyze the given data
2. Select proper method for analysis
3. Interpret the results

**Motor Skills:**

1. Measure the quantities accurately
2. Handle instruments properly

Term work shall consist of eight experiments in part A & mini project work in Part B

**Part A**: PART A consists of GROUP I & GROUP II.

**Group I**– Physical tests on ordinary Portland cement (any four)

1) Determination of fineness of cement preferably by Blaine's air permeability apparatus or by sieving.
2) Determination of standard consistency of OPC
3) Determination of initial & final setting times of OPC.
4) Determination of compressive strength of ordinary portland cement
5) Determination of soundness of OPC.

**Group II** – Tests on fine & coarse aggregates (any four)

1) Determination of silt content in sand by volume / weight
2) Determination of maximum % of bulking of sand
3) Determination of aggregate impact value.
4) Determination of aggregate abrasion value.
5) Determination of aggregate crushing value.
6) Determination of bulk density & water absorption, fine & coarse aggregated.

**Part B:**

**Mini Project :**

Comparative study of compressive strength of concrete for different Water cement ratio With and without curing.

**Note:** video cassettes or cd's of above experiments developed by NITTTR (if available) shall be shown to the students on T. V. / L.C.D. projector prior to the conductance of above experiments.

# DEVELOPMENT OF LIFE SKILLS-II (CIVIL ENGINEERING GROUP)

| Subject Code 1615311 | Term Work | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| | No. of Periods Per Week | | | Full Marks | : | 25 | 02 |
| | L | T | P/S | Internal | : | 07 | |
| | — | — | 03 | External | : | 18 | |

## CONTENTS: TERM WORK

| | Name Of The Topic | Hrs/week |
|---|---|---|
| **Unit -1** | **SOCIAL SKILLS**<br>SOCIETY, SOCIAL STRUCTURE, DEVELOP SYMPATHY AND EMPATHY. | **01** |
| **Unit -2** | Swot Analysis – Concept , How to make use of SWOT. | **01** |
| **Unit – 3** | **Inter personal Relation**<br>Sources of conflict, Resolution of conflict ,<br>Ways to enhance interpersonal relations. | **02** |
| **Unit – 4** | **Problem Solving**<br>**I)STEPS IN PROBLEM SOLVING,**<br>1)IDENTIFY AND CLARIFY THE PROBLEM,<br>2)INFORMATION GATHERING RELATED TO PROBLEM,<br>3)EVALUATE THE EVIDENCE,<br>4)CONSIDER ALTERNATIVE SOLUTIONS AND THEIR IMPLICATIONS,<br>5)CHOOSE AND IMPLEMENT THE BEST ALTERNATIVE,<br>6)REVIEW<br>**II)Problem solving technique**.(any one technique may be considered)<br>1) Trial and error, 2) Brain storming, 3) Lateral thinking | **02** |
| **Unit – 5** | **Presentation Skills**<br>Body language --<br>Dress like the audience<br>Posture, Gestures, Eye contact and facial expression.<br>PRESENTATION SKILL –<br>STAGE FRIGHT,<br>Voice and language – Volume, Pitch, Inflection, Speed, Pause<br>Pronunciation, Articulation, Language,<br>Practice of speech.<br>Use of aids –OHP,LCD projector, white board | **03** |
| **Unit – 6** | **Group discussion and Interview technique** –<br>Introduction to group discussion,<br>Ways to carry out group discussion,<br>Parameters— Contact, body language, analytical and logical thinking, decision making<br>**INTERVIEW TECHNIQUE**<br>NECESSITY,<br>TIPS FOR HANDLING COMMON QUESTIONS. | **03** |
| **Unit – 7** | **Working in Teams**<br>UNDERSTAND AND WORK WITHIN THE DYNAMICS OF A GROUPS.<br>TIPS TO WORK EFFECTIVELY IN TEAMS,<br>ESTABLISH GOOD RAPPORT, INTEREST WITH OTHERS AND WORK EFFECTIVELY WITH THEM TO MEET COMMON OBJECTIVES,<br>TIPS TO PROVIDE AND ACCEPT FEEDBACK IN A CONSTRUCTIVE AND CONSIDERATE WAY ,<br>LEADERSHIP IN TEAMS, HANDLING FRUSTRATIONS IN GROUP. | **02** |

| | | |
|---|---|---|
| **Unit – 8** | **Task Management**<br>INTRODUCTION,<br>TASK IDENTIFICATION,<br>TASK PLANNING ,ORGANIZING AND EXECUTION,<br>CLOSING THE TASK | **02** |
| | **TOTAL** | **16** |

**List of Term Work / Assignment: (Any Eight ):-**

1) SWOT analysis:- Analyse yourself with respect to your strength and weaknesses, opportunities and threats.Following points will be useful for doing SWOT.
   a) Your past experiences,
   b) Achievements,
   c) Failures,
   d) Feedback from others etc.
2) Undergo a test on reading skill/memory skill administered by your teacher.
3) Solve the puzzles.
4) Form a group of 5-10 students and do a work for social cause e.g. tree plantation, blood donation, environment protection, camps on awareness like importance of cleanliness in slump area, social activities like giving cloths to poor etc.( One activity per group)
5) Deliver a seminar for 10-12 minutes using presentation aids on the topic given by your teacher.
6) Watch/listen an informative session on social activities. Make a report on topic of your interest using audio/visual aids. Make a report on the programme. ####
7) Conduct an interview of a personality and write a report on it.
8) Discuss a topic in a group and prepare minutes of discussion. Write thorough description of the topic discussed
9) Arrange an exhibition, displaying flow-charts, posters, paper cutting, photographs etc on the topic given by your teacher.

**Note**: - Please note that these are the suggested assignments on given contents/topic. These assignments are the guide lines to the subject teachers. However the subject teachers are free to design any assignment relevant to the topic. The **term work** will consist of any eight assignments.

**MINI PROJECT** ON TASK MANAGEMENT. DECIDE ANY TASK TO BE COMPLETED IN A STIPULATED TIME WITH THE HELP OF TEACHER. WRITE A REPORT CONSIDERING VARIOUS STEPS IN TASK MANAGEMENT.

| Text /Reference Books:- | | |
|---|---|---|
| **Titles of the Book** | **Name of Authors** | **Name of the Publisher** |
| Adams Time management | Marshall Cooks | Viva Books |
| Basic Managerial Skills for All | E.H. Mc Grath , S.J. | Pretice Hall of India, Pvt Ltd |
| Body Language | Allen Pease | Sudha Publications Pvt. Ltd. |
| Creativity and problem solving | Lowe and Phil | Kogan Page (I) P Ltd |
| Decision making & Problem Solving | by Adair, J | Orient Longman |
| Develop Your | Bishop , Sue | Kogan Page India |
| Assertiveness | | |
| Make Every Minute Count | Marion E Haynes | Kogan page India |
| Organizational Behavior | Steven L McShane and Mary Ann Glinow | Tata McGraw Hill |
| Organizational Behavior | Stephen P. Robbins | Pretice Hall of India, Pvt Ltd |
| Presentation Skills | Michael Hatton ( Canada – India Project) | ISTE New Delhi |
| Stress Management Through Yoga and Meditation | -- | Sterling Publisher Pvt Ltd |
| Target setting and Goal Achievement | Richard Hale ,Peter Whilom | Kogan page India |
| Time management | Chakravarty, Ajanta | Rupa and Company |
| Working in Teams | Harding ham .A | Orient Longman |

# PROFESSIONAL PRACTICES-III (CIVIL ENGINEERING GROUP)

| Subject Code 1615312 | Term Work | | | | | | Credits |
|---|---|---|---|---|---|---|---|
| | No. of Periods Per Week | | | Full Marks | : | 25 | 02 |
| | L | T | P/S | Internal | : | 07 | |
| | — | — | 03 | External | : | 18 | |

## CONTENTS :TERM WORK

| | Name Of The Topic | Hrs/week |
|---|---|---|
| **Unit -1** | **Industrial Visits**<br>Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form a part of the term work.<br>**TWO** industrial visits may be arranged in the following areas / industries :<br>i) Manufacturing organizations for observing various manufacturing processes including heat treatment<br>ii) Material testing laboratories in industries or reputed organizations<br>iii) Auto workshop / Garage<br>iv) Plastic material processing unit<br>v) ST workshop / City transport workshop | **08** |
| **Unit -2** | Lectures by Professional / Industrial Expert be organized from **ANY THREE** of the following areas :<br>i) Use of a plastics in automobiles.<br>ii) Nonferrous Metals and alloys for engineering applications<br>iii) Surface Treatment Processes like electroplating, powder coating etc.<br>iv) Selection of electric motors.<br>v) Computer aided drafting.<br>vi) Industrial hygiene.<br>vii) Composite Materials.<br>viii) Heat treatment processes.<br>ix) Ceramics<br>x) Safety Engineering and Waste elimination | **08** |
| **Unit – 3** | **Individual Assignments :**<br>**Any two** from the list suggested<br>a) Process sequence of any two machine components.<br>b) Write material specifications for any two composite jobs.<br>c) Collection of samples of different plastic material or cutting tools with properties , specifications and applications.<br>d) Preparing models using development of surfaces.<br>e) Assignments on bending moment , sheer forces , deflection of beams and torsion chapters of strength of material.<br>f) Select different materials with specifications for at least 10 different machine components and list the important material properties desirable.<br>g) Select 5 different carbon steels and alloy steels used in mechanical engineering applications and specify heat treatment processes employed for improving the properties. Also give brief description of the heat treatment processes.<br>h) List the various properties and applications of following materials – a. Ceramics b. fiber reinforcement plastics c. thermo plastics d. thermo setting plastics e. rubbers.<br>OR<br>Conduct **ANY ONE** of the following activities through active participation of students and write report<br>i) Rally for energy conservation / tree plantation.<br>ii) Survey for local social problems such as mal nutrition, unemployment, cleanliness, illiteracy etc.<br>iii) Conduct aptitude , general knowledge test , IQ test<br>iv) Arrange **any one** training in the following areas :<br>a) Yoga. B) Use of fire fighting equipment and First aid Maintenance of Domestic appliances. | 08 |

| | | |
|---|---|---|
| **Unit – 4** | **Modular courses ( Optional ) :**<br>A course module should be designed in the following areas for max. 12 hrs.<br>Batch size – min. 15 students.<br>Course may be organized internally or with the help of external organizations.<br>a) Forging Technology.<br>b) CAD-CAM related software.<br>c) Welding techniques.<br>d) Personality development.<br>e) Entrepreneurship development. | **08** |
| **Unit – 5** | j) 3-D Design using software<br>k) Computer screen, coordinate system and planes, definition of<br>l) HP,VP, reference planes How to create them in 2nd/3rd<br>m) environment. Selection of drawing site & scale. Commands of<br>n) creation of Line, coordinate points, Axis, Poly lines, square,<br>o) rectangle, polygon, spline, circles, ellipse, text, move, copy,<br>p) offset, Mirror, Rotate, Trison, Extend, Break, Chamfer, Fillet,<br>q) Curves, Constraints fit tangency, perpendicularity, dimensioning<br>r) Line convention, material conventions and lettering.<br>s)<br>t) The Student should draw – different orthographic Views (including sections), Auxiliary views according to first/ Third angle method of projection. (Minimum two sheets, each containing two problems) after learning the contents as above. | **16** |
| | **Total** | **48** |