SANDIP UNIVERSITY, SIJOUL, MADHUBANI

III SEMESTER DIPLOMA IN CIVIL ENGINEERING

Skill Based Diploma in Engineering Course

THEORY OF STRUCTURES (CE301T)

Subject Code CE301T	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	
Unit -1	Direct And Bending Stresses Concept of direct and eccentric loads, eccentricity about one principal axis, nature of stresses, maximum and minimum stresses, resultant stress distribution diagram. Condition for no tension or zero stress at extreme fiber, limit of eccentricity, core of section for rectangular and circular cross sections. Columns, pillars and chimneys of uniform section subject to lateral wind pressure, coefficient of wind resistance, stress distribution at bases	10	16
Unit -2	Slope And Deflection Concept of slope and deflection, stiffness of beam Relation between slope, deflection and radius of curvature, differential equation (no derivation), double integration method to find slope and deflection of simply supported and cantilever beam Macaulay's method for slope and deflection,, application to simply supported and cantilever beam subjected to concentrated and uniformly distributed load.	10	14
Unit – 3	Fixed Beam Concept of fixity, effect of fixity, advantages and disadvantages of fixed beam. Principle of superposition. Fixed end moments from first principle for beam subjected to UDL over entire span, central point load, Point load other than midspan. Application of standard formulae in finding moments and drawing S.F. and B.M. diagrams for a fixed beam (Derivation need not be asked in the examination)	06	10
Unit – 4	Continuous Beam Definition, effect of continuity practical example, nature of moments induced due to continuity, concept of deflected shape Clapeyron's theorem of three moment (no derivation) Application of theorem maximum up to three spans and two unknown support moment only, Support at same level, spans having same moment of inertia subjected to concentrated loads and uniformly distributed loads over entire span. Drawing SF and BM diagrams for continuous beams.	08	10

Unit – 5	Moment Distribution Method Introduction, sign convention Carry over factor, stiffness factor, distribution factor. Application of moment distribution method for various types of continuous beams subjected to concentrated loads and uniformly distributed load over entire span having same or different moment of inertia up to three spans and two unknown support moment only, SF and BM diagrams (Supports at same level) Application of moment distribution method to single storey single bay symmetrical portal frames, SF and BM diagrams	08	10
Unit – 6	Columns Definition, classification of column Buckling of axially loaded compression member, Types of end conditions for column, effective length, radius of gyration, slenderness ratio Assumptions in the theory of long column Euler's theory, buckling load and Rankin's theory, crippling load , factor of safety, safe load Application of Rankin's and Euler theory, designing solid circular or hollow circular sections	06	10
	Total	48	70

Text /Reference Books:-		
Titles of the Book	Name of Authors	Name of the Publisher
Mechanics of structures	S. B. Junnarkar	Charotar Publishing House, Anand
Theory of structures	S. Ramanrutham	Dhanpatrai & Sons, Delhi
Analysis of Structures	V.N.Vazirani & M.M. Ratwani	Khanna Publishers Delhi
Theory of Structure	R.S. Sharma	Foundation Publishing

(I) Beam Colum Joint for Duetile Structure.
(II) Earthquake Part on old Syllabus.

DESIGN OF STEEL STRUCTURES (CE302T)

Subject Code CE302T	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	
Unit -1	Introduction Tyes of sections used, Grades of steel and strength characteristics; advantages and disadvantages of steel as construction material; Use of steel table and relevant I. S . code; Types of loads on steel structure and its I. S. code specification.	02	08
Unit -2	Connections Riveted connections, Types of rivets and their use, Types of riveted joint and its failure, Strength of riveted joint and efficiency of a riveted joint. Assumptions in theory of riveted joint Design of riveted joint for axially loaded member. Welded connection Introduction, Permissible stress in weld, strength of weld, advantages and disadvantages of welded joint. Types of weld and their symbols. Design of fillet weld and butt weld subjected to axial load.	06	10
Unit – 3	Design of Tension Member TYPES OF SECTIONS USED, PERMISSIBLE STRESSES IN AXIAL TENSION AND GROSS AND NET CROSS- SECTIONAL AREA OF TENSION MEMBER Analysis and Design of tension member with welded and riveted connection. Introduction to Lug Angle and Tension splice.	04	08
Unit – 4	Design of Compression Member Angle struts Types of Sections used, Effective length, Radius of gyration, slenderness ration and its limit, Permissible compressive stresses. Analysis and Design of axially loaded angle struts with welded and riveted connection. Stanchion and Columns types of sections used; simple and built up sections, effective length, Analysis and design of axially loaded column introduction to lacing andbattening (No numerical problem on Lacing and Battening)	06	12
Unit – 5	Steel Roof Truss Types of steel roof truss & its selection criteria Calculation of panel point load for Dead load; Live load and wind load as per I.S. 875-1987 Analysis and Design of steel roof truss. Design of Angle purlin as per I. S. Arrangement of members at supports	06	14

Unit – 6	Beams Different steel sections used; Simple and built-up sections Permissible bending stresses. Design of simple beams, check for shear only. Design of built-up beams (Symmetrical I Section with cover plates only), check for shear only. Introduction to Plate Girder: Various components and their functions. (No numerical Problem on Plate Girder)	04	08
Unit – 7	Column Bases Types of column bases design of slab base & concrete block introduction to gusseted base (no numerical problems on gusseted Base)	04	10
	Total	32	70

Text/ Reference Books:-

Titles of the Book	Name of Authors	Name of the Publisher
Design of steel structure	S. K. Duggal	Tata Macgraw Hill Publication Company ltd. New Delhi
Design of steel structure	M. Raghupati	Tata Macgraw Hill publication Company ltd. New Delhi
Design of steel structure	L. S. Nege	Tata Macgraw Hill publication Company ltd. New Delhi
Design of steel structure	Ramchandra	Dalpatrai & Sonts publication Company ltd. New Delhi
Design of Steel Structures	S.S. Bhari katti	I.K. International Publishing House
Design of Steel Structures	Kazimi & Jindal	Prentice hall India, New Delhi.
Design of Steel Structure	S.N. Malik	Foundation Publishing

ESTIMATING & COSTING(CE303T)

Subject Code CE303T	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	Overview Of Estimating & Costing Meaning of the terms estimating, costing. Purpose of estimating and costing . Types of estimate - Approximate and Detailed. Approximate estimate Types- Plinth area rate method, Cubic Content method, Service Unit method, Typical bay method, Approximate Quantity method , Problems on Plinth area rate method & application of Service unit method for selection of service unit for different types of civil Engineering Structures. Types of detailed estimate. Detailed estimate for new work. Revised estimate. Supplementary estimate. Revised & Supplementary estimate. Maintenance & Repair estimate. Uses of detailed estimate	06	08
Unit -2	*Detailed Estimate* Unit quantity method, Total quantity method, Data required for detailed estimate. Factors to be considered during preparation of detailed estimate, Specification, Quantity availability of material, Location of site, Labour Component. Steps in preparing detailed estimate. Taking out quantities, squaring, abstracting. 2.4 Preparing check list – by adoption of Sequence of execution. drafting Brief Specification of items, contents of measurement Sheet , Abstract sheet , face sheet	04	06
Unit – 3	Mode of Measurements. General Rules for fixing units of Measurements for different – items of work as per IS 1200 & As per PWD Hand Book Desired accuracy in taking measurements of various items of work & rules for deductions as per IS 1200 & P.W.D. handbook.	06	09
Unit – 4	Procedure for Preparing Detailed Estimate Procedure for taking out quantities for various items of works by P.W.D & IS 1200 for:- a) Load bearing Structure –Long Wall and short wall method , Center line method. b) Framed Structure building.-- - By using thumb rules for reinforcement quantity calculation - By preparing bar bending Schedule 4.2 Provisions in detailed estimate for contingencies, work charged establishment, Provisional items, Provisional Sum, Provision for water Supply & Sanitary works, Electrical wiring & installations, centage charges, Tools & Plants, Prime cost, Day work.	14	22

Unit – 5	Rate analysis Meaning of term Rate analysis –Factors affecting rate analysis, lead, lift, task work, materials and labour component, Market Rate and labour rate. Transportation of Materials, load factor for different materials. Standard lead , extra lead, Transportation Charges , Labour - Categories of labours, labour rates, overheads , contractor's profit, water charges, taking out quantities of materials for different items of works. Preparing rate analysis of different items of work Standard Schedule of rates, full rates & labour rates. Taking out quantities of work for different Civil Engineering Works Roads, Dam , Canals ,Railway embankments, methods of mean area , mid sectional area, trapezoidal, Prismoidal formula. Calculation of quantity of earth work.	18	25
	Total	48	70

Text / Reference Books:-

Titles of the Book	Name of Authors	Name of the Publisher
Estimating & costing in Civil Engineering	B.N. Datta	UBS Publishers Distributors Pvt Ltd New Delhi
Estimating & costing, Specification and Valuation in Civil Engineering	M. Chakraborti	M. Chakraborti , Calcutta
Estimating & costing	S.C. Rangwala	Charotar Publication, Anand
Civil Engineering Estimating, Contracts and accounts Vol . I	B.S. Patil	Orient Longman, Mumbai
Estimating & costing	G. S. Birdie	Dhanpat Rai and Sons Delhi
Estimating and Costing	R.S. Majumdar	Foundation Publishing

HIGHWAY ENGINEERING (CE304T)

Subject Code CE304T	Theory						Credits
	No. of Periods Per Week			Full Marks	:	100	04
	L	T	P/S	ESE	:	70	
	04	—	—	TA	:	10	
	—	—	—	CT	:	20	

CONTENTS: THEORY

Name of the Topic		Hrs/week	Marks
Unit -1	Road Engineering : Importance of road in India. Classification of roads according to Nagpur plan (Location and function), and third road development plan. Traffic and tonnage, Classification of urban roads.	03	04
Unit -2	Investigation for Road Project Reconnaissance survey, Preliminary survey and Location survey for a road project. Detailed survey for cross drainage- L-section and C/S sections. Fixing the alignment of road, factors affecting alignment of road. Drawings required for road project- Key map, Index map, Preliminary survey plan and detailed location survey plan, L-section and C/S sections cross drainage work, land acquisition plan. Survey for availability of construction material, location plan of quarries.	03	04
Unit – 3	Geometric Design Of Highways Camber- definition, purpose, types, IRC – specifications. Kerbs, road margin, road formation, right of way. Design speed- IRC – specifications Gradient – definition, types, IRC specification. Sight distances– definition, types, IRC specification. Curves–Necessity, types– horizontal, vertical and transition curves. Widening of roads on curves. Super Elevation – definition, formula for calculating super elevation, minimum and maximum values of super elevation, and methods of providing super elevation. Sketching of standard C/S of national highway in embankment and cutting. Simple problems on geometric design of road.	12	18

Unit – 4	Construction of Roads Pavements and materials Types of road materials and Tests – soil, aggregates, bitumen, Cement Concrete. Test on soil sub grade- C.B.R. test, Test on Aggregate – Los Angeles abrasion, impact, and shape test. Tests on bitumen- Penetration, Ductility and Softening point test. Pavement – objective of pavement, structure of pavement, function of pavement components, types of pavement. Construction of earthen road – general terms used- borrows pits, spoil bank, lead and lift, balancing of earthwork. Construction procedure. Soil stabilized roads – necessity, methods of soil stabilization, brief details of mechanical soil stabilization. Water bound macadam roads – materials used, size and grading of aggregates and screening, construction procedure including precautions in rolling. Construction of bituminous roads. Terms used–bitumen, asphalt, emulsion, cutback, tar, common grades adopted for construction. Types of bituminous surface – prime coat, tack coat, seal coat, Surface dressing – procedure of construction bituminous penetration macadam, and Bitumen/Tar carpets – procedure of construction. Cement concrete pavements- Construction procedure and equipments, Construction joints, joint filler, joint sealer.	14	18
Unit – 5	Traffic Engineering Traffic volume study, Traffic control devices-road signs, marking, Signals, Traffic island. Road intersections- intersections at grade and grade separator intersections. Road accident. Building code IS:1904 Definition of active earth pressure and passive earth pressure, structures subjected to earth pressure in the field	06	10
Unit – 6	Hill Roads Parts and functions of hill road components, types of curves, Hill road formation. Land slides- causes and prevention. Structures- drainage structures.	04	06
Unit – 7	Drainage of Roads Surface drainage – side gutter, catch water drains, surface drainage. Sub-surface drainage –Longitudinal drains and cross drains.	03	05
Unit – 8	Maintenance and Repairs of Roads Necessity of maintenance of roads Classification of maintenance operation – ordinary, routine and periodic maintenance. Maintenance of W.B.M., bituminous and cement concrete roads.	03	05
	Total	48	70

Text/ Reference Books:-		
Titles of the Book	Name of Authors	Name of the Publisher
Highway Engineering	Khanna & Justo	Khanna Publication
Traffic Engineering	L.R. Kadiyali	--
Transportation Engineering	N.L. Arora, S.P. Luthara	I.P.H. New Delhi
Transportation Engineering	Vazarani & Chandola	Khanna Publication
Road, Railway, Bridges	Biridi & Ahuja.	S.B.H.New Delhi
Transportation Engineering	Kamala.	T.M.H. New Delhi
DATA book of P.W. D.	Khanna & Justo	--
Highway Engineering	B.K. Mathur	Foundation Publishing

IRRIGATION ENGINEERING (CE305T)

Subject Code CE305T	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	Introduction Definition – Irrigation and irrigation engineering, advantages of irrigation, ill effects of over irrigation, types of irrigation project- purpose wise and administrative wise, Methods of irrigation.	04	04
Unit -2	Hydrology Definition of rainfall , rain gauge and rain gauge station , types of rain gauges (names only average annual rain fall and its calculation , definition of run of , factor affecting run off, calculation of run off by run of coefficient, inglis' formula , Stranges and Binnie's tables and curves. Maximum flood discharge and methods of calculation. Yeild and Dependable yield and methods of calculation.	08	06
Unit – 3	Water Requirement Of Crops Cropping seasons and crop in Maharashtra. Definition – Crop period, base period Duty & Delta , factors affecting Duty , relation between Duty Delta and base period Definition – CCA , GCA, IA, intensity of irrigation time factor capacity factor. Problems on water requirement and capacity of canal . Modified Penman method . Assessment of irrigation water.	08	08
Unit – 4	Investigation And Reservoir Planning Survey for irrigation project data collected for irrigation project. area capacity curve, silting of reservoir, rate of silting , factors affecting silting , methods to control levels and respective storage in reservoir . Fixing control levels.	06	08
Unit – 5	Dams And Spillways Types of dams – Earthen dams and Gravity dams (masonry and concrete) Comparison of earthen and gravity dams with respect to foundation, seepage, construction and maintenance Earthen Dams – Components and their function , typical cross section seepage through embankment and foundation seepage control though embankment and foundation . Methods of constructions, types of failure of earthen dams and remedial measures. Gravity Dams Theoretical and practical profile, typical cross section, drainage gallery, joint in gravity dam, high dam and low dam Spillways-Definition, function, location and components. Emergency and services, ogee spillway and bar type spillway, discharge over spillway. Spillway with and without gates.	14	18
Unit – 6	Bandhara , Precolation Tanks And Lift Irrigation Advantages and disadvantages of bandharairrigation layout and component parts, solid and open bandhara. Percolation Tanks – necessity and importance, selection of site. Layout of lift irrigation scheme. Irrigation department standard design and specification.	04	06

Unit – 7	Divertion Head Works Weirs – components parts, function and types, layout of diversion head works with its components and their function, canal head regulator, silt excluders and slit ejectors. Barrages – components and their function. Difference between weir and barrage irrigation department standard design and specifications.	10	10
Unit – 8	Canals CANALS – classification of canals according to alignment and position in the canal network. Design of most economical canal section. Canal lining – Definition, purpose, types of canal lining advantages of canal lining properties of good canal lining material. CD. works- different C.D. works, canal falls, escapes, cross regulators and canal outlets.	10	10
	Total	64	70

Text/ Reference Books:-		
Titles of the Book	Name of Authors	Name of the Publisher
Irrigation and hydraulic structure	S. K. Garg	Khanna publisher, New Delhi
Irrigation Engineering	B.C.punmia	Laxmi Publication, Delhi
Irrigation Engineering	Deepak Verma	Foundation Publishing

THEORY OF STRUCTURE LAB (CE306P)

Subject Code CE306P	Practical						Credits
	No. of Periods Per Week			Full Marks	:	50	01
	L	T	P/S	ESE	:	50	
	—	—	02	Internal	:	15	
	—	—	—	External	:	35	

CONTENTS : PRACTICAL

LIST OF PRACTICALS - (ANY SIX):-

1.	To Verify Strain in an externally loaded beam with the help of a strain gauge indicater and to verify theoretically.
2.	To study behavior of different types of Calumns: (i) Both ends fixed (ii) One end fixed and other Pinned (iii) Both ends pinned (iv) One end fixed and other free.
3.	To find Euler's buckling load for different types of Columns : (i) Both ends fixed (ii) One end fixed and other pinned. (ii) Both ends pinned (iv) One end fixed and other free.
4.	To Study two hinged arch for the horizontal displacement of the roller end for a given system of loading and to compare the same with those obtained analytically.
5.	Determination of Shear force and loading.
6.	Compression test on metal.
7.	Determination of deflection of beam.
8.	Determination of moment of Inertia of fly wheel.

DESIGN OF STEEL STRUCTURE LAB (CE307P)

Subject Code CE307P	Practical						Credits
	No. of Periods Per Week			Full Marks	:	50	01
	L	T	P/S	ESE	:	50	
	—	—	02	Internal	:	15	
	—	—	—	External	:	35	

CONTENTS : PRACTICAL

PRACTICAL SHALL CONSISTS OF SKETCH BOOK AND DESIGN REPORT OF STEEL ROOF TRUSS FOR AN INDUSTRIAL BUILDING, TWO FULL IMPERIAL SIZE SHEET SHALL BE USED FOR DRAWINGS.

1. Sketch Book:
   Sketch book shall consists of any five plates out of the below mentioned
   1. Typical sketches of sections of tension member, determination of net effective cross sectional area of tension member for angle section.
   2. Typical sketches of sections of compression member, determination of effective length for different end conditions.
   3. Type of trusses for different spans.
   4. Riveted and welded connections for axially loaded member.
   5. Column section and slab base
   6. Important information of clauses of IS800-1984 and IS875 (Part-1,2 & 3)

2. Design of Steel roof truss:
   The student should draw two full imperial size sheets covering design of steel roof truss any one of the truss fink, fan, pratt, lattice truss for Span from 8 to 16 meter the design shall cover calculations for the dead load, live load, wind load with design of the various elements. The drawing shall include detailing the truss for below mentioned elements.
   a. Architectural drawing
   b. Data for structural design
   c. Key plan at tie level
   d. Detailed layout of steel roof truss.
   e. Details at end support.

2. Is Codes :

1. IS 800-1984 Indian Standard code of practice for use of structural steel in general building construction, BIS New Delhi.
2. IS-875 Part-1, 2, & 3- 1987 Indian Standard code of practice for use of structural steel in general building construction, BIS New Delhi.
3. IS hand book No. 1 Properties of structural steel rolled section
4. Steel table.

IRRIGATION ENGINEERING LAB (CE308P)

Subject Code CE308P	Practical						Credits
	No. of Periods Per Week			Full Marks	:	50	01
	L	T	P/S	ESE	:	50	
	—	—	02	Internal	:	15	
	—	—	—	External	:	35	

CONTENTS: PRACTICAL

Data should be collected from irrigation engineering department or irrigation project and processed accordingly.

1. Collection of information and prepare list of documents and drawings required for irrigation project.
2. Calculation of yield from given Tope sheet of a catchment area, plotting catchment area, determination of catchment area by planimeter.
3. Canal capacity calculation from a given command area and cropping pattern.
4. Plotting of area capacity curve of a given contour map of irrigation project
5. From a given data fixation of control levels of reservoir.
6. Layout of drainage in earthen dam on A4 sizeplate
7. Neat labeled sketch of ogee spillway with gate and energy dissipation arrangement.
8. Study of National Water Policy.

Technical Seminar (CE309P)

Subject Code CE309P	Term Work						Credits
	No. of Periods Per Week			Full Marks	:	25	02
	L	T	P/S	Internal	:	07	
	—	—	05	External	:	18	

CONTENTS: TERM WORK

- Selection of topic/area

Select a paper according to the specialization of students. Papers from any other approved journals can also be selected.

- Approval to the selected topic

After selecting the paper, get approval from the concerned faculty in charge.

- Study of topic

Students are requested to acquire a thorough knowledge on the subject by referring back papers and reference books (These may be included as references at the end of the paper) on the corresponding area.

- Preparation of slides for presentation

Slides may be presented in MS power point. Time allowed for presentation is 20 minutes for presentation and 5 minutes for discussions. So, number of slides may be around 20 - 25 to adhere the time limit.

- Organization of slides

a. The first slide will be a title page showing the title, name of author (presenter), roll no. and Class.

b. 2 nd page will contain overview of the seminar

c. Successive pages will contain

a. Objectives of the paper

b. Introduction

c. Body of the paper includes system dynamics, methodology, graphs, block diagrams etc. arranged in a logical sequence depending on the problem.

d. Results and discussions

e. Conclusion

d. Last page will contain references and bibliography. References must be presented in IEEE format, which is given as Annexure 2.

- Each slide consists of 4 or 5 lines with enough space between lines.
- All equations must be typed using equation editor (available with MS office/other office suite)
- Each slide will have a title and each figure have a caption.
- An abstract of the work (seminar) is to be circulated among the faculty and fellow students before presentation of the seminar. The abstract is prepared as follows. The seminar abstract is an important record of the coverage of topic and provides a valuable source of leading references for students and faculty alike. Accordingly, the

abstract must serve as an introduction to your seminar topic. It will include the key hypotheses, the major scientific findings and a brief conclusion. The abstract will be limited to 500 words, excluding figures and tables. The abstract must contain references to the research articles upon which the seminar is based as well as research articles that have served as key background material. The references should be listed using a standard format (IEEE format given in App. 1). The abstract must be submitted to the faculty in charge and get approval before the presentation.

- Draft copy of the Seminar report should also be submitted before the presentation.

ESTIMATING AND COSTING –TW (CE310P)

Subject Code CE310P	Term Work						Credits
	No. of Periods Per Week			Full Marks	:	25	01
	L	T	P/S	Internal	:	07	
	—	—	02	External	:	18	

CONTENTS : TERM WORK

Term Work / Assignments:

Skills to be developed:

Intellectual Skills:

a. List various items of work with their units in a Civil Engineering Structure.
b. Calculate quantities of various items of work.
c. Prepare rate analysis.

List of Term Work/ Assignments:

1) Prepare Check list of items of following type of Civil Engineering works.
   a) Load Bearing type Building
   b) Framed structure type building
   c) W.B.M.Road
   d) Septic Tank
   e) Community well
2) Writing the rules of deduction's for below mentioned items of work as per IS 1200.
   a) Brick / Stone masonry.
   b) Plastering / Pointing
3) Taking out quantities of various items of work for load bearing building.
   i) Earth work in excavation for foundation
   ii) Base Concrete of foundation
   iii) U.C.R./BB Masonry work in foundation and plinth.
   iv) D.P.C.
   v) Plinth Filling.
   vi) Brick work in masonry.
   vii) Flooring
   viii) Plastering.
   ix) Wood work in doors & windows
4) Taking out quantities of following items for small R.C.C. Hall
   i) Concreting for footing, Column, Beam, slab.
   ii) Reinforcement for above items by preparing Schedule of bars.
   iii) Form work for all above items.
5) Preparing detailed estimate of a RCC single & two storied residential building for all items of work. (The quantity of reinforcement shall be calculated by percentage.)
6) Preparing Rate analysis of following items:
   Building work – Brick work, P.C.C., R.C.C., Plastering, Flooring, Doors, Windows.
7) Taking out quantities of earth work for a Road profile prepared in surveying subject. Prepare the lead statement.
8) Taking out quantities of work for a Community well or Jack well or Septic Tank.
9) Taking out quantities of work for pipe culvert.

(Drawings shall be provided for the above exercises by subject teacher.)

2. Video Cassettes / CDS

MSBTE CAI Package.
Q. E. PRO software

3. IS / INTERNATIONAL CODES:

IS 1200- Method of Measurement of building and Civil engineering works

BUILDING SERVICES AND ENTREPRENEURSHIP DEVELOPMENT -TW CE311P

Subject Code CE311P	Term Work						Credits
	No. of Periods Per Week			Full Marks	:	25	02
	L	T	P/S	Internal	:	07	
	—	—	05	External	:	18	

CONTENTS : TERM WORK

A: Building Services:		Hrs/week
Unit -1	Plumbing Elements ofplumbing Objectives of plumbing, purpose of plumbing, role of plumber, licensing of plumbers their functions, sewer Air, supply pipes, drainage & vent pipes application for obtaining supply connection. Pipes joints & fittings Introduction. Types of Pipe – G.I. Pipes, PVC Pipes, Copper pipes, C.I. Pipes, A.C. Pipes, prestressed concrete pipes, joints in pipes, method of fixing pipes such as G.I. fitting C.I. fitting. Valves & Terminal Fittings Types of valves & its purpose, sluice valve, reflux valve, scour valve, Air relief valve, pressure relief valve, gate valves, Bio-taps & stop valve self closing valve. Flush valve, mixing valve. Sanitary fixture & Building drainage system Building sanitary fittings – water closet, flushingappliances, urinals, washbasins, flushing cisterns, principles of building drainage siphonic action, traps & its types. Capacity & sizing of pipe, soil pipe, waste pipe, rain water pipe, system of plumbing. Installation of pipes, testing of pipes.	08
Unit -2	Water Proofing Treatment Introduction, material required for water proofing and its specification. Water proofing of water closet and bath room procedure & Cross section. Terrace and basement water proofing, Precautions to be taken while water proofing.	04
Unit – 3	Termite Proofing Introduction, general principles of termite proofing. Methods of termiteproofing. Material used in termite proofing treatment.	02
Unit – 4	Damp Proofing Sources of dampness & its effects. Material used for damp proofing, Methods of damp – proofing. Damp proofing treatment in building such as basement, floors, walls.	02
	Total	16

Term Work :

1. Term Work on joining P.V.C. / G.I. Pipes & fittings/Models and writing report on the process.
2. Term Work based on sanitary fitting like, traps, wash basin & water closet fittings.
3. Prepare drawing for water supply. Layout plan for campus showing following details service pipe, communication pipe. consumer pipe, water meter, rain water pipes
4. Prepare drawing for drainage line plan for campus showing following details: Inspection chambers, sewage pipes, traps, man holes.
5. Market survey for different materials available in market their trade names & rates used for water proofing, termite proofing and damp proofing treatment and writing report on the materials collected.

Part B : Entrepreneurship Development

S.No	Students will be able to:
1.	• Identify entrepreneurshipopportunity.
2.	• Acquire entrepreneurial values and attitude.
3.	• Use the information to prepare project report for business venture.
4.	• Develop awareness about enterprise management.

CONTENTS		Hrs/week
Unit -1	Entrepreneurship, Creativity & Opportunities Concept, Classification & Characteristics of Entrepreneur Creativity and Risk taking. Concept of Creativity & Qualities of Creative person. Risk Situation, Types of risk & risk takers. 1.3) Business Reforms. 1.3.1) Process of Liberalization. 1.3.2) Reform Policies. 1.3.3) Impact of Liberalization. 1.3.4) Emerging high growth areas. Business Idea Methods and techniques to generate business idea. Transforming Ideas in to opportunities transformation involves Assessment ofidea &Feasibility of opportunity 1.6) SWOT Analysis	03
Unit -2	Information and Support Systems 2.1) Information Needed and Their Sources. Information related to project, Information related to support system, Information related to procedures and formalities 2.2) Support Systems 1) Small Scale Business Planning, Requirements. 2) Govt. & Institutional Agencies, Formalities 3) Statutory Requirements and Agencies.	03
Unit -3	Market Assessment Marketing –Concept and Importance Market Identification, Survey Key components 3.3) Market Assessment	02

Unit -4	Business Finance & Accounts Business Finance Cost of Project 1) Sources of Finance 2) Assessment of working capital 3) Product costing 4) Profitability 5) Break Even Analysis 6) Financial Ratios and Significance Business Account Accounting Principles, Methodology 1) Book Keeping 2) Financial Statements 3) Concept of Audit,	03
Unit -5	Business Plan & Project Report Business plan steps involved from concept to commissioning: Activity Recourses, Time, Cost 5.2) Project Report 1) Meaning and Importance 2) Components of project report/profile (Give list) Project Appraisal 1) Meaning and definition 2) Technical, Economic feasibility 3) Cost benefit Analysis	03
Unit -6	Enterprise Management and Modern Trends Enterprise Management:- Essential roles of Entrepreneur in managing enterprise 2) Product Cycle: Concept And Importance 3) Probable Causes Of Sickness 4) Quality Assurance Importance of Quality, Importance of testing 6.2) E-Commerce Concept and process 6.3) Global Entrepreneur	02
	Total	16

Text/Reference Books:-		
Titles of the Book	Name of Authors	Name of the Publisher
Plumbing Design & Practice	S. Deolalikar	Sata M.C. Graw hill publishing company, New Delhi
Building services	Prof. S.M. Patil	Patil Publication & Goregaon, Mumbai.
Design & Practical Handbook on plumbing	S.R. Mohan & Vivek Anand	Standard Publishing, New Delhi.
A to Z of practical building and its management	Sandeep Mantri	Mantri Institute of Development & research, Pune.
Building Construction	Bindra & Arora	Dhanpat rai publishing
Building Construction	Rangwala	Charotor publishing House Anand
Building Services and Entrepreneurship Development	Rajiv Sinha	Foundation Publishing
2. IS / International Codes: 1. National Building Code– 1983, Bureau of Indian Standards, New Delhi.		

Text/Reference books :-		
Titles of the Book	Name of Authors	Name of the Publisher
Entrepreneurship Development	E. Gorden K.Natrajan	Himalaya Publishing.
Entrepreneurship Development	Preferred by Colombo plan staff college for Technical education.	Tata Mc Graw Hill Publishing co. ltd. Delhi.
A Manual on How to Prepare a Project Report	J.B.Patel D.G.Allampally	EDI STUDY MATERIAL Ahmadabad (Near Village Bhat , Via Ahmadabad Airport & Indira Bridge), P.O. Bhat 382428 , Gujrat,India P.H. (079) 3969163, 3969153 E-mail : ediindia@sancharnet.in/olpe@ediindia .org Website : http://www.ediindia.org
A Manual on Business Opportunity Identification & Selection	J.B.Patel S.S.Modi	
National Directory of Entrepreneur Motivator & Resource Persons.	S.B.Sareen H. Anil Kumar	
New Initiatives in Entrepreneurship Education & Training	Gautam Jain Debmuni Gupta	
A Handbook of New Entrepreneurs	P.C.Jain	
Evaluation of Entrepreneurship	D.N.Awasthi , Jose Sebeastian	
Development Programmes		

The Seven Business Crisis & How to Beat Them.	V.G.Patel	
Entrepreneurship Development of Small Business Enterprises	Poornima M. Charantimath	Pearson Education, New Delhi
Entrepreneurship Development	--	McGraw Hill Publication
Entrepreneurship Theory and Practice	J.S. Saini B.S.Rathore	Wheeler Publisher New Delhi
Entrepreneurship Development		TTTI, Bhopal / Chandigadh

2) Video Cassettes

SUBJECT	SOURCE
Five success Stories of First Generation Entrepreneurs	EDI STUDY MATERIAL Ahmadabad (Near Village Bhat , Via Ahmadabad Airport & Indira Bridge), P.O. Bhat 382428 , Gujrat,India P.H. (079) 3969163, 3969153 E-mail : ediindia@sancharnet.in/olpe@ediindia.org Website : http://www.ediindia.org
Assessing Entrepreneurial Competencies	
Business Opportunity Selection and Guidance	
Planning for completion & Growth	
Problem solving-An Entrepreneur skill	

Glossary:

Industrial Terms:

Terms related to finance, materials, purchase, sales and taxes.

Components of Project Report:

1. Project Summary (One page summary of entire project)
2. Introduction (Promoters, Market Scope/ requirement)
3. Project Concept & Product (Details of product)
4. Promoters (Details of all Promoters- Qualifications, Experience, Financial strength)
5. Manufacturing Process & Technology
6. Plant & Machinery Required
7. Location & Infrastructure required
8. Manpower (Skilled, unskilled)
9. Raw materials, Consumables & Utilities
10. Working Capital Requirement (Assumptions, requirements)
11. Market (Survey, Demand & Supply)
12. Cost of Project, Source of Finance