

17BPE121 - Mathematics II

Teaching Scheme					Exam Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	--	4	4	25	50	25	--	--	100

Unit I

Hours: 10

Infinite Sequences and Series: Introduction of Convergence, Divergence of Sequences and Infinite Series The nth term test for Divergence, Integral Test, Comparison Test, Ratio Test, Root Test, Alternating Series, Absolute convergence, Conditional convergence, Power Series & Radius of convergence Taylor's series, Maclaurin's series, Successive differentiation, Leibnitz theorem (without proof)

Curve Sketching: Concavity Curve sketching, Polar co-ordinates, Relation between Polar and Cartesian Co-ordinates, Graphs in Polar co-ordinates

Indeterminate Forms: Indeterminate form $(\frac{0}{0}, \frac{\infty}{\infty}, \infty \times 0, \infty - \infty)$, Indeterminate form $(0^0, 1^\infty, \infty^\infty)$

Unit II

Hours: 10

Partial Derivatives: Function of 2-variables, graphs, level curves, Limit, continuity of function of several variables, Partial derivatives and Clairauts' theorem, Tangent plane, Normal line, Linear approximation, Total differential, Chain rule, implicit differentiation, Euler's theorem for homogeneous function, Maximum and minimum values by second derivative test, Lagrange multipliers, Taylor's formula for two variables.

Improper Integrals: Improper integrals of Type- I and Type – II, Convergence and divergence of improper integrals

Unit III

Hours: 10

Multiple Integrals: Double integrals over rectangles and Fubini's theorem, Properties of double integrals Double integrals over general region, Double integrals in polar co-ordinates, Triple Integrals, Triple integrals in cylindrical coordinates, Triple integrals in spherical co-ordinates, Change of Order of Integration, Jacobian of several variables, Change of variable in multiple integrals.

Application of Integration: Volume by slicing, Volume of solids of revolution by disk method, Volume of solids of revolutions by washer method, Volume by cylindrical shell.

Unit IV

Hours:09

Vector Functions: Vector & Scalar Functions and Fields, Derivatives Curve, Arc length, Curvature & Torsion Gradient of Scalar Field, Directional Derivative, Divergence of a Vector Field, Curl of a Vector Field,

Vector Calculus: Line Integrals, Path Independence of Line Integrals, Green's Theorem in the plane, Surface Integrals, Divergence Theorem of Gauss, Stokes's Theorem.

Total Hours: 39

Textbook For Calculus:

- Higher Engineering Mathematics Vol. 1 by Dr. K.R.Kachot, Mahajan Publishing House

Reference Books for Elements of Mechanical Engineering:

1. Higher Engineering Mathematics, by B. S Grewal, Khanna Publication, Delhi.
2. Calculus (5th Edition), by James Stewart, Thomson (2003).
3. Higher Engineering Mathematics, by R. K. Jain & S. R. K. Iyernagar
4. Thomas' Calculus, eleventh edition, Pearson.
5. E.Kreyszig, Advanced engineering mathematics (8th Ed.), John Wiley (1999).
6. Advance Engineering Mathematics, by Michael D. Greenberg.
7. Engineering Mathematics, A Programmed Approach, by C. W. Evans, Stanley Thornes Publishers Ltd.
8. Calculus, Volumes 1 and 2, by T. M. Apostol, Wiley Eastern.
9. Calculus, by Robert T. Smith & Ronald B. Minton, McGraw-Hill.
10. Calculus – Single and Multivariable, by Hughes – Hallett et al., John-Wiley and Sons.

17BPE122 - Chemistry

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	4	4	25	50	25			100

UNIT I

Hours:10

Physical Chemistry

Reactions and Mechanisms: Organic reactions and their mechanisms: types of organic reactions; general methods of obtaining mechanisms, study of ionic, free radical and other reactions; Surface Chemistry: Interparticle forces, adsorption isotherms, determination of the surface area of fine powders using BET theory, surface films; Colligative Properties and their Experimental Determination: Boiling Point Elevation, Freezing Point depression, Osmotic Pressure

UNIT II

Hours :10

Organic Chemistry

Alkanes, Alkenes, Alkynes; Markovnikov's rule; Peroxide effect; Bayer's test; Monohydric alcohols; Saytzeff rule; Methods of distinguishing the three classes of alcohols; Aldol condensation; Clemmensen reduction; Wolf-Kishner reduction; Haloform reaction; Cannizzaro reaction; Reformatsky reaction; Wittig reaction; Saturated monocarboxylic acids; Hell-Volhard-Zelinsky reaction; Amino acid; Classification of carbohydrates; Monosaccharides; Mutarotation; Epimerization; Aromatics; Ruff degradation Aromaticity; Huckel rule; Electrophilic substitution reactions; Directive effects of substituents; Aromatic amino compounds ; Carbylamines reaction. Organic Geochemistry; A brief biological background.

Unit III

Hours: 10

Marine Geochemistry

Marine Geochemistry: Ocean as a chemical system: Salinity, Chlorinity, Density temperature: ocean circulation and structure of water: Sea water composition; Conservative elements; dissolved gases, CO₂ distribution etc; Upwelling phenomena; Carbonate dissolution and precipitation; Nutrient elements; Sources and sinks of Dissolved matter and organic Matter; Residence time

Unit IV

Hours: 9

Organic Geochemistry and Isotope geochemistry

Organic Geochemistry; A brief Biological background, Organic Compound and their nomenclature, Biologically important organic compounds; Carbohydrate, Lipids, Proteins, Introduction to isotope geology; Discovery of radioactivity and isotopes; Isotope in earth sciences; Nuclide types and their abundances; Decay mechanism of radioactive atoms; basic Principles of radiometric dating; Stable isotope Systematic: elementary knowledge about fractionation of stable isotopes; Stable isotopes and petroleum; mass spectrometry

Total Hours - 39

Texts and References:

1. Finar I.L., "Organic chemistry" Vol-I, 6th Edition, Pearson Education, 2002.
2. Sharma B.K., "Industrial Chemistry", 12th Edition, Goel Publishing house, 2001

3. Atkins, Peter, 'Physical Chemistry', 8th ed New Delhi : Oxford & IBH Publishing House, 2006.
4. Faure G, "Principles of Isotope Geochemistry"
5. Killops and Killops, "Introduction to organic Geochemistry"
6. White, "organic Geochemistry"
7. "Treatise on Geochemistry", 10 volume set, 2006

17BPE123 - Sedimentary and Petroleum Geology

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25			100

Unit – I **Hours – 9**

Sedimentology

Subaerial weathering processes: physical and chemical weathering; distinction between soil, alluvium and sediments; Transport and deposition of sediments: fundamentals of fluid flow, particle transport by fluids and by sediment gravity flows. Sedimentary textures: grain size, particle shape, sorting and fabric and their effect on porosity and permeability of sedimentary rocks; sedimentary structures: stratification and bedforms, bedding plane markings; paleocurrent analysis.

Unit – II **Hours - 10**

Sedimentary Rocks and Depositional Environments

Diagenesis of siliciclastic sediments. Classification of siliciclastic sedimentary rocks: rudaceous, arenaceous, and lutaceous sedimentary rocks; carbonate sedimentary rocks: textures, classification, diagenesis; other nonclastic sedimentary rocks: evaporites, cherts, coal, oil-shale. Introduction to different types of sedimentary basins. Introduction to depositional environments: Eh-pH fence diagram; continental (fluvial, lake, aeolian), marginal marine (estuarine, lacustrine), shallow marine (tidal flat, beach, deltaic), shelf and deep marine environments.

Unit – III **Hours – 10**

Origin and Migration of Petroleum

Introduction to petroleum system. Theories of inorganic, Organic and duplex origin of petroleum. Conversion of organic matter to petroleum: diagenesis of organic matter and formation of kerogens, pristane and phytane; classification of kerogens; catagenesis, and metagenesis of kerogens; thermal maturity indicators. Classification, composition, and physical properties of crude oils; composition of natural gases. Primary, Secondary, and Tertiary Migrations; physico-chemical aspects of migration of petroleum; effects of temperature (geothermal gradients, thermal conductivities of subsurface rocks) and pressure (types and causes of subsurface pressures) on primary and secondary migration; possible modes of primary migration of petroleum; mechanisms of secondary migration under hydrostatic and hydrodynamic conditions; petroleum prospect of sedimentary basins; termination of secondary migration and accumulation of oil and gas; oil/gas saturation in reservoirs. Reconstruction of the migration history.

Unit – IV **Hours - 10**

Petroleum Traps and Petroliferous Basins of India

Traps and their associations. Cap rock and seal formation: lithological aspects and capillary characteristics of seals; diagenetic seals. Trap formation: structural – fold (anticlinal) traps, fault (sealing/non-sealing) traps; growth faults; traps associated with salt domes; stratigraphic – channel sand, up-dip wedges, sand lenses, sand bars; carbonate traps (bioherm and biostrome), etc. Classification of sedimentary basins of India. Structures, petroleum geology of petroleum producing basins of India.

Total Hours – 39

Texts and References:

1. Sengupta S.M.: *Introduction to Sedimentology*. 2. Kunt Bjorlykke: *Sedimentology and Petroleum Geology*. 3. F.J. Pettijohn: *Sedimentary Rocks*. 4. Sam Boggs Jr: *Principals of Sedimentology and Stratigraphy*. 5. Reineck H.E. and Singh I.B.: *Depositional Sedimentary Environments*; Springer. 6. Killops and Killops: *Introduction to Organic Geochemistry*. 7. B.P. Tissot and D.H. Welte: *Petroleum*

formation and occurrence: a new approach to oil and gas exploration. 8. F.K. North: *Petroleum Geology*.
9. Lavorsen: *Petroleum Geology*.

17BPE124 - Elements of Engineering

Teaching Scheme					Exam Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25	--	--	100

Unit I

Hours: 9

Introduction : Prime movers and its types, Concept of Force, Pressure, Energy, Work, Power, System, Heat, Temperature, Specific heat capacity, Change of state, Path, Process, Cycle, Internal energy, Enthalpy, Statements of Zeroth Law and First law.

Properties of Gases: Gas laws, Boyle's law, Charle's law, Combined gas law, Gas constant, Relation between Cp and Cv, Various non-flow processes like constant volume process, constant pressure process, Isothermal process, Adiabatic process, Poly-tropic process.

Properties of Steam: Steam formation, Types of Steam, Enthalpy, Specific volume, Internal energy and dryness fraction of steam, use of Steam tables, steam calorimeters.

Heat Engines: :Heat Engine cycle and Heat Engine, working substances, Classification of heat engines, Description and thermal efficiency of Carnot; Rankin; Otto cycle and Diesel cycle.

Steam Boilers: Introduction, Classification, Cochran, Lancashire and Babcock and Wilcox boiler, Functioning of different mountings and accessories.

Unit II

Hours: 10

Internal Combustion Engines: Introduction, Classification, Engine details, four-stroke/ two-stroke cycle Petrol/Diesel engines, Indicated power, Brake Power, Efficiencies.

Pumps and Air Compressors: Types and operation of Reciprocating, Rotary and Centrifugal pumps. Types and operation of Reciprocating and Rotary air compressors.

Refrigeration & Air Conditioning: Refrigerant, Vapour compression refrigeration system, vapours absorption refrigeration system, Domestic Refrigerator, Window and split air conditioners.

Couplings: Clutches and Brakes: Construction and applications of Couplings (Box; Flange; Pin type flexible; Universal and Oldham), Clutches (Disc and Centrifugal), and Brakes (Block; Shoe; Band and Disc).

Transmission of Motion and Power: Shaft and axle, Belt drive, Chain drive, Friction drive, Gear drive.

Unit III

Hours: 10

Introduction to Civil Engineering: Branches of Civil Engineering, Scope of Civil Engineering.

Surveying Levelling and Mapping: Definition of Surveying, Aims and applications, Fundamental principles of surveying, Classification of surveying, Plans and maps, Scales, Units of measurement. Methods of Linear measurement, Instruments used in chain surveying, Selection of stations, Chaining, Ranging, Offsetting, Errors in chaining and correction. Methods of angular measurements, Instruments used, Types of compass, Types of meridians and bearings, Measurement of bearings, computation of angles. Compass traversing and correction of bearings for local attraction. Aims and applications of levelling, Definition of various terms, Instruments for leveling, Methods of leveling, Recording observations in level-book, Computing reduced levels by HI and rise & fall method. Introduction to planimeter, introduction to Global positioning system (GPS), remote sensing (RS) and Geographical information system (GIS), Beam bending, bending of composite beams, transverse shear, combined loadings, deflection of beams and shafts, stress in columns.

Unit IV**Hours: 10**

Elementary Concepts: Introduction of Electrical Current, Voltage, Power and Energy; Sources of Electrical Energy – Independent and Dependent Source, Source conversion; Ideal electrical circuit elements - Resistor, Inductor and Capacitor; Fundamental laws of electric circuits - Ohm's Law and Kirchoff's Laws; Analysis of series, parallel and series-parallel circuits; Star – Delta conversion.

Electrostatics: Electric charge and Laws of electrostatics; Definitions - Electric field, lines of force, electric field intensity, electric flux and flux density; Electrostatic induction; Gauss's law and its application; Dielectric strength; Capacitor; Capacitor in series and parallel, Energy stored in a capacitor.

Electromagnetism: Faradays Laws; Lenz's Law; Fleming's Rules; Effect of magnetic field on current carrying conductor; Magnetic circuits; Statically and dynamically induced EMF; Concepts of self inductance, mutual inductance and coefficient of coupling; Inductance in series and parallel; Hysteresis and Eddy current losses; Energy stored in magnetic fields.

Single Phase A.C. Circuits: Generation of sinusoidal voltage, Definition of average value, root mean square value, form factor and peak factor; Phasor representation of alternating quantities; Analysis with phasor diagrams of R, L, C, R-L, R-C and R-L-C circuits; Concepts of Real power, Reactive power, Apparent power and Power factor, Series, Parallel and Series - Parallel circuits; Power in AC circuit, Power factor improvement; Resonance in series and parallel circuits, Q-factor, Bandwidth and Selectivity.

Safety Protections: Circuit protection devices: Fuses, MCB, ELCB & Relays.

Total Hours: 39**Textbook For Elements of Mechanical Engineering:**

1. Elements of Mechanical Engineering by H.G.Katariya, J.P.Hadiya and S.M.Bhatt, Books India Publication.

Reference Books for Elements of Mechanical Engineering:

1. Basic Mechanical Engineering by Pravin Kumar, Pearson
2. Thermal Science and Engineering by Dr. D.S. Kumar, S.K. Kataria & sons, Publication New Delhi
3. Fundamental of Mechanical Engineering by G.S. Sawhney, PHI Publication New Delhi
4. Elements of Mechanical Engineering by Sadhu Singh S. Chand Publication
5. Introduction to Engineering Materials by B.K. Agrawal Tata Mcgrahill Publication, New Delhi.
6. Thermodynamics- An Engineering Approach by Yunus A, Cengel & Bole Tata Mcgraw Hill, New Delhi
7. Engineering Thermodynamics by P. K. Nag, Tata Mcgraw Hill, New Delhi
8. Engineering Thermodynamics by R.K.Rajput, EVSS Thermo Laxmi Publications
9. Rayner Joel , Engineering Thermodynamics, ELBS Longman.
10. Fundamentals of Engineering Thermodynamics by R.Yadav, Central Publishing House, Allahabad

Textbook For Elements of Civil Engineering:

1. Elements of Civil Engineering by Dr.R.B.Khasiya, Mahajan Publishing House.

Reference Books for Elements of Civil Engineering:

1. Surveying Vol. I by Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar Jain 16th Edition, Laxmi Publication Delhi
2. Surveying Theory and Practice (7th Edition) by James M Anderson and Edward M Mikhail Publisher: McGraw Hill Education, India Pvt. Ltd.
3. Surveying and Leveling by R. Subramanian Publisher: Oxford University
4. Surveying and Leveling by N. N. Basak, Tata McGraw Hill Education, Pvt. Ltd. New Delhi
5. Surveying Vol. I by S. K. Duggal Tata McGraw Hill Publication New Delhi
6. Elements of Civil Engineering by Dr. R.K. Jain and Dr. P.P. Lodha, McGraw Hill Education, India Pvt. Ltd.
7. Building drawing by M.G.Shah, C.M.Kale and S.Y.Patki, Tata McGraw Hill
8. Civil Engg. Drawing by S. C. Rangwala Charotar Pub. House Anand
9. Building Construction by Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar Jain, Laxmi Pub. Delhi
10. Building Construction and Construction Material by G.S.Birdie and T.D. Ahuja Dhanpat Rai Publishing Company.
11. Irrigation Engineering and Hydraulic Structures by Santoshkumar Garg, Khanna Publishers Delhi.

Textbook for Elements of Electrical Engineering:

1. Elements of Electrical Engineering by J.N.Swamy and N.V.Sinha 8th Edition, Mahajan Publishing House.

Reference Books for Elements of Electrical Engineering:

1. Electrical Technology, Vol – 1, by B.L. Theraja, S. Chand.
2. Theory and Problems in Basic Electrical Engineering, by D.P. Kothari and I.J. Nagrath, Prentice Hall, India.
3. Electrical Circuit Theory and Technology, Forth edition, by John Bird, Routledge, Taylor and Francis Group.

17BPE125 - Introduction to Petroleum Engineering

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25	--	--	100

Unit I

Hours : 10

Nature of Petroleum- composition & properties; Overview of Petroleum geology & basic rock properties: Source, migration and accumulation of petroleum, Seal and trap; Overview of Petro physical properties of rock and fluid; Brief study of fluid flow through porous media.

Unit II

Hours : 09

Prospect Analysis, Exploration Techniques, Resource Estimation and Classification, Reservoir Engineering, Drilling Engineering and Production Engineering.

Unit III

Hours : 10

Thermal and Physical properties of crude; Crude characterization techniques; Overview of Refining operations; Introduction to each unit of refinery – Distillation, Sweetening, Cracking, Reforming, Isomerisation, Alkylolation, Polymerization; Major equipment used in refinery; Various catalysts used in refining units;

Unit IV

Hours : 10

Introduction to gas processing, Pre-treatment of gas, Sulphur Removal, Dehydration; General processes concerning gas Processing; Overview of LNG Value Chain; Introduction to Gas Distribution, Gas Retailing.

Total Hours: 39

Texts and References:

1. Levenson, '*Geology of Petroleum*' CBS Publishers and Distributors
2. O Serra, '*Fundamentals of Well Log Interpretation*' Elsevier
3. Carl Gatlin, '*Petroleum Engineering*', Prentice Hall Inc.
4. Kermit Brown, '*Technology of Artificial Lift Methods*', Pennwell Publishing Company
5. Dr. B.K. Bhaskara Rao, Modern Petroleum refining Processes (5th Edition)

17BPE126 - Fluid Mechanics

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	4	4	25	50	25	-	-	100

Unit – I **Hours: 10**

Introduction: Continuum, Force, Stress, Strain, Solids vs. Fluids, Types of fluids, Fluid Properties, Newton’s law of viscosity, Stokes’ theorem, Compressibility and vapor pressure

Fundamental Concepts: Fluid flow definition (Eulerian vs. Lagrangian), System vs. Control Volume, Reynolds’ transport theorem

Fluid Statics: Hydrostatic law, Pascal’s law, Pressure at a point, Total Pressure, Centre of pressure, Pressure on a plane(Horizontal, Vertical, Inclined) & Curved surfaces, Archimedes Principle , Buoyancy and stability of floating and submerged bodies, Meta-centric height

Unit – II **Hours: 10**

Fluid Kinematics: Types of flow (steady vs. unsteady, uniform vs. non-uniform, laminar vs. turbulent, One, Two and Three dimensional, compressible vs. incompressible, rotational vs. Irrotational), Stream lines, path lines, streak lines, velocity components, convective, local and total acceleration, velocity potential, stream function, continuity equation in Cartesian co-ordinates

Fluid Dynamics: Introduction to Navier-Stokes’ equation, Euler’s equation of motion along a stream line, Bernoulli’s equation, Application of Bernoulli’s equation to Pitot tube, Venturi meter, Orifices, Orifice meter, Triangular Notch & Rectangular Notch

Dimensional Analysis: Dimensions of physical quantities, dimensional homogeneity, Buckingham pi Theorem, important dimensionless numbers, Model analysis (Reynolds, Froude and Mach)

Unit – III **Hours:10**

Laminar Flow: Definition, relation between pressure and shear stresses, laminar flow through round pipe, fixed parallel plates.

Boundary Layer Theory: Development of Boundary Layer on a flat plate, Laminar and Turbulent Boundary Layers, Laminar sub layer, Separation of Boundary Layer and Methods of Controlling, Flow around Immersed Bodies, Lift and Drag, Classification of Drag, Flow around circular cylinder and Aerofoil, Development of lift on Aerofoil

Unit – IV **Hours: 09**

Flow Through Pipes: Total energy line, Hydraulic grade line, Energy losses through pipe, Darcy-Weisbach equation, Moody diagram, Minor losses in pipes, pipes in series and parallel, Siphons, Transmission of power, Turbulent Flow, Velocity Distribution

Compressible fluid flow: Ideal gas relations, mach number, speed of sound. Isentropic flow of ideal gas.

Total Hours: -39

Texts and References

1. S. Gupta, Fluid Mechanics and Hydraulic Machines, Pearson Publishers.
2. Cengel and Cimbala, Fluid Mechanics, Tata-McGraw Hill Publishers.
3. F. White, Fluid Mechanics, Tata-McGraw Hill publishers.
4. R. Fox and A. McDonald, Fluid Mechanics, John Wiley Publishers.
5. J. Douglas, J. Gasiorek, J. Swaffield, and L. Jack, Fluid Mechanics, Pearson Publishers.
6. C. Ojha, P. Bernstein and P. Chandramouli, Fluid Mechanics and Machinery, Oxford University Press.

17BPE127 - Chemistry Practical

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	2	1	2	--	--	--	50	50	100

List of Experiments:

1. Estimation of Alcohol
2. Estimation of Aldehydes & Ketones
3. Estimation of Phenol
4. Determination of average molecular weight by viscometer
5. Ore analysis
6. Estimation of Amines
7. Estimation of Aromatics
8. Qualitative analysis of simple Organic compounds.
9. Hydrolysis of Sucrose.
10. Waste Water analysis
11. Adsorption Studies - Freundlich Adsorption Isotherm
12. Determination of Transition Temperature.
13. Determination of Critical solution temperature for the Phenol - Water system.
14. Determination of Saponification value of an oil.
15. To determine the moisture & volatile contents in a given coal sample by proximate analysis.

17BPE128 - Sedimentary and Petroleum Geology Practical

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	2	1	2	--	--	--	50	50	100

List of Experiments :

1. Study of Sedimentary rocks in Hand Specimen:
Sandstone – Detailed study of Different types of Sandstone, Ex. Arkose, Arenite, Wacke with respect to texture (grain size, shape and angularity/roundness), sorting, presence/absence of cement/matrix), porosity, permeability, and their depositional environment.
2. Shale – Detailed study of different types of shales (glaucconitic, fossiliferous, carbonaceous) & their depositional environment.
3. Limestone- Detailed study of different types of Limestone and their depositional environment).
4. Study of shapes of pebbles.
5. Grain size analysis of sediment (Mean, Median, Standard deviation, Skewness, Kurtosis).
6. Study of thin sections of sedimentary rocks (shale, sandstones, limestone) vis-à-vis their porosity and permeability.
7. Study of Isochore maps and construction of sections.
8. Study of Isopach maps and construction of sections.
9. Construction of panel and fence diagrams.

17BPE129 - Surveying

Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	2	1	2	--	--	--	50	50	100

List of Experiments:

1. Measurement of offsets for a building using tape survey
2. Compass traverse survey for closed traverse and corrections on internal angles
3. Simple leveling and measurement of gradients
4. Profile leveling and cross-section leveling for a survey line
5. Preparation of a contour sheet for an area
6. Measurement of horizontal and vertical angles using theodolite
7. Measurements using total station
8. Field project using total station