



**DR. A P J ABDUL KALAM UNIVERSITY,
INDORE**

SYLLABUS

For

DIPLOMA CIVIL ENGINEERING

(SECOND YEAR, 3rd SEM)

Dr. A P J Abdul Kalam University, Indore

DR. A P J ABDUL KALAM UNIVERSITY, INDORE

Syllabus for Diploma CIVIL Engineering

List of Subject (Second Year, IIIrd Sem)

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Unit 1: Types of survey: Definition. Objects of Surveying. Principles of Surveying. Uses of survey, Classification of Surveying. Primary –Plain, Geodetic. Secondary – Based on Instruments, method, object, Nature of field.

Unit 2: Chain & cross staff survey: Principle of Chain Survey. Study and use of Instruments for linear measurements – chain, Tape, Ranging Rod, arrows, pegs, cross Staff, optical Square, line Ranger. Ranging –Direct and Indirect Ranging Chaining – Plain and sloping grounds. Chain Triangulation – Survey Station and their Selections, factors affecting selection of survey station. Survey lines, Check lines, Tie lines, base line. Taking offsets. long and short offset, degree of offset. Obstacles in chaining. Chain & cross staff Survey for finding area of a field (Numerical problems) Errors in chain Surveying & applying Corrections for chain & Tape (Numerical problems).Conventional signs related to survey

Unit 3: Compass survey: Principle of Compass Survey. Bearing of lines – Meridian –True, Magnetic, and Arbitrary. Bearing –fore bearing, Back bearing, Whole circle bearing, Quadrennial bearing system and Reduced bearing, Conversion of bearings, finding included angles from bearings. Prismatic Compass – Component, construction and use. Local attraction, Causes, precautions to be taken to avoid and correction of bearings affected due to local attraction, calculation of included angles. Traversing – traversing by chain and compass. open traverse, closed traverse, check on open and closed traverse. Graphical adjustment for closing error. Numerical problems on calculation of bearings, Angles and local attraction.

Unit 4 Leveling: Definitions, meaning of various terms used in leveling – Level surface, Level line, horizontal line, Vertical line, Datum surface , Reduced level, Bench mark and its types .Dumpy

Unit 5: Practical Metallography: Preparation of specimen, selecting the specimen, mounting the specimen, grinding , polishing, etching and etching reagents. The metallurgical microscope. Use and care of microscope. level –Components, Construction, Line of sight, Line of Collimation, Bubble tube axis, leveling Staff – Telescopic and folding type .Foresight, back sight, Intermediate sight, Change point, Height of collimation .Fundamental axes and their relationship Recording in level book. Temporary adjustments of dumpy level. Method of Reduction of levels – Height of instrument method and Rise and fall method. Arithmetical checks, Numerical problems, Computation of missing readings. Classifications of leveling - simple, differential, profile, cross sectional, fly and check leveling. Study and use of tilting level & Auto level. Sources and errors in leveling, precautions and difficulties faced in leveling

Unit 6: Contouring : Definitions – Contour, contour interval, Horizontal equivalent. Characteristics of contours .Method of locating contours. Interpolation of contours. Establishing grade contours. Uses of Contour Maps. Calculation of reservoir capacity by contour map by trapezoidal and prismoidal formula. Interpretation of Typical Contour Sheets

Unit 7: Area and volume measurements : Construction and use of polar planimeter for measurement of area and simple numerical problems. Study and use of Digital Planimet.

Concept of computation of Volume by Trapezoidal and Prismoidal formulae.(No numerical problems)

REFERENCES

- 1 Surveying And Levelling N.N.Basak Tata Mc Graw-Hill
2. Surveying And Levelling,Part I And IIT .P. Kanetkar & S. V.Kulkarni, Pune Vidhyarthi Griha Prakashan.
- 3 Surveying And Levelling, Vol. I And II, Dr. B. C. Punmiya Laxmi Plublication.
- 4 Text Book Of Surveying, S.K.Husain & M.S. Nagaraj, S. Chand And Company.
- 5 Surveying And Levelling, Vol. I And II S. K. Duggal, Tata Mc Graw-Hill.
- 6 Plane Surveying, A.M.Chandra,

LIST OF EXPERIMENTS

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.
- 8 Recording readings in field book.
- 9 Differential leveling practice, reduction of level by H.I. method.
- 10 Differential leveling practice, reduction of level by rise & fall method.
- 11 Carrying Bench mark from one point to another point about 200 m by fly leveling with tilting level.
- 12 Use of auto level and taking observation.
- 13 Measurement of Area of irregular figure by polar planimeter. Measuring area enclosed by closed contours on contour map prepared earlier, by simple digital planimeter.

Unit 1. Introduction: Importance of material Technology for Civil Engineer. name of common Engineering materials used in construction

Unit 2. Masonary materials: a) Building stones- classification of rocks, requirement of good building stone, dressing of stones, quarrying of stones, artificial or cast stones. b) Bricks – properties of good building bricks, conventional bricks , standard bricks, composition of clay brick, method of preparation of bricks, strength of bricks, proportions of burnt clay bricks , testing of bricks, special bricks, hollow blocks, fly ash bricks

Unit 3. Binding Materials : Murum, Properties of Murum for Road work. Lime - Types and properties of lime : Fat lime, Hydraulic Lime, Quick lime. Cement - Different ingredients used for manufacturing cement with their percentage. Physical properties of ordinary Portland cement (OPC), hydration of cement. Physical properties of cement – fineness, standard consistency, initial and final setting time, compressive strength and soundness, different grades of OPC, 33, 43, 53 and their specification of physical properties as per relevant IS codes, field test of cement, storing cement at site, effect of storage of cement on properties of cement, Types of cement and their functional uses.

Unit 4. Aggregates: Properties of fine aggregates - Concept of size, shape, surface texture, strength, specific gravity, bulk density , water absorption, surface moisture, soundness, bulking impurities. Determination of fineness modulus & grading zone of sand by sieve analysis, determination of silt content in sand & their specification as per IS 383, Bulking of sand, phenomenon of bulking, its effect on concrete mix proportion. Properties of coarse aggregates - Concept of size, shape, surface texture, water absorption, soundness, specific gravity & bulk density, Determination of fineness modulus of coarse aggregate by sieve analysis, grading of Coarse Aggregates. Determination of crushing value, impact value & abrasion value of coarse aggregate, flakiness index & elongation index of coarse aggregate and their specification.

Unit 5. Mortars: Classifications, lime mortar, cement mortar, special mortars. Functions of mortar, proportions, properties of mortar and tests for mortar

Unit 6. Concrete: Introduction to concrete - Definition of concrete, necessity of supervision for concreting operation, different grades of 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. Water cement (w/c) ratio, Definition of w/c ratio, significance of w/c ratio, maximum w/c ratio for different grades of concrete for different exposure conditions. Properties of fresh concrete, Definition of workability, factors affecting workability of concrete. Determination of workability of concrete by slump cone test, compaction factor test, vee bee consistometer. Range values of workability requirement for different types of concrete works, cohesiveness, segregation, bleeding, creep of concrete. Curing of concrete. Testing of concrete for strength and workability. Properties of hardened concrete

Unit 7. Timber : Difference between wood and timber. Timber based material: use of timber, characteristics of good timber, defects in timber, plywood, particle board, veneer, sun mica ,fore mica, nuwood, artificial timber, rubber wood.

Unit 8. Paints, Varnishes & Colors: Different in gradients used in manufacturing/ preparation of paints, Primers, their different types for steel and timber. Use of paint as protecting surface device for steel surface type of paint used and for wood surface types of paint used. VARNISH : Method of preparation of varnish, component materials used in varnish

Unit 9. Steel And Aluminum Products : Steel used as Engineering Material in different shapes. Like T- section , Angle section, Channel Section, I-Section steel sheets used in manufacturing of Doors. Aluminum : Used as construction materials

Unit 10 Miscellaneous: Give the concepts about the other materials which can be used as Engineering Materials like Glass, Rubber, Tar, Emulsion, Bitumen, Glass wool, Use of J bolts, U hooks, Stoneware pipes, Galvanized iron pipes. Miscellaneous materials: glass, plastic- P.V.C. pipes used as materials in pipe laying for water supply purposes, Irrigation etc. Water tanks. fibers, aluminum, steel , galvanized iron, asphalt bitumen etc. micro silica, PVC, CPVC, PPF. Waterproofing and termite proofing materials, admixtures in concrete, bonding agents, epoxy resins, Polishing materials etc. readymade concrete cover. Readymade ornamental material (wall papers, carpets, radium prints, blocks etc.).

REFERENCES

- 1.Engineering Materials By Rangwala
 2. Engineering Materials By Deshpande
 - 3 Engineering Materials By Ojha
 - 4 Engineering Materials By Surendra Singh
 - 5 Civil Engineering Materials By T.T.T.I., Madras.
 - 6 Building Materials By S.K. Duggal
 7. construction Materials By D.N. Ghose
- Engineering Materials By Rangwala
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LIST OF EXPERIMENTS

Test on Aggregate

- (1) Fineness Modulus of fine aggregate.
- (2) Fineness modulus of Coarse Aggregate.
- (3) Flakiness Index.
- (4) Aggregate crushing test (Demonstration)
- (5) Impact Test.

2 Test on Bricks

- (1) Water Absorption Test.
- (2) Compressive strength of bricks.
- (3) Effloresce Test.

3. Test for Cement

- (1) Fineness of cement.
- (2) Normal consistency of cement
- (3) Setting time test initial and final.
- (4) Tensile strength.
- (5) Specific gravity

4 Test for concrete

- (1) slump cone test
- (2) Compressive strength of cubes (7 days ,28 days)
- (3) Rebound hammer test
- (4) Compaction factor test

5 Test for mortar

- (1) bulking of sand
- (2) silt content
- (3) slaking of quick lime

6 . Testing for Steel

- (1) Tensile strength of M.S. bar.
- (2) Shear strength on M.S. bar

Unit 1 Building Components and Materials: Building components and types of structure - building components & their function. Substructure – foundation, plinth. Superstructure – walls, sill, lintel, doors & windows, floor, roof, parapet, beams, columns. Types of structures – load bearing structures, Framed structures, composite structures.

Unit 2. Construction of Sub Structure : Job layout – necessity and procedures, 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. Earthwork - excavation for foundation, timbering and strutting, earthwork for embankment, material for plinth filling. Tools and plants used for excavation and earthwork. Foundation - importance and necessity, types of foundation, open foundations, shallow Foundation, stepped foundation, isolated and combined column footing, raft foundation, deep foundation and pile foundation. Selection of foundation. Pumping method of dewatering, cofferdams. Bearing capacity of foundation soil, under reamed pile Foundation

Unit 3. Construction of Super Structure : stone masonry – terms used in stone masonry – facing, backing, hearting, through stone, corner stone. 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. Brick masonry : common terms used in brick masonry, requirements of good brickwork, bonds in brick masonry, English, Flemish, stretcher and header bonds only. 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. Comparison between brick and stone masonry. Hollow concrete block masonry, composite masonry, cavity wall- purpose and construction. Doors and windows: doors -components and, construction of paneled doors, battened doors, flush doors, collapsible doors, rolling shutters, revolving doors, Aluminum doors, glazed doors. Sizes of door – as per IS specification. Windows -component and construction of fully paneled, partly paneled 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. Selection of doors and windows. Sill, lintel and weather shed - functions, types and construction . Vertical communication means of vertical communication – stair case, elevators, escalators etc. terms used in stair case, characteristics of good staircase, types of staircase - fabricated stair. Relation between rise and tread, IS standards, design of staircase for the given situation, Scaffolding and shoring: purpose, types of scaffolding, process of erection and dismantling. Merits and demerits of different types of scaffolding, Purpose and types of shoring, underpinning, safety precautions.

Unit 4. Building Finishes : *floors and roofs* - floor finishes, brick flooring, flag stone, Shahabad , Kota, marble, granite, Kadappa, ceramic tiles, vitrified, mosaic tiles, Chequered tiles, glazed tiles, pavement blocks, concrete floors, Tremix floor, skirting and dado. Process of laying- process of laying and construction, finishing and polishing of floors. *Roofing materials* – AC sheets ,GI sheets, plastic sheets, fiber sheets, Mangalore tiles etc. Steel trusses. R.C.C. slab,

lean to roof, King post and Queen post trusses (Line Diagram). *Wall finishes*: 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. *Pointing* – necessity and procedure of pointing, Difference between plastering and pointing. *Painting* – necessity, surface preparation, method of application, selecting suitable painting material, white Wash and colour wash

Unit 5. Introduction to Auto CAD: Coordinate system. Draw command-line ,arc, circle rectangle, polygon, point, ellipse, hatch, table. Modify commands-erase, copy, offset, array, trim, extend, break, join, chamfer, fillet, move, rotate, scale, stretch, lengthen. Dimensioning Tray settings: snap, grid, ortho, polar, osnap Format commands: line type, point style, units, layers, drawing limit, dimension style.

Unit 6. Building Maintenance : *Cracks* - causes and types of cracks, identification and repair of cracks. Guniting and grouting, use of epoxy and crack fills. *Settlement* - causes and remedial measures plinth protection – necessity and materials used. *Demolition* - necessity, method of demolition, hand demolition, Machine demolition, controlled blasting demolition, precautions during demolition. *Re-baring techniques* - necessity and equipment for re-baring techniques.

Unit 7. Presentation: Block, creating layout, insert layout ,ploting/printing

Unit 8. Safety And Environmental Aspects : Safety precautions to be observed during the construction viz. trenching, digging pits for foundation using machineries, masonry works, erection, scaffolding, centering etc. Environmental consideration to be observed during construction of a building e.g. laying out of drainage line and water supply line, soak pit, septic tank, precautions

Unit 9. Gear Drawing : Gear terminology such as pitch, pitch circle diameter module, addendum, root circle diameter, hole depth, blank diameter etc. construction of cycloidal, involute teeth profiles, pinion and rack meshing, spur gear meshing. to be taken during site clearance considering environmental effect. Avoiding unnecessary cutting of bushes and tress etc.

REFERENCES

1. Building Construction, S. P. Arora and Bindra, Dhanpat Rai Publication
2. Building Construction, S. C. Rangawala Charotar Publication
- 3 Building Construction, Sushil Kumar, Standard Publication
- 4 Building Construction, B. C. Punmia Laxmi Publication
- 5 Building Construction, S.K. Sharma, Tata McGraw-Hill
- 6 Building Construction, Dr. Janardan Zha, khanna Publication Construction, Mantri Construction

LIST OF EXPERIMENTS

- 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** Observing and writing report of the process of plastering.
- 6** Observing and writing report of the process of water proofing of terrace or basement.
- 7** 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.
- 8** Visit to a building where slab casting is in progress. **3**
- 9** Use of water level, plum bob, spirit level, Thread, gunia, etc. **2**
- 10** Study and use of various tools used in building construction.

Unit 1. Properties Of Fluid : Definition of fluid, Difference in behavior of fluid with respect to solids. Introduction to fluid mechanics and hydraulics, Branches of hydraulics- Hydrostatics and hydrodynamics, Importance of Hydraulics with respect to Irrigation and Environmental engineering. Physical properties of fluid Mass density, Weight density, Specific volume, Specific gravity, Surface tension and capillarity, Compressibility, Viscosity, Newton's law of viscosity – Dynamic and kinematics viscosity. Ideal and Real liquids

Unit 2. Hydrostatic Pressure : Free liquid surface, Definition of pressure and its SI unit, Hydrostatic pressure at point, Pascal's law, Variation of pressure in horizontal and vertical direction in static liquid, Pressure diagram. Total hydrostatic pressure and center of pressure, Determination of total pressure & center of pressure on vertical & inclined faces of dams, sluice gates, sides and bottom of water tanks. Numerical Problems.

Unit 3. Measurement Of Liquid Pressure In Pipes : Concept of pressure head and its unit, Intensity of pressure, Variation of pressure with depth of liquid, Types of pressure- atmospheric gauge and absolute pressure. Conversion of pressure head of one liquid in to other, devices for pressure measurements in pipes – Piezometer, U-tube manometer, Bourdon's pressure gauge. Principle of working and limitations. Measurement of pressure difference using differential manometer – U-tube differential manometer and inverted U-tube differential manometer. Simple Numerical Problems.

Unit 4. Fundamentals Of Fluid Flow : Concept of flow, Gravity flow and pressure flow. Types of flow – steady and Unsteady, uniform and non-uniform, Laminar and turbulent. Various combinations of flow with practical examples, Reynolds number and its application, Stream line and equi-potential line. Flow net and its uses. Discharge and its units, Continuity equation for fluid flow. Various forms of energies present in fluid flow-potential, kinetic, & pressure energy. Datum head, pressure head, velocity head and total head, Bernoulli's theorem, its assumptions and limitations. Loss of head and modified Bernoulli's theorem.s.

Unit 5. Flow Of Liquid Through Pipes : Loss of head due to friction, Darcy-Weisbach Equation Friction factor, relative roughness. Common range of friction factor for different types of pipe material. Minor loss of head in pipe flow- loss of head due to sudden Contraction, sudden expansion, gradual contraction & expansion, at entrance and exit of pipes and in various pipe fittings. Pipes in series and parallel, Equivalent pipe – Dupuit's equation. Hydraulic gradient line and Energy gradient line, Siphon pipe. Water hammer in pipes – cause effects and remedial measures, Use of Nomograms for design of water distribution system. Simple Numericals on head loss..

Unit 6. Flow Through Open Channel : Types of channels- artificial & natural, purposes of artificial channel, Different shapes of artificial channels. Geometrical properties of channel section – wetted area, wetted Perimeter, hydraulics radius. Prismatic channel sections, steady-uniform flow through prismatic channel section. Chezy's equation and Manning's

equation for calculation of discharge through an open channel, common range of values of Chezy's constants and Manning's constant of different types of channel surfaces. Most economical channel section, conditions for most economical channel sections. Froude's number and its significance. Critical, sub-critical and supercritical flow in channel, Hydraulic jump its occurrence in field, uses of hydraulic jump.

Unit 7. Flow Measuring Devices : Velocity measuring devices for open channels. Float surface, sub-surface and float rod, Pitot tube – principle, expression for velocity, current meter - cup type & propeller type. Discharge measuring devices for channels – Notches, Types of notches, expression for discharge. Francis formula, End contraction and velocity of approach, Weirs – Broad crested weir, ogee spillway, and expression for discharge. Flumes - Venturi flume, standing wave flume, expression for discharge. Velocity area method for measurement of discharge through open channels. Discharge measuring devices for pipes. Venturimeter – Component parts, principle of working, Study and use of Water meter, Flow through orifice. Orifice- Definition and use, Types of orifice based on various criteria. Coefficient of contraction, coefficient of velocity and coefficient of discharge, Relationship between them. Discharge through small sharp-edged circular orifice. Determination of hydraulic coefficient of orifice. Simple Numerical.

Unit 8. Hydraulic Machines : Pumps - Definition and types. Suction head, delivery head, static head and manometric head. Centrifugal pump - component parts and their functions, principle of working, priming. Reciprocating pump - component parts and working. Submersible pump and Jet pump. Selection and choice of pump. Computation of power required for pumps. Turbines - Definition and types.

REFERENCES

- 1 Hydraulics & Fluids Mechanics, Dr. P.N.Modi & Dr. S.M.Seth, Standard Book House, Dehli.
2. Hydraulics & Fluids Mechanics, S.Ramamrutham, Dhanpat Rai & Sons, Delhi.
- 3 A Text Book of Hydraulics, R.S.Khurmi.
- 4 Fluids Mechanics & Hydraulics Machines, S.Chand & Company

LIST OF EXPERIMENTS

- 1 Measurements of pressure and pressure head by Piezometer, U-tube manometer.
- 2 Measurement of pressure difference by U-tube differential manometer. Study of bourdon's gauge.
- 3 Verification of Bernoulli's theorem.
- 4 Reynolds experiment to study types of flow.
- 5 Determination of Darcy's friction factor for a given pipe.
- 6 Determination of Minor losses in pipes (any two).
- 7 Determination of Manning's constant or Chezy's constant for given rectangular channel Section.
- 8 Demonstration of Hydraulic jump.
- 9 Determination of coefficient of discharge for given rectangular or triangular notch.
- 10 Determination of coefficient of discharge for a given Venturimeter.
- 11 Demonstration and use of Pitot tube and current meter.
- 12 Determination of hydraulic coefficients for sharp edge orifice.
- 13 Study & use of water meter.
- 14 Study of a model of centrifugal and reciprocating pump.
- 15 Use of characteristic curves/ charts / catalogs from manufactures for selection of pump for the designed discharge and head (Refer IS: 9694)

UNIT 1 Conventions : Conventions as per IS:962-1967 and other practices Types of Lines – Visible line, Centerline, Hidden line, Section line, Dimension line, Extension line, Pointers, Arrow heads or dots. Dimensioning systems. Symbols – Materials used in construction, building components. Reading of available ammonia prints of residential buildings

UNIT 2 Planning Of Building : Principles of planning of Residential and Public building. Space requirements and norms for various units of Residential and Public building. Rules and byelaws of local governing authorities for construction. Drawing of line plans for Residential and Public building

UNIT 3 Building Drawing : Development of plan from line plan of a residential building, Elevation, Section, Site plan, Location Plan, Foundation plan, Area statement and other details. Submission Drawing and Working Drawing

UNIT 4 Detailed Drawing : Drawing of staircase, drawing of steel truss & lean to roof, drawing of layout plan of water supply line with accessories. Layout plan of sanitary line - position of inspection chamber, septic tank, sanitary fittings. Position of wash basin, sink etc.

UNIT 5 Perspective Drawing : Definition, Necessity, Principles of Perspective Drawing, Terms used in perspective drawing, Two point perspective view of a small object like pedestal, step block, small single storied building with flat roof etc

REFERENCES

- 1 Text Book of Building Drawing, Shah, Kale & Patki
2. Elements of Building Drawing, D. M. Mahajan
- 3 Planning and Design of Building Y. S. Sane

LIST OF EXPERIMENTS

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**.
3. Residential Building (Min. three rooms)
4. Public Building – School building, Primary health center / Hospital building, Bank, Post Office, Hostel building etc. (At least four)
5. 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.
6. 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.
7. Working drawing of above drawing sheet preferably one plan, section through stair case to scale 1:50
8. Two point perspective view of a building drawn in submission drawing.
9. Tracing of a submission drawing prepared at Sr. No.4 above.
10. Ammonia print of submission drawing prepared at Sr. No.4 above

Professional Activities is not a descriptive course, as per conventional norms;

therefore specific content for this course cannot be prescribed. It is a group of openended activities; where in variety of tasks are to be performed, to achieve objectives. However general guidelines for achieving the target and procedure for its assessment are given under the course content. As the student has to practice this course in all the six semesters, the guidelines given therein are common and applicable to each semester.

Objectives:

To allow for professional development of students as per the demand of engineering profession.

- To provide time for organization of student chapter activities of professional bodies) i.e. Institute of engineers, ISTE or Computer Society of India etc.)
- To allow for development of abilities in students for leadership and public speaking through organization of student's seminar etc.
- To provide time for organization of guest lectures by expert engineers/ eminent professionals of industry.
- To provide time for organization of technical quiz or group discussion or any other group activity.
- To provide time for visiting library or using Internet.
- To provide time for group discussion or solving case studies.
- To provide time for personality development of students.
- To provide time for working for social cause like awareness for environmental and ecology etc.

DETAILED INSTRUCTIONS TO CONDUCT PROFESSIONAL ACTIVITIES:

A. Study hours, if possible should be given greater time slot with a minimum of two hrs/week to a maximum of four hrs/week.

B. This course should be evaluated on the basis of grades and mark sheet of students, should have a separate mention of the grade awarded. There will be no pass/fail in professional activities (PA).

C. Following grade scale of evaluation of performance in PA has been established.

Grades	Level of performance
A	Excellent
B	Good
C	Fair
D	Average
E	Below Expectations

D. Grades once obtained in a particular examination shall become final and no chance of improvement in grades will be given to the students.

E. Assessment of performance in PA is to be done internally by the Institution, twice in a Semester/Term through a simultaneous evaluation of the candidate by a group of three teachers, of the deptt. Concerned. Group of teachers will jointly award the grade to candidate in the assessment. Best of the grades obtained by the student in these two assessments shall be finally taken on the mark sheet of the respective Semester/Term.

Candidate abstaining from the prescribed course work and/or assessment planned at the Institute shall be marked ABSENT in the mark sheet, instead of any grade.

F. While awarding the grades for performance in PA, examining teacher should reach the final consensus based on the attendance, punctuality, interest, presentation skills in seminar on the topic assigned (collection of relevant data, observations, analysis, findings/conclusion) and its written report, awareness of latest developments in the chosen programme of study.

G. Institution shall maintain the record of grades awarded to all the students in PA for a period of 1 year.

H. It shall be mandatory for students to submit a compendium for his PA in the form of a Journal.

I. Compendium shall contain following:

I. Record of written quiz.

II. Report/write up of seminar presented

III. Abstract of the guest lectures arranged in the Institution.

IV. Topic and outcome of the group discussion held.

V. Report on the problems solved through case studies.

VI. Report on social awareness camps (organized for social and environmental prevention).

VII. Report on student chapter activities of professional bodies like ISTE, IE (India), CSI etc.

J. PA is not a descriptive course to be taught in the classroom by a particular teacher. Various activities involved in the achievement of objectives of this course should be distributed to a number of teachers so that the talent and creativity of group of teacher's benefit the treatment of the course content.

These activities should preferably be conducted in English language to maintain continuity and provide reinforcement to skill development.

Small groups shall be formed like in tutorials, group discussion, case studies, seminar, project methods, roll play and simulation to make the development of personality affective.

Treatment of PA demands special efforts, attention, close co-operation and creative instinct on the part of teachers of department concerned. Since this course is totally learner

centered, many of the activities planned under this course shall come out from the useful interaction of student, among themselves and with the teachers. The guide teacher/s shall best act as a facilitator of these creative hunts/ exercises, which unfold many of the hidden talents of the students or bring out greater amount of confidence in them, to execute certain activity.