

**SWAMI VIVEKANAND UNIVERSITY, SIRONJA,  
SAGAR (M.P.)**



**SYLLABUS**

**For**

**DIPLOMA**

**I & II SEMESTER (ALL BRANCH)**

**Swami Vivekanand University, Sironja Sagar  
2012-2013**



# SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P.)

## Diploma in Engineering (3 Year)

### Scheme of Examination

Branch : Common to All

Semester : I

w.e.f. Session 2012-2013

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT							PRACTICAL COMPONENT					TOTAL CREDIT	GRAND TOTAL OF MARKS				
			LECTURES						THEORY CREDIT	PRACTICAL Hrs. Per Week	CONTINUOUS EVALUATION	END OF THE TERM/ SEMESTER EVALUATION					PRACTICAL CREDIT			
				Hrs. Per Week	TERM WORK QUIZ, ASSIGNMENT	MID TERM TEST (TWO)		THEORY PAPER				LAB. WORK QUIZ, ASSIGNMENT	PRACTICAL / ORAL EXAMINATION (VIVA)							
						I	II	NO.					MARKS	DURATION (Hrs)				NO.	MARKS	DURATION (Hrs.)
101	COMMUNICATION SKILLS	5161	06	10	10	10	01	70	3	04	--	--	--	--	--	--	04	100		
102	PHYSICS	6031	06	10	10	10	01	70	3	04	04	20	01	30	3	02	06	150		
103	CHEMISTRY	6032	06	10	10	10	01	70	3	04	04	20	01	30	3	02	06	150		
104	MATHEMATICS	6033	08	10	10	10	01	70	3	04	--	--	--	--	--	--	04	100		
105	PROFESSIONAL ACTIVITIES (PA)	----	--	--	--	--	--	--	--	--	02									
	TOTAL	----	26	40	40	40	04	280		16	10	40	02	60		04	20	500		

Theory Credits : 16  
 Practical Credits : 04  
 Total Credits : 20

Theory Marks : 280  
 Practical Marks : 60  
 Quiz, Mid Term, Lab. Work : 160  
 Total : 500

Minimum Pass Grade in Theory & Practical 'D'



# SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P.)

## Diploma in Engineering (3 Year)

### Scheme of Examination

Branch : Common to All

Semester : II

w.e.f. Session 2012-2013

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT								PRACTICAL COMPONENT					TOTAL CREDIT	GRAND TOTAL OF MARKS			
			LECTURES	CONTINUOUS EVALUATION		END OF THE TERM/ SEMESTER EVALUATION			THEORY CREDIT	PRACTICAL Hrs. Per Week	CONTINUOUS EVALUATION	END OF THE TERM/ SEMESTER EVALUATION			PRACTICAL CREDIT					
				Hrs. Per Week	TERM WORK QUIZ, ASSIGNMENT	MID TERM TEST (TWO)		THEORY PAPER				LAB. WORK QUIZ, ASSIGNMENT	PRACTICAL / ORAL EXAMINATION (VIVA)							
						I	II	NO.					MARKS	DURATION (Hrs.)				NO.	MARKS	DURATION (Hrs.)
101	APPLIED MECHANICS	6034	06	10	10	10	01	70	3	04	02	20	01	30	3	02	06	150		
102	ENVIRONMENTAL ENGINEERING AND SAFETY	6035	06	10	10	10	01	70	3	04	02	20	01	30	3	02	06	150		
103	INTRODUCTION TO COMPUTERS	5132	04	10	10	10	01	70	3	04	04	20	01	30	3	02	06	150		
104	ENGINEERING DRAWING	6036	06	10	10	10	01	70	3	04	--	--	--	--	--	--	04	100		
105	WORKSHOP PRACTICE	----	--	--	--	--	--	--	--	--	04	40	01	60	3	02	02	100		
106	PROFESSIONAL ACTIVITIES (PA)	----	--	--	--	--	--	--	--	--	02									
	<b>TOTAL</b>	----	22	40	40	40	04	280		16	14	100	04	150		08	24	650		
Theory Credits : 16		Theory Marks : 280				Minimum Pass Grade in Theory & Practical 'D'														
Practical Credits : 08		Practical Marks : 150																		
Total Credits : 24		Quiz, Mid Term, Lab. Work : 220																		
		Total : 650																		

# **SWAMI VIVEKANAND UNIVERSITY SAGAR (M.P.)**

**SUBJECT CODE: 101**

**SUBJECT NAME: Communication Skills**

## **UNIT – I : COMMUNICATION PROCESS AND ITS NEEDS**

How to make communication effective, Barriers in communication, Removal of barriers. Grammar and vocabulary for correct English usage. Determiners, Prepositions, Auxiliary verbs and subject-verb agreement, Rewrite as directed ( change voice, correct form of verbs/ tenses), Vocabulary – Oneword substitution, words often misused and wrongly spelt.

## **UNIT – II : PASSAGES OF COMPREHENSION**

Prescribed passages (six from existing syllabus), Language of Science, Desalination or Desalting Process, Safety Practices, Non-conventional Sources of Energy, Our Environment, Entrepreneurship, Writing summary, moral and characterization of any one story from the book prescribed.

## **UNIT – III : BUSINESS COMMUNICATION (One question with internal choice)**

Principles of effective business correspondence Its parts, mechanics, styles and forms., Application for job, Bio-Data and C.V., Letter of Enquiry, Placing order, Complaint

## **UNIT – IV : COMPOSITION & TRANSLATION**

Writing paragraphs of 150 words on topics of general interest i.e. pollution, ragging college, importance of computers, importance of communication skill, importance of science and technology etc., Translation (Hindi to English and vice- versa).

## **UNIT – V : UNSEEN PASSAGES & PRECIS WRITING**

Answer the questions based on the passage. Give suitable title, Writing Précis

# SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P)

## NAME OF COURSE ( SUBJECT ) PHYSICS

### Unit – I

**UNITS & MEASUREMENT:** Fundamental and derived units, Scalar and vector, Basic requirements to represent vector, Symbols, abbreviation, and proclation, Linear measurement by vernier calipers, screw gauge and spherometer  
Angular measurement by angular vernier,

**MOTION:** Motion and its type, Linear motion (laws and equation), Circular motion, Angular velocity and relation with linear velocity, Centripetal acceleration, Centripetal and Centrifugal forces

Rotatory motion, Axis of rotation, Moment of Inertia, Radius of gyration, Kinetic energy of rotation, Numerical Problems and solution on the topic.

### Unit – II

**Molecular Phenomenon Of Solids, Liquids And Gases:** Postulates Of Molecular Kinetic Theory Of Structure of Matter, Brownian motion, Kinetic and Potential energy of molecules, Kinetic theory of gases, Postulates, Calculation of pressure by Kinetic theory, Prove of different gases law by Kinetic theory.

**PROPERTIES OF MATTER:** Elasticity: Meaning, definition, stress, strain, Hook's law and elastic limit, Surface Tension : Meaning, definition, molecular forces, cohesive and adhesive forces, surface energy, capillary rise and capillary rise method. Viscosity : Meaning, definition, stream line and turbulent flow, critical velocity, Stock's law. Numerical problems and solution on the topic.

### Unit – III

**HEAT:** Heat and temperature, concept of heat as molecular motion, Transmission of heat, study state and variable state. Concept of heat capacity, specific heat and latent heat. Calorimeter and its uses, Thermodynamics , Relation between heat and work, Mechanical equivalent of heat, First law of thermodynamics and its application, Second law of thermodynamics and its application. Carnot cycle, Numerical problems and solution on the topic.

**Heating effect of current and thermoelectricity:** Heating effect of electric current: Joule's law, work energy and power in electric circuit, calculation of electric energy. Thermo electricity, See back effect and thermoelectric power. Neutral temperature, emperature of inversion and relation between them, Thermo electric thermometer and thermo couples. Numerical problems and solution on the topic.

### Unit – IV

**SOUND:** Production of sound waves( Longitudinal and transverse waves), Progressive and stationary waves, Basic knowledge of refraction , reflection, interference and diffraction. Ultrasonic, Audible range, Production of ultrasonic, properties and uses,

**OPTICS AND OPTICAL INSTRUMENTS:** Refraction, critical angle and total internal reflection, refraction, through lenses and problems, Power of lenses, Spherical and chromatic aberrations, Simple and compound microscope, telescope and derivation for their magnifying power, Numerical problems and solution on the topic.

### Unit – V

**ELECTROSTATICS AND ELECTROMAGNETIC INDUCTION:** Coulomb's law, Electric field intensity, potential. Capacity, principle of capacitor, types of capacitor, combination of capacitors, Electromagnetic Induction: Faraday's law, Lenz's law, Self and mutual inductance, Transformer and electric motor, Induction coil.

**MODERN PHYSICS, BASIC ELECTRONICS:** Photoelectric effect, threshold frequency, Einstein- equation, Photo electric cells, Radioactivity : decay constant, Half life, mean life, Properties of nucleus, nuclear mass, mass defect, Production of x-rays, properties and its uses, Thermal emission, semiconductors, Types of semiconductors, Explanation of conductor, semiconductor and insulators on the basis of band theory, P-N junction, diode as rectifier.

**SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P)**  
**NAME OF COURSE ( SUBJECT ) PHYSICS**

**S.NO. LIST OF EXPERIMENTS**

1. Refractive index of prism ( I-d ) curve
2. Refractive index of prism ( spectrometer )
3. Focal length of a convex lens by u-v method
4. Focal length of a convex lens by displacement method
5. Verification of Ohm's law
6. To find out unknown resistance by meter bridge
7. To find out internal radius of hollow tube by vernier calipers.
8. To find out volume of given cylinder by screw gauge.
9. Surface tension by Capillary rise method.
10. Coefficient of viscosity
11. Coefficient of Thermal conductivity by searl's method.
12. Verification of Newton's cooling law.

**SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P)**  
**NAME OF COURSE ( SUBJECT ) PHYSICS**

**S.NO. LIST OF EQUIPMENTS**

- 1 VERNIER CALIPER
- 2 SCREW GUAGE
- 3 OPTICAL BENCH
- 4 SEARLS APPRATUS FOR "Y"
- 5 SEARLS APPRATUS FOR "K"

# SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P)

## NAME OF COURSE ( SUBJECT ) CHEMISTRY

### Unit – I

**ATOMIC STRUCTURE AND RADIOACTIVITY :** Discovery of electron, proton, neutron and nucleus. Rutherford's and Bohr's model of atom. Bohr-Bury scheme of filling the electrons in various orbits. Idea of s, p, d, f orbital. Alpha, Gamma and Beta rays, theory of radio activity, Group displacement law, half life period, numerical problems on half life period, fission and fusion.

**SURFACE CHEMISTRY AND ITS APPLICATION:** True solution, colloidal solution and suspension, lyophobic and lyophilic colloids, optical and electrical properties of colloids, coagulation, coagulants, idea about gels and emulsions.

**ELECTROCHEMISTRY:** Electrolysis, Faraday's laws of electrolysis, Numerical problems on Faraday's Law, electroplating of copper and nickel.

**COLLIGATIVE PROPERTIES:** Osmosis & osmotic pressure, Relative vapour pressure and Raoult's law. Internal energy (enthalpy) Entropy, Entropy function free energy, Effect of change in temperature catalysis.

### Unit – II

**CHEMICAL BONDING AND CATALYSIS:** Bonding: Nature of bonds- Electrovalent, Co-valent, co-ordinate and hydrogen bond. Catalysis : Types, theory characteristic, positive, negative, auto and induced catalyst. Catalytic Promoter, and catalytic inhibitors. Industrial Application of catalysis.

**WATER :** Sources of water, types of water, hardness of water, its causes, types and removal, Boiler feed water, harmful - effects of hard water in boiler. Municipal water supply. Numerical on soda lime process. Determination of hardness of water by O. Hender's, EDTA and soap solution method.

### Unit – III

**METALS AND ALLOYS :** Physical and chemical properties of metals, copper, iron, aluminum, tin, nickel. General principle of metallurgy, minerals/ ores, ore dressing, roasting, smelting, base metalisation, fluxes, purification. Explanation of alloying purposes, methods of alloying, composition and uses of alloy like brass, bronze, duralium, German silver, gun metal, solder, stainless steel, casting and bearing alloy.

**Ionization, pH value corrosion and protection:** Arrhenius theory of ionization, factors affecting ionization. pH meaning (numerical), Buffer solutions and Buffer actions, choice of indicator (acidimetry and alkalimetry). Explanation of corrosion, types of corrosion, factors affecting corrosion, corrosion control (protection against corrosion), metal and organic coating for corrosion control.

### Unit – IV

**Glass, Cement and Refractory:** Glass: Basic raw materials for glass, composition and manufacture of glass, varieties of glass and annealing of glass, Cement : Constituting compounds in cement, Composition of Portland Cement, its manufacture, setting and hardening of cement. Refractories : Meaning, characteristics, use of common refractory materials.

**HIGH POLYMERS, RUBBER AND INSULATORS:** Polymerization and condensation, classification of plastics, Compounding and Moulding constituents of plastics. Preparation Properties and uses of PVC, polyethylene, polystyrene, polyamides, polyesters, Bakelite. Synthetic fibers - nylon, rayon, decron, and polyesters. Definition characteristics, classification and properties of insulators. Glass, wool and thermocole. Idea about rubber and vulcanization.

### Unit – V

**Lubricants, Paints and Varnishes:** Lubricants: Meaning, type and theory of lubricants, properties of a good lubricant, Flash, and fire point and cloud point, emulsification number, viscosity. Paints and Varnishes : Meaning, ingredients and characteristics of good paints and varnishes, their engineering applications.

**FUELS, FIRE EXTINGUISHERS AND EXPLOSIVES** : Classification of fuel, gross and net calorific value, Determination of a solid fuel by bomb calorimeter , octane and octane number. Proximate analysis of fuel, its utility, crude petroleum, products of fractional distillation . Fire extinguishers - Description and use. Explosives - Meaning, types, characteristic and use of explosives. Name Dynamite, lead azide, T.N.T., Picric acid, R.D.X. **Pollution and control** : Introduction and chemical toxicology, air and water pollution, control of air and water pollution. Harmful effect of different gases like carbon mono-oxide, carbon dioxide, sulphur dioxide, nitric oxide, nitrous and lead.

**SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P)**  
**NAME OF COURSE ( SUBJECT ) CHEMISTRY**

**S. NO. LIST OF EXPERIMENTS**

01. To identify one Anion and Cation in a given sample.
02. Determination of flash point and fire point of a given sample of oil by Abel's apparatus.
03. Determination of viscosity by Red Wood Viscometer no. 1 and no.2.
04. Redoximetry Titration :
  - a. Percentage of Iron in given sample of alloy.
  - b. Determination of strength of ferrous ammonium sulphate.
  - c. Determination of strength of anhydrous ferrous sulphate and ferrous sulphate.
05. Determination of hardness of water by :
  - a. EDTA Method and Soap Solution Method
06. Determination of solid content in the given sample of water.
07. Determination of percentage of moisture in the given sample of coal by proximate analysis.



# SWAMI VIVEKANAND UNIVERSITY, SAGAR (M.P)

## NAME OF COURSE ( SUBJECT ) MATHEMATICS

### Unit – I

**ALGEBRA:** Permutation- Meaning of factorial n, Permutation of 'n' dissimilar thing taken 'r' at a time. Combination  
Combination of n dissimilar things taken 'r' at a time, Binomial Theorem, Statement of the theorem for positive integer  
General Term, Middle term, Constant term, Partial Fractions, Define a proper-improper fraction, Break a fraction into  
partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors. Determinant,  
Concept & principles of determinants, Properties of determinant, Simple examples. Complex Numbers, Algebra of  
Complex

### Unit – II

**TRIGONOMETRY :** Allied angles. Trigonometrical ratios of sum and difference of angles, (Only statement), Sum and  
difference of trigonometric ratios (C-D formula), Multiple angles (Only double angle and half angle), Properties of triangle  
(without proof).

**MATRIX :** Definition of Matrix. Types of Matrix. Row, Column, Square, Unit, Upper and lower triangular, Symmetric  
& Skew Symmetric, Singular and non Singular Matrices. Adjoint of a Matrix. Inverse of a Matrix.

### Unit – III

**CO-ORDINATE GEOMETRY :** Co-ordinate System : Cartesian and Polar. Distance, Division, Area of a triangle.  
Locus of a point and its equation. Slope of St. Line, Angle between two St. lines. Parallel and perpendicular St. lines.  
Standard and general equation of St. line. Point of intersection of two st lines.

**STATISTICS :** Measures of Central tendency (Mean, Mode, Median), Measures of Dispersion (Mean deviation,  
standard deviation).

### Unit – IV

**DIFFERENTIAL CALCULUS :** Define constant, variable, function. Value of the function. Concept of limit of a  
function. Definition and concept of differential coefficient as a limit. Standard results. Derivatives of sum, difference,  
product, quotient of two functions. Diff coeff. of function of a function. Diff. coeff. of implicit function. Logarithmic  
Differentiation. Differential coeff. of Parametric function.

### Unit – V

**INTEGRAL CALCULUS :** Definition as a inverse process of differentiation, Standard Results (including inverse  
function), Methods of Integration, Substitution, Integration by parts, Breaking up into partial fraction, Concept of  
Definite Integral.

**VECTOR ALGEBRA :** Concept of Vector and Scalar Quantities. Different types of vectors.

Addition and subtraction of vectors. Components of a vector, Multiplication of two vectors: Scalar Product, Vector  
Product, Applications (Work done, power & reactive power).



# SWAMI VIVEKNAND UNIVERSITY SAGAR (M.P.)

## SEMESTER-II

SUBJECT: APPLIED MECHANICS

SUBJECT CODE: PT201

### UNIT I

#### COMPOSITION AND RESOLUTION OF FORCES

Definition, Effect, characteristics of force, System of Forces, Principle of Transmissibility of Forces, Concept of Resultant Force, Law of –Parallelogram of Forces, Triangle of Forces, Polygon of Forces Determination of Resultant of two or more concurrent forces (analytically and graphically)

#### PARALLEL FORCES AND COUPLES

Classification of Parallel Forces, Methods of finding resultant Force of parallel forces- analytically & graphically, Position of resultant force of parallel forces- Definition, Classification and characteristics of a force Couple, moment of couple

### UNIT II

#### MOMENTS AND THEIR APPLICATIONS

Definition, Types and law of moment-Varignon's Principle of moment and its applications Lever and its Applications. Types of supports and determination of support reactions of a simply supported beam subjected to point load and uniformly distributed load (UDL).

#### EQUILIBRIUM OF FORCES

Equilibrium of a system of concurrent forces, Conditions and types of Equilibrium Lami's Theorem and its applications.

### UNIT III

#### CENTRE OF GRAVITY

Difference between Centroid and Center of Gravity (CG), Centroid of standard plane figures and CG of simple solid bodies, Method of finding out Centroid of composite plane laminas and cut sections, Method of finding out CG of Composite solid bodies.

#### FRICTION

Concept and types of friction, Limiting Friction, coefficient of friction, angle of friction, angle of repose, Laws of friction (Static and Kinetic), Analysis of equilibrium of Bodies resting on Horizontal and inclined Plane, Utility / Nuisance value of friction.

### UNIT IV

#### SIMPLE LIFTING MACHINES

Concept of lifting Machines, Definition of Mechanical Advantage, Velocity Ratio and Efficiency of Machines and their relation Reversibility of Machines and condition for self locking machine, Law of Machines, Maximum mechanical advantage and maximum efficiency of machine, Friction in machine (In terms of Load and effort), Calculation of M.A., V.R. and efficiency of following machines, Simple wheel and axle Differential wheel and axle Single purchase crab Double purchase crab Simple screw jack, Different System of simple pulley blocks.

#### MOTION OF A PARTICLE

Definition of speed, velocity, acceleration, uniform velocity, uniform acceleration and variable acceleration, Motion under constant acceleration/ retardation (equations of motion) Motion under force of gravity, Concept of relative velocity, Definition of projectile, velocity of projection, angle of projection, time of flight, maximum height, horizontal range and their determination, Definition of angular velocity, angular acceleration and angular displacement, Relation between linear and angular velocity of a particle moving in a circular path, Motion of rotation under constant angular acceleration.

## UNIT V

### LAWS OF MOTION

Newton's Laws of motion and their applications.

### WORK, POWER AND ENERGY 10

Definition unit and graphical representation of work, Definition and unit of power and types of engine power and efficiency of an engine. Definition and concept of Impulse, Definition, unit and types of energies, Total energy of a body falling under gravity.

S. NO.	REFERENCE BOOKS
01.	A text book of Applied Mechanics – R.S. Khurmi , S.C. Chand & Co. , New Delhi
02.	Applied Mechanics – I.B. Prasad, Khanna Publishers, New Delhi
03.	Applied Mechanics ( Hindi) – R.S. Jog, Anand Publishers, Gwalior Applied
04.	Mechanics ( Hindi) – A.R. Page, Deepak Prakashan, Gwalior

S. NO.	LIST OF EXPERIMENTS
01.	Verification of laws of parallelogram of forces.
02.	Verification of laws of polygon of forces
03.	Verification of laws of moments
04.	Determination of forces in the members of Jib Crane
05.	Determination of Centroid of plane lamina by graphical method
06.	Determination of coefficient of friction for surfaces of different materials on horizontal plane
07.	Determination of coefficient of friction for surfaces of different materials on an inclined plane Determination of mechanical advantage, velocity ratio and efficiency of the following lifting machines.
08.	Simple wheel and axle Differential wheel axle Single purchase crab Double purchase crab Simple pulley block Simple screw jack
09.	Measurement of B.H.P. of an engine using rope break dynamometer



# SWAMI VIVEKNAND UNIVERSITY SAGAR (M.P.)

SUBJECT: ENVIRONMENTAL ENGINEERING & SAFETY

SUBJECT CODE: PT202

## UNIT I

### INTRODUCTION TO ENVIRONMENT.

The Biosphere, biotic and abiotic, An aquatic ecosystem, Types of pollution, Impact of human being on environment, Impact of environment on human being, Basic approach to improve environmental qualities, Roll of an environmental engineer.

### AIR POLLUTION SOURCES AND EFFECTS

Standard definition of air pollution, Composition of natural air, Names of air pollutants, Classification of air pollutants, primary and secondary pollutants, Classification of source of air pollutants on different bases, Definition of different types of aerosols, Effect of air pollution on: human health, material properties, vegetation, Major toxic metals and their effects, Major environmental phenomenon e.g., acid rain, global warming, green house effect, ozone layer depletion, Air quality standards, Brief description of air pollution laws.

## UNIT II

### METEOROLOGICAL ASPECTS OF AIR POLLUTANT DISPERSION

Meteorological parameters influencing air pollution, Environmental lapse rate, temperature inversion, atmospheric stability and adiabatic loss rate, Turbulence, topographical effects, Plume behavior, looping, coning, fanning fumigation, lofting, trapping.

### AIR POLLUTION CONTROL METHODS AND EQUIPMENTS

Natural purification processes of air, Artificial purification methods of air, Brief description of following control equipments along with sketch e.g, gravitation settling chamber, cyclone, scrubber, bag house filter, electrostatic precipitator, Brief description of following processes for the control of gaseous pollutants e. g., absorption, adsorption, condensation, combustion etc

## UNIT III

### WATER POLLUTION SOURCES AND CLASSIFICATION

Water resources, Uses of water, Classification of water, Origin, composition and characteristics of domestic waste water as well as industrial waste water, Biochemical oxygen demand, Water pollution laws and standards, Uses of waste water, Classification of waste water, Chemical oxygen demand.

### WASTE WATER TREATMENT METHOD

basic processes of water treatment. Meaning of primary, secondary and tertiary treatment. Flow chart of a simple effluent treatment plant, Theory of industrial waste treatment, Volume reduction, neutralization and proportioning.

## UNIT IV

### SOLID WASTE MANAGEMENT

Sources and classification of solid waste, Public health aspects, Disposal methods – open dumping, sanitary, land fill. Incineration, composting, Potential methods of disposal, Recovery and recycling of paper, glass, metal and plastic.

### NOISE POLLUTION AND CONTROL

Sources of noise pollution, Units of Noise pollution measurement, Allowable limits for different areas, Problems of noise pollution and measures to control it, Noise pollution control devices brief discussion.

## UNIT V

### SAFETY PRACTICES

Responsibility of employees and employers regarding health and safety, Fire hazards, prevention and precautions, Industrial hazards prevention and protection, Protection from air and noise pollution.

S.NO.	REFERENCE BOOKS
1	Environmental pollution control Engineering by C.S. Rao
2	Air pollution and control by Seth
3	Air pollution by M.N Rao
4	Industrial waste and its treatment by Seth
5	Paryavaran Yantriki Hindi granth akadami

S.NO.	LIST OF PRACTICALS
1	<p><b>GROUP A AIR POLLUTION ( Any one experiment may be selected from this group)</b></p> <ol style="list-style-type: none"> <li>1. Air monitoring and determination of SPM , CO, Nox, SO2 with high volume sampler.</li> <li>2. Monitoring of stack gases and determination of SPM , CO, Nox, SO2 with slack monitoring kit.</li> <li>3. Determination of CO,HC, in exhaust gases from petrol vehicle</li> </ol>
2	<p><b>GROUP B NOISE POLLUTION</b></p> <ol style="list-style-type: none"> <li>4. Determination of sound pollution in (a) Auditorium (b) Factories (c) Busy roads (d) Theatre (e) TV rooms ( select any three situations)</li> </ol>
3	<p><b>GROUP C INDUSTRIAL WASTE WATER (Any Two experiment may be selected from this group)</b></p> <ol style="list-style-type: none"> <li>5. Determination of BOD/COD ratio in industrial waste water.</li> <li>6. Determination of Ph and alkanity/ acidity in industrial waste water.</li> <li>7. Determination of solids in industrial waste water.</li> <li>8. Determination of turbidity, colour, and temperature of industrial waste water.</li> </ol>
4	<p><b>GROUP D POLLUTION STANDARDS(Any Two experiment may be selected from this group)</b></p> <ol style="list-style-type: none"> <li>9. Study of drinking water standards.</li> <li>10. Study of effluent standards for water disposal.</li> </ol> <p>Study of air pollution standards.</p>



# SWAMI VIVEKNAND UNIVERSITY SAGAR (M.P.)

SUBJECT: INTRODUCTION OF COMPUTERS.

SUBJECT CODE: PT203

## UNIT- I

### INTRODUCTION TO COMPUTERS

**Basic Concepts**-Generations of Computers Overview of computer Systems Classifications of Computers Characteristics of Computers Applications of Computers.

**Numbers System & Codes**-Decimal, Binary, Octal, Hexadecimal Conversions from one system to other Binary Coded Decimal & ASCII Code

### Computer Hardware

**Input Devices**-Keyboard, Mouse, Trackball, Joystick, Scanner, OMR OCR Bar-Code Reader, MICR, Digitizer, Card Reader, Voice Recognition, Web Cam, Video Cameras, Etc.

**Output Devices**-Monitors, Printers : Dot matrix, Inkjet & Laser, Plotters, Commuter, Output Micro Film (COM), Multimedia Projector, Speech Synthesizer, Dumb, Smart & Intelligent Terminal.Storage Devices

## UNIT- II

**Primary and Secondary Storage**- Characteristics and Limitation, Floppy, Hard disk, CD ROM DVD, Disk Cartridge.

**Microprocessor**-Registers, Arithmetic Unit, Control Unit, Buses, Instruction Set, Processor Speed.,Memory Concepts.

**Concept of Memory**-Unit of Memory, Types of Memory, RAM,ROM, PROM, EPROM, EEPROM, Cache Memory.

**Computer Software**-System Software Vs Application Software, Operating System Programs, Language Processor, Assembler, Compiler & Interpreter,Application Software, Types of Application Software and their examples., High Level Language, Low Level Language, Assembly Language.

**Multimedia**-Basics of Multimedia,Components- Tex, Graphics, Animation, Audio, Images & Video. Multimedia Applications.

## UNIT-III

### OPERATING SYSTEM

**Overview of DOS**- Internal Commands, External Commands

**Windows Operating System**-Overview of different versions of Windows Characteristics and Facilities of Windows, Terminologies of Windows – Desktop, Icon, Menu etc. Components of Desktop. Working with Files and Folders.

**Windows Utilities and Accessories** – Notepad, WordPad, Paintbrush, Windows Explorer, Calculator.

**Introduction to Linux**- An overview of Linux, Basic Linux elements System, Features Software, Features File structure, Linux H/W & S/W requirements.

## UNIT IV

### WORD PROCESSING

Saving, Closing, Opening of documents, Selecting text Editing text, Finding and replacing text\ Printing documents, Merge Documents. Character and paragraph Formatting, Page Design and layout

Spell Check, Creating Tables and Charts. Handling Graphics

### SPREADSHEET PACKAGE

Spreadsheet concept – Need, advantage, Terminology like cell, row, column etc. Working with **Spreadsheet**– Creating, Saving, Editing and printing, Entering data – Entering number, text, date, time etc. Selecting cells – Cut, copy, paste date, Editing Worksheet data. **Formatting** – Text and Cells, Applying border shading, background patterns, conditional formats, positioning cells, formatting numbers, text, Date, time. **Creating formulas**- Entering, Editing, Using Functions, Controlling calculations. Working with Charts- Creating charts, Adding & changing text, changing the view and display, types of charts.

### Presentation Software

Introduction Presentation design tools Presentation terminologies, Creating, Opening and Saving Presentation. Working with different views Creating and Organizing slides, Adding and Formatting text in slides Formatting paragraphs Adding drawings and objects Creating special effects Working with table and charts Printing Presentation

## UNIT V

### Database

**Introduction** – need, Characteristics and terminologies of database

**Types of database** – relational, Hierarchical and Network

**Basic entities** – Tables, records, Data types, Data, Validation and constraints, keys relation between tables.

**Query** – Select, Insert, Update, Delete. Forms – Creating forms, Forms controls Report Designer- Customize formats, grouping reports.

### Computer Communication & Networks

**Information Networks-** The Technology of Workgroup Computing, Types of network, Network topology, Network components

**Data Communication-** Introduction to Data Communication, Types of Data, Transmission media

**Internet and E-mail-** Internet Basics, Websites- Applications, terminologies, naming conventions., Web Browsers- Types, Navigation and tools, E-mail – concept, terminologies, mailing services provider, advantages comparison with Conventional mailing

Search engine – concept, search engine websites, searching methods.

S. NO.	REFERENCE BOOKS
01.	S . Jaiswal, A First Course in Computers, Golgotha Publication
02.	Slotnick, Butterfield, Colantonio and Kopetzky, Computers & Application, C.C. Health & Company
03.	Suresh K. Basandra, Computers Today, Galgotia Publication
04.	Ron Mansfield, The Complete Guide to Microsoft Office Professional, Sybex /BPB Asian Edition
05	Norton Peter, Inside IBM PC
06	Hardware Bible, BPB Publication
07	Computer Hardware, Osborne Series
08	Computer Hardware, Osborne Series
09	DOS & Utilities, BPB Publication
10	Learning Windows in 24 Hours, Sam Techmedia
11	Tay Vaughan, Multimedia Making it work, Tata McGrawHill
	Chapman, Understanding windows, BPB Publication

### LIST OF EXPERIMENTS

1. Study of various components of computer like CPU, keyboard, mouse, monitor, printer, CVT and storage devices.
2. Internal and external commands of DOS.
3. Using Windows operating system, study of desktop, control panel, accessories and settings.
4. File management in windows explorer, Study of WordPad, NotePad, PaintBrush, Calculator etc. Study of Linux operating system.
5. **Study of MS-word** – opening and saving of documents, formatting, editing and spell check, find and replace, printing, merging. Creating Table, Charts and Graphics.
6. **Study of Spreadsheet** – creating, saving, editing and printing. Entering data, selecting cells, formatting text, applying border shades and backgrounds, creating formulas, creating charts.
7. **Study of Power Point** – creating, opening, editing and saving of slides. Adding and formatting text, creating, animations, working with images and special effects. Printing presentation.
8. **Study of MSAccess**– creating, saving, editing and printing of tables. Managing relationships, writing queries e.g.
9. SELECT, UPDATE, DELETE, INSERT. Forms designing and report printing.
10. Study of Web Browser and mailing programs.





# SWAMI VIVEKNAND UNIVERSITY SAGAR (M.P.)

SUBJECT: ENGINEERING DRAWING

SUBJECT CODE: PT-204

**NOTE:** ONLY FIRST ANGLE PROJECTION METHOD IS TO BE FOLLOWED

## UNIT I

### INTRODUCTION TO DRAWING INSTRUMENTS:

Introduction of drawing instruments, materials and their uses, Applications of minidrafter Applications of compass and divider Applications of French curves and spline Pencils grades and their uses, Designation and sizes of drawing sheet and drawing board.

### PLANNING AND LAYOUT OF DRAWING SHEET:

Planning of drawing sheet as per I.S.: 696-1972 (SP 46: 1988). This should include- Margin, Title Block, Zoning, Revision panel, Folding marks, Numbering of sheet.

### CONVENTIONAL REPRESENTATION:

Conventional representation of the following as per BIS practice

#### Common Engineering materials

**Electrical installations and fittings** – Main switches, (lighting and power), socket outlets (3 pin 5AMP, 3pin15AMP), bell, buzzer, loud speaker, Aerial, ceiling fan, exhaust fan, Bracket fan, fan regulator, battery and earth point.

**Electronics components-** Diode: Zener, varactor, Scotty, step recovery, light emitting diode (LED), PNP and NPN transistors, resistance, capacitor, Inductors (fixed and variable both), IC (8pin and 14pin), SCR, TRIAC, DIAC, UJT, FET, MOSFET, LOGIC GATES.

**Sanitary fittings-** showerhead, wall lavatory basin, corner Lavatory basin, urinal stall, kitchen sink, Indian type WC, Water closets (Asian pan, urissapan, Anglo-Indian, European)

**Building** -single and double swing doors and windows.

**Mechanical components-** Internal and external threads, slotted head, Square end and flat, radial arms and ribs, serrated shaft, splined shaft, Chain wheel, bearing, straight and diamond knurling, Compression and tension spring, leaf spring (with and without eye), Spur and helical gear.

### LINES, LETTERING AND DIMENSIONING:

Introduction of type of lines and their applications, Single stroke vertical, inclined letters (capital and lowercase) And numerals. Dimensioning: Elements of dimensioning- dimension line, extension line, arrowhead And leader line

**Dimensioning system** – Aligned and unidirectional. Dimensioning of Arcs and Circles. Angular Dimensioning.

**Dimension of counter sunk and counter bore.**

## UNIT II

### GEOMETRICAL CONSTRUCTIONS AND ENGINEERING CURVES

Divide a line into any number of equal parts by parallel line method, Bisecting of line and angle. Construction of triangles and polygons Introduction of conic sections (curves), Construction of Ellipse by Eccentricity and Concentric circles methods, Construction of Parabola by Eccentricity and Rectangle methods, Construction of Hyperbola by Eccentricity method, Construction of Cycloid, Construction of Involute of circle and polygon, Construction of Archimedean Spiral of any number of convolutions

### SCALES:

Introduction of scales and their applications, Concept of reducing, enlarging and full size scale Classification of scales – plain, diagonal, vernier, Scale of chord and comparative scales Definition of R.F. Construction of plain and diagonal scales.

### UNIT III

#### **THEORY OF PROJECTION AND PROJECTION OF POINTS, LINES AND PLANES**

Definition of various term associated with theory of projection- Planes of projection, Quadrants, first & third angle projection method, Projection of points in all the four quadrants. **Projection of lines-** parallel to HP and VP both, perpendicular to one plane and parallel to other, Inclined to one plane and parallel to other, knowledge of projection of line inclined to both the plane, (No practice required) **Projection of planes** – Perpendicular to HP and VP both, Perpendicular to one plane and parallel to other, Inclined to one plane and perpendicular to other, Knowledge of projection of plane inclined to both the planes

### UNIT IV

#### **PROJECTIONS OF SOLIDS:**

Projection of cylinder, cone, prism and pyramid. **Under the conditions** :- Axis parallel to HP and VP, Axis perpendicular to HP and parallel to VP, Axis perpendicular to VP and parallel to HP, Axis inclined to HP and parallel to VP, Axis inclined to VP and parallel to HP, Axis inclined to both HP and VP.

#### **SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES:**

Section of cone, cylinder, prism and pyramid

(Solid resting on its base in the HP i.e. the Axis perpendicular to HP and parallel to VP) in the cases:- Section plane parallel to HP and perpendicular to VP, Section plane parallel to VP and perpendicular to HP, Section plane inclined to HP and perpendicular to VP, Section plane inclined to VP and perpendicular to HP. Drawing True shape of section.

#### **Introduction to development of lateral surface of solids-**

Cone, Cylinder, Prism and Pyramids (Simple and truncated). Under the condition – solid resting on its base in the HP and axis Perpendicular to HP and parallel to VP. Development of funnel and elbow

#### **INTERSECTION OF SURFACES**

Intersection of following cases – Cylinder to cylinder and Prism to prism (With their axis intersecting and perpendicular to each other.)

### UNIT V

#### **ORTHOGRAPHIC PROJECTIONS & FREE HAND SKETCHING:**

Principles of orthographic projections- Identification of necessary views and superfluous view  
Selection of front view. Preparation of necessary orthographic views of simple objects  
From given pictorial views. Dimensioning of orthographic views as per standard practice.  
Free hand sketches of simple objects (Using Pencil, Eraser & Paper only)

#### **ISOMETRIC VIEWS**

Concept of isometric projection and isometric view (Isometric Drawing), Construction of isometric scale, Construction of isometric view of polygon and circle, Construction of isometric view of cone, cylinder, prism and pyramids, Construction of isometric view of simple objects from given orthographic views.

1	ENGINEERING DRAWING	– N.D. Bhatt
2	ENGINEERING DRAWING	– R.K. Dhawan
3	ENGINEERING DRAWING	– P.S.Gill
4	FIRST YEAR ENGINEERING DRAWING	– A.C.Parkinson
5	SP: 46-1988 Bureau of Indian standard	
6	PRINCIPLES OF ELECTRONICS	- Malvino
7	ADHIVANTDIK ADEKLIAN	Shivdatt Hoodhwar