SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL

DIPLOMA IN ENGINEERING
BRANCH: MECHANICAL
GRADING SYSTEM
I SEM / I YEAR

Implemented w.e.f. July -2015

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT								THEORY CREDIT	PRACTICAL COMPONENT						PRACTICAL CREDIT	TOTAL CREDIT	GRAND TOTAL OF MARKS
			LECTURES	CONTINUOUS VALUATION	MID TERM TEST (TWO)		END OF THE TERM/SEMESTER VALUATION					PRACTICAL Hrs. PER WEEK	CONTINUOUS VALUATION	END OF THE TERM/SEMESTER VALUATION					
			Hrs. PER WEEK	TERM WORK,QUIZ ASSIGNMENT	I	II	NO.	MARKS (THEORY PAPER)	DURATION (Hrs.)				LAB WORK QUIZ ,ASSIGNMENT	NO.	MARKS (PRACTICAL/ORAL EXAMINATION (VIVA))	DURATION (Hrs.)			
101	APPLIED MECHANICS	6000	05	10	10	10	01	70	03	05	02	20	01	30	03	01	06	150
102	ENVORNMENTAL ENGINEERING AND SAFETY	2001	05	10	10	10	01	70	03	05	02	20	01	30	03	01	06	150
103	INTRODUCTION TO COMPUTERS	5000	05	10	10	10	01	70	03	05	02	20	01	30	03	01	06	150
104	ENGINEERING DRAWING	6001	06	10	10	10	01	70	03	06	-	-	-	-	-	-	06	100
105	WORKSHOP PRACTICE	6002	…	…	…	…	…	…	…	…	04	40	01	60	03	02	02	100
106	PROFESSIONAL ACTIVITIES (PA)	…	…	…	…	…	…	…	…	…	02							
	TOTAL		21	40	40	40	04	280		21	12	100		150		04	26	650

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THEORY CREDITS        : 21          THEORY MARKS              : 280
PRACTICAL CREDITS     : 05          PRACTICAL MARKS           : 150
TOTAL CREDITS         : 26          QUIZ, MID TERM, LAB WORK  : 220
                                    TOTAL                     : 650
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SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL

PROGRAMME: DIPLOMA IN ENGINEERING
BRANCH: MECHANICAL
GRADING SYSTEM
II SEM / I YEAR   Implemented w.e.f. July -2015

COURSE CODE	COURSE TITLE	PAPER CODE	THEORY COMPONENT								PRACTICAL COMPONENT						TOTAL CREDIT	GRAND TOTAL OF MARKS
			LECTURES	CONTINUOUS VALUATION	MID TERM TEST (TWO)		END OF THE TERM/SEMESTER VALUATION THEORY PAPER			THEORY CREDIT	PRACTICAL Hrs. PER WEEK	CONTINUOUS VALUATION	END OF THE TERM/SEMESTER VALUATION PRACTICAL/ORAL EXAMINATION (VIVA)			PRACTICAL CREDIT		
			Hrs. PER WEEK	TERM WORK,QUIZ ASSIGNMENT	I	II	NO.	MARKS	DURATION (Hrs.)			LAB WORK QUIZ ,ASSIGNMENT	NO.	MARKS	DURATION (Hrs.)			
01	COMMUNICATION SKILL	4000	06	10	10	10	01	70	03	06							06	100
02	PHYSICS	1000	05	10	10	10	01	70	03	05	04	20	01	30	03	02	07	150
03	CHEMISTRY	2000	05	10	10	10	01	70	03	05	04	20	01	30	03	02	07	150
04	MATHEMATICS	3000	06	10	10	10	01	70	03	06	-	-	-	-	-	-	06	100
05	PROFESSIONAL ACTIVITIES (PA)	-	-	-	-	-	-	-	-	-	02	-	-	-	-	-	-	-
	TOTAL	-	22	40	40	40	04	280		22	10	40	02	60		04	26	500

THEORY CREDITS	: 22		THEORY MARKS	: 280	
PRACTICAL CREDITS	: 04		PRACTICAL MARKS	: 60	
TOTAL CREDITS	: 26		QUIZ, MID TERM, LAB WORK	: 160	
			TOTAL	: 500	

CURRICULUM

FOR

DIPLOMA IN

ENGINEERING (COMMON)

(FIRST SEMESTER & SECOND SEMESTER)

Implemented from session 2015-16

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **APPLIED MECHANICS**

PAPER CODE: **6000**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS

1.	**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)

2.	**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
3.	**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)

S.NO.	TOPIC	CONTENTS
4.	EQUILIBRIUM OF FORCES	Equilibrium of a system of concurrent forces Conditions and types of Equilibrium Lami's Theorem and its applications
5.	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
6.	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
7.	SIMPLE LIFTING MECHINES	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
8.	MOTION OF A PARTICLE	Definition of speed, velocity, acceleration, uniform velocity, uniform acceleration and variable acceleration

S.NO.	TOPIC	CONTENTS
		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 light, 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
9.	LAWS OF MOTION	Newton's Laws of motion and their applications
10.	WORK, POWER AND ENERGY	Definition unit and graphical representation of work **Definition and unit of power and typesof 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**

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **APPLIED MECHANICS**

PAPER CODE: **6000**

NO.	NAME OF THE EXPERIMENT
1	Verification of laws of parallelogram of forces.
2.	Verification of laws of polygon of forces
3.	Verification of laws of moments
4.	Determination of forces in the members of Jib Crane
5.	Determination of Centroid of plane lemina by graphical method
6.	Determination of coefficient of friction for surfaces of different materials on horizontal plane
7.	Determination of coefficient of friction for surfaces of different materials on an inclined plane
8.	Determination of mechanical advantage, velocity ratio and efficiency of the following lifting machines ☐ Simple wheel and axle ☐ Differential wheel axle ☐ Single purchase crab ☐ Double purchase crab ☐ Simple pulley block ☐ Simple screw jack
9.	Measurement of B.H.P. of an engine using roap break dynamometer

SARVAPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL (M.P.)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **APPLIED MECHANICS**

PAPER CODE: **6000**

REFERENCES

1. A text book of Applied Mechanics – R.S. Khurmi , S.C. Chand & Co. , New Delhi

2. Applied Mechanics – I.B. Prasad, Khanna Publishers, New Delhi

3. Applied Mechanics (Hindi) – R.S. Jog, Anand Publishers, Gwalior

4. Applied Mechanics (Hindi) – A.R. Page, Deepak Prakashan, Gwalior

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **ENVIRONMENTAL**
ENGINEERING AND SAFTY   PAPER CODE: **2001**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
1.	**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 - Role of an environmental engineer
2.	**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

S.NO.	TOPIC	CONTENTS
3.	METEOROLOGICAL ASPECTS OF AIR POLLUTANT DISPERSION	Meteorological parameters influencing air pollution Environmental laps rate, temperature inversion, atmospheric stability and adiabatic loss rate. Turbulence, topographical effects, Plume behavior, looping, coning, fanning fumigation, lofting, trapping.
4.	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

5.	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

6.	WASTE WATER TREATMENT METHOD	Chemical oxygen demand 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
7.	SOLID WASTE MANAGEMENT	Sources and classification of solid waste Public health aspects Disposal methods – open dumping , sanitary , land fill Incineration , compositing Potential methods of disposal Recovery and recycling of paper, glass, metal and plastic

SARVAPALLI RADHAKRISHNAN UNIVERSITY,
BHOPAL (M.P.)

S.NO.	TOPIC	CONTENTS
8.	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
9.	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

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **ENVIRONMENTAL**
ENGINEERING AND SAFTY   PAPER CODE: **2001**

LIST OF EXPERIMENTS

NO.	NAME OF THE EXPERIMENT

1.
 	
2.
 	
3.
 	
4.
	GROUP A AIR POLLUTION (Any one experiment may be selected from this group)
	  1. Air monitoring and determination of SPM, CO, Nox, SO2 with high volume sampler.
	  2. Monitoring of stack gases and determination of SPM, CO, Nox, SO2 with slack monitoring kit.
	  3 Determination of CO,HC, in exhaust gases from petrol vehicle
	GROUP B NOISE POLLUTION
	  4. Determination of sound pollution in (a) Auditorium (b) Factories (c) Busy roads (d) Theatre (e) TV rooms (select any three situations)
	
	GROUP C INDUSTRIAL WASTE WATER (Any Two experiment may be selected from this group
	
	  5. Determination of BOD/COD ratio in industrial waste water.
	  6. Determination of Ph and alkanity/ acidity in industrial waste water.
	  7. Determination of solids in industrial waste water.
	  8. Determination of turbidity, cobur,and temperature of industrial waste water.
	
	GROUP D POLLUTION STANDARDS (Any Two experiment may be selected from this group)
	  9. Study of drinking water standards.
	  10. Study of effluent standards for water disposal.
	  11. Study of air pollution standards.

SARVAPALLI RADHAKRISHNAN UNIVERSITY,
BHOPAL (M.P.)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **ENVIRONMENTAL
ENGINEERING AND SAFTY**   PAPER CODE: **2001**

REFERENCES

1.   Enviornmental 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

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **INTRODUCTION TO COMPUTER**

PAPER CODE: **5000**

OURSE CONTENTS

S.NO.	TOPIC	CONTENTS
1.	INTRODUCTION TO COMPUTERS	Basic Concepts Generations of Computers Overview of computer Systems Classifications of Computers Characteristics of Computes 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 board, Mouse, Trackball, Joystick, anner, OMR OCR Bar-Code Reader, MICR, itizer, Card Reader, Voice Recognition, Web Cam, Video Cameras, Etc. Output Devices nitors, Printers : Dot matrix, Inkjet & Laser, tters, Commuter, Output Micro Film (COM), ltimedia Projector, Speech Synthesizsr, – Dumb, Smart & Intelligent

S.NO.	TOPIC	CONTENTS
		Terminal.
		Storage Devices
		Primary and Secondary Storage, Characteristics and Limitation,
		Floppy,
		rd disk, CD ROM DVD, Disk Cartidge.
		Microprocessor Registers, Arithmetic Unit, Control Unit, Buses,
		truction Set, Processor Speed.
		Memory Concepts
		ncept of Memory, Unit of Memory, Types of mory, RAM, ROM, PROM, EPROM,
		– EEPROM, Cache Memory.
		Computer Software
		Computer Software
		tem Software V/s Application Software
		Operating System Programs Language Processor, Assembler, Compiler &
		Interpreter.
		Application Software
		es of Application Software and their examples.
		h Level Language, Low Level Language, Assembly – Language.
		Multimedia
		Basics of Multimedia Components- Tex, Graphics, Animation, Audio, Images
		& Video.
		Multimedia Applications.
2.	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,

S.NO.	TOPIC	CONTENTS
		Menu etc. Components of Desktop. Working with Files and Folders. Windows Utilities and Accessories – Notepad, WordPad, Paintbrush, – Windows Explorer, Calculator. 2.3 Introduction to Linux An overview of Linux Basic Linux elements System Features Software Features File structure Linux H/W & S/W requirements.
3.	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
4.	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.

S.NO.	TOPIC	CONTENTS
5.	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
6.	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
7.	COMPUTER COMMUNICATION & NETWORKS	**7.1 Information Networks** **– The Technology of Workgroup Computing** **Types of network Network topology Network components** **7.2 Data Communication** **– Introduction to Data Communication** **Types of Data Transmission media** **7.3 Internet and E-mail** **Internet Basics Websites- Applications, terminologies, naming conventions.** **– Web Browsers- Types, Navigation and tools**

S.NO.	TOPIC	CONTENTS
		E-mail – concept, terminologies, mailing services provider, advantages comparison with Conventional mailing **Search engine – concept, search engine websites, searching methods.**

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **INTRODUCTION TO COMPUTER**

PAPER CODE: **5000**

LIST OF EXPERIMENTS

S.NO.	NAME OF THE EXPERIMENT
1.	
	Study of various components of computer like CPU, keyboard, mouse, monitor, printer, CVT and storage devices.
2.	
3.	Using Windows operating system, study of desktop, control panel, accessories and settings. File management in windows explorer, Study of WordPad, NotePad, PaintBrush, Calculator etc.
4.	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 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 MSAcess– creating, saving, editing and printing of tables. Managing relationships, writing queries e.g. SELECT, UPDATE, DELETE, INSERT. Forms designing and report printing.
9.	Study of Web Browser and mailing programs.

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **INTRODUCTION TO COMPUTER**   PAPER CODE: **5000**

REFERENCES

1.   A First Course in Computers
            - S . Jaiswal Golgotha Publication
2.   Computers & Application,
            -Slotnick, Butterfield, Colantonio and Kopetzky C.C. Health & Company
3.   Computers Today,

4.   The Complete Guide to Microsoft Office Professional,
            -Ron Mansfield Sybex /BPB Asian Edition
5.   Inside IBM PC

6.   Hardware Bible

7.   Computer Hardware
            -Osborne Series
8.   DOS & Utilities

9.   Learning Windows in 24
            Hours -Sam Techmedia
10.   Multimedia Making it work

11.   Understanding windows
            -BP Chapman B Publicati

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **ENGINEERING DRAWING**

PAPER CODE: **6001**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
1.	**INTRODUCTION TO DRAWING INSTRUMENTS:-**	Introduction of drawing instruments, materials and their uses - Applications of minidrafter - Applications of compass and divider - Applications of Frenchcurves and spline - Pencils grades and their uses - Designation and sizes of drawing sheet and drawing board
2.	**PLANNING AND LAY- OUT 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.
3.	**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,

S.NO.	TOPIC	CONTENTS
		Bracket fan, fan regulator, battery and earth point. - Electronics components- Diode: Zener, varactor, Scotty, step recovery, light emitting diode (LED), PNP and NPN transistors, résistance, 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

4.	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.

5.	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)

S.NO.	TOPIC	CONTENTS
		- 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 Involutes of circle and polygon - Construction of Archimedean Spiral of any number of convolutions
6.	**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 .
7.	**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- - 1.parallel to HP and VP both. - 2.perpendicular to one plane and parallel to other. - 3.Inclined to one plane and parallel to other. - 4.knowledge of projection of line inclined to both the planes (No practice required) - Projection of planes – - 1Perpendicular to HP and VP both - 2 Perpendicular to one plane and parallel to other - 3.Inclined to one plane and perpendicular to other. - 4 Knowledge of projection of plane inclined to both the planes (No practice required)

S.NO.	TOPIC	CONTENTS
8.	**PROJECTIONS OF SOLIDS:**	Projection of cylinder, cone, prism and pyramid. Under the following conditions: 1. Axis parallel to HP and VP 2. Axis perpendicular to HP and parallel to VP 3. Axis perpendicular to VP and parallel to HP 4. Axis inclined to HP and parallel to VP. 5. Axis inclined to VP and parallel to HP. 6. Axis inclined to both HP and VP (No Practice required)
9.	**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 following cases: 1. Section plane parallel to HP and perpendicular to VP 2. Section plane parallel to VP and perpendicular to HP. 3. Section plane inclined to HP and perpendicular to VP. 4. 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
10.	**INTERSECTION OF SURFACES**	Intersection of following cases – Cylinder to cylinder and Prism to prism(With their axis intersecting and perpendicular to each other.)
11.	**ORTHOGRAPHIC PROJECTIONS & FREE HAND SKETCHING:**	Principles of orthographic projections Identification of necessary views and superfluous view

S.NO.	TOPIC	CONTENTS
		- 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)
12.	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 objectsfrom given orthographic views

SARVAPALLI RADHAKRISHNAN UNIVERSITY,
BHOPAL (M.P.)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **ENGINEERING DRAWING**

PAPER CODE: **6001**

REFERENCES

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.   ABHIYANTRIK AAREKHAN
            -SHIVDATT UPADHYAY

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **WORKSHOP PRACTICE**

PAPER CODE: **6002**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
1.	INTRODUCTION TO WORK SHOP	- General Safety rules of workshop - State the General Safety Measures to be observed in Workshop. - State the General house keeping activities - Prepare a list of general safety Rules to be followed in Workshop - Layout of Shop
2.	FITTING SHOP	- Sketch & Label Details of shop Layout - Type of jobs produced in fitting shop - Understand the functions of fitting shop - Understand different Metals, Alloys & their Sections - List the Commonly used Metals, Alloys. - State at least Five Sections, Shape & Size of Metals, Alloys. - Use relevant IS Code for commonly used materials with their samples of different Cross sections. - Fitting tools. - Know use of fitting tools, sketch various tools & label their parts. - Classify fitting tools as marking tools, Clamping devices, striking tools, cutting tools etc. - Know the marking out & inspection instruments such as surface plate, marking block, scriber, tri square, bevel protractor etc. - Fitting operation: - Use of Various fitting tools, inspection & measuring Instruments. To produce given jobs. - Choose correct Shape & Size of Blank for a given drawing. - Marking as per drawing using correct method, tools & sequence. - Choose correct sequence of operations for the job viz. Sawing, filing, scraping, drilling & Tapping etc.

S.NO.	TOPIC	CONTENTS
3.	**CARPENTRY SHOP**	- Select appropriate Tools, inspection and measuring instruments. - Clamping the job in correct position in an appropriate clamping device. - Perform the operation with appropriate body posture, method & precision, exercising personal judgment of need of the force. - Inspect the job as and when necessary. - Introduction to screw threads. - Know common types of screw threads & the terminology used. - Sketch and label details of Metric &Whitworth thread. - Carpentry shop lay out. - Sketch & Label Details of shop Layout. - Type of jobs produced in carpentry shop. - Understand the functions of carpentry shop. - Introduce type of jobs produced by carpenter. - Commonly used raw materials: - Know commonly used raw materials &their commercially available size. - Name various types of raw materials used such as Timber: - logs, planks, battens etc. Ply, Teak ply, block board, sun mica, Formica etc. - Carpentry tools: - Know various carpentry tools with their specifications and uses e.g. different saws, chisels, gauges, scales, hammers, tri squares, planners, vice etc. - Carpentry Joints:- Introduction of various joints like T, corner, mortise & tennon joints, dovetail, pin, cross half lap joint,etc. - Choose correct shape &size of timber blank for a given job drawing. - **Do marking as per drawing using correct method, tools &sequence.** - Identify correct operations e.g. sawing, chiseling, planning, grooving etc. - Select appropriate Tool, inspection & measuring Instruments. - Clamping the jobs in correct position in an appropriate clamping device. Perform the operation with appropriate body posture, method & precision, exercising personal judgment of need.

S.NO.	TOPIC	CONTENTS

4.	**BLACK SMITHY SHOP**	of the force.
		    Inspect for size & quality of finish as and when necessary.
		    Assemble the components produced. Inspect for proper joint quality &take remedial steps.
		    Understand the function of black smithy & forging shop.
		    Layout of Shop.
		    Sketch & Label Details of shop lay out.
		    Know the different jobs produced in smithy shop e.g. round to hexagonal shapes or vice versa J -hook, S- hook, circle, chain etc.
		    Commonly used raw materials: - M.S. Bars of different shapes and size.
		    Smithy Tools: - Know various smithy tools with their specifications e.g. different type of hammers, hot / cold chisel, flatters, tongs, leg vice, swage block, anvils, open hearth and furnaces etc.
		    Preparation of job (any three): J-hook, S-hook, chain, circle, tong, chisel etc.
		    Safety measures: Know the safety regulation in black smithy shop.

5.	**SHEET METAL SHOP**	Layout of Shop
		    Sketch & Label Details of shop lay out.
		    Know the different jobs produced in sheet metal shop e.g. Open tray, cylinder, prism, Funnel etc.
		    Commonly used raw materials: -M.S. sheet (black), G.I., M.S.rivets, and aluminum rivet etc.
		    Understand foil, sheet and plate.
		    Tools used:-
		Different snips, shears, stacks, latter punch, figure punch, Solid punch, hollow punch, mallet, soft hammers, channel, Square bars, std. Sheet gauge.
		    Type of joints and operations: - Introduction of various sheet metal operations &joints e.g. seaming, single seam, double seam, Grooved seam, corner joint, cap joint etc.
		    Preparation of job (any two): - Open tray, cylinder, prism, Funnel etc.
		    Choose correct shape &size of sheet for a given job drawing considering allowances for joint or seam.

S.NO.	TOPIC	CONTENTS
6.	WELDING SHOP	Do marking as per drawing using correct method, tools and sequence. Identify correct operation e.g. shearing, punching, bending, debarring, folding, strengthening, stamping, riveting, etc. Select appropriate Tool, inspection & measuring Instruments. Holding the job in correct position. Perform the operation with appropriate body posture, method & precision, exercising personal judgment of need of the force. Inspect for proper joint quality and take remedial steps. Layout of Shop. Sketch & Label Details of shop lay out. Know the different jobs produced in Welding shop e.g. Lap joint, single butt, double butt, corner, T joint, etc. Tools & equipments used:- Specifications & use of various tools and equipments used in Welding shop e.g. A.C. welding transformer, Gas welding set, electrode used, chipping hammer, wire brush, shield, gloves, apron etc. Preparation of job: - (any two) Lap joint, single butt, double butt, corner, T joint, etc. Safety measures: - Know the safety regulation in Welding shop.
7.	PLASTIC MOULDING	Know the commonly used plastic materials i.e. Thermosetting, Thermo plastic. Sketch & label various parts of bench molding m/c. Production of any product on bench molding m/c.
8.	REVISION	Understand the difference in theory and practice. Explain the importance of skills in production of quality jobs

NOTE:-1. Theoretical inputs will be provided on shop floor during workshop Practice.
2. Shop safety would include First Aid training for each shop.

SARVAPALLI RADHAKRISHNAN
UNIVERSITY, BHOPAL (M.P.)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **FIRST**
NAME OF COURSE: **WORKSHOP PRACTICE**

PAPER CODE: **6002**

REFERENCES

1.   Workshop technology vol. I
        - Hazra & Chaudhary

2.   Production technology vol. I
        - R.C. Patel &C.G. Gupta

3.   Production technology vol. I
                 - -Dalela

4.   Work shop technology vol. I
-               Raghuwanshi

5.   Work shop technology vol. I
-               Chapman

6.   Workshop Vol. I
        - P.N.Vijayvargiya (Hindi medium)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF COURSE:
COMMUNICATIONSKILLS   PAPER CODE: **4000**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
01.	*COMMUNICATION PROCESS AND ITS NEEDS*	1.1 (i)How to make communication effective (ii) Barriers in communication, Removal of barriers 1.2 Grammar and vocabulary for correct English usage. (i) Determiners, Prepositions, Auxiliary verbs and subject-verb agreement (ii) Rewrite as directed (change voice, correct form of verbs/ tenses) (iii) Vocabulary – One word substitution, words often misused and wrongly spelt
02.	*PASSAGES OF COMPREHENSION*	2.1 Prescribed passages (six from existing syllabus) i Language of Science ii Desalination or Desalting Process iii Safety Practices iv Non-conventional Sources of Energy v Our Environment vi Entrepreneurship 2.2 Writing summary, moral and characterization of any one story from the book prescribed.
03.	*BUSINESS COMMUNICATION* *(One question with internal choice)*	3.1 Principles of effective business correspondence Its parts, mechanics, styles and forms

S.NO.	TOPIC	CONTENTS
04.	*COMPOSITION & TRANSLATION*	3.2 Application for job, Bio-Data and C.V. 3.3 Letter of Enquiry 3.4 Placing order 3.5 Complaint 4.1 Writing paragraphs of 150 words on topics of general interest i.e. pollution, ragging in college, importanceof computers, importance of communication skill, importance of science and technology etc. 4.2 Translation (Hindi to English and vice- versa).
05.	*UNSEEN PASSAGES & PRECIS WRITING*	**i Answer the questions based on the passage.** **ii Give suitable title OR** **iii Writing Precis**

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF OURSE:**COMMUNICATIONSKILLS**

PAPER CODE: **4000**

REFERENCES

9. English Conversation Practice

-Grant Taylor

10. Practical English Grammar-

1 Thomson & Martinet

10. Communication Skills for Technical Students Book – I, Book – II

-M/S Somaiya Publication, Bombay

11. Living English
   Structure-S. Allen

12. English Grammar, Usage, and Composition

13. Tickoo & Subramanian, S. Chand & Co. Standard Allen Longman.

14. Essentials of Business Communication

5. Dr. Rajendra Pal & J.S. Korlahalli S.Chand & Sons, New Delhi.

5. Effective Business Communication

2. M.V. Rodriques, Concept Pub. Co., New Delhi.

3. Communication for Business

3. Shirely Taylor, Longman, England.

2 Communication for Engineers and Professors

5. P. Prasad, S.K.Kataria and sons publications, New Delhi

12. Technical English Book-II,

   -Somaya Publications, New Delhi

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER:**SECOND**
NAME OF COURSE:
 PHYSICS   PAPER CODE: **1000**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
2.	**UNITS & MEASUREMENT** – –	Fundamental and derived units Scalar and vector, Basic requirements to represent vector – Symbols, abbreviation, and proculation – Linear measurement by vernier calipers, screw gauge and spherometer – Angular measurement by angular vernier
2.	**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
3.	**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

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S.NO.	TOPIC	CONTENTS
4.	**PROPERTIES OF MATTER**	Calculation of pressure by Kinetic theory – Prove of different gases law by Kinetic theory. – Elasticity: Meaning, definition, stress, stain, 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.
5.	**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.
6.	**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 – Seeback effect and thermoelectric power. – Neutral temperature, temperature of inversion and relation between them – Thermo electric thermometer and thermo couples.

S.NO.	TOPIC	CONTENTS
7.	**SOUND**	Numerical problems and solution on the topic. — 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
8.	**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.
9.	**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
10.	**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.**

SARVAPALLI RADHAKRISHNAN UNIVERSITY,
BHOPAL (M.P.)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF COURSE:
 PHYSICS   PAPER CODE: **1000**

LIST OF EXPERIMENTS

S.NO.	NAME OF THE EXPERIMENT
7.	Refractive index of prism (I-d) curve
9.	Refractive index of prism (spectrometer)
10.	Focal length of a convex lens by u-v method
11.	Focal length of a convex lens by displacement method
12.	Verification of Ohm's law
13.	To find out unknown resistance by meter bridge
14.	To find out internal radius of hollow tube by vernier calipers.
	To find out volume of given cylinder by screw gauge.
8.	Surface tension by Capillary rise method. Coefficient of viscosity
10.	Coefficient of Thermal conductivity by searl's method.
11.	Verification of Newton's cooling law.

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DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF COURSE:**PHYSICS**
PAPER CODE: **1000**

REFERENCES

1.   APPLIED PHYSICS VOL. 1 & 2
-               SAXENA AND PRABHAKAR
2.   PHYSICS
-               TTTI   PUBLICATION
3.   PHYSICS VOL. 1 &2
-               HALLIDAY AND RESNIC R
4.   ENGINEERING PHYSICS
-               GAUR AND GUPTA
5.   PRINCIPLE OF PHYSICS
-               BRIJ LAL & SUBRAMANYAN
6.   PHYSICS FOR TECHNICAL EDUCATION
-               LS ZEDNOV

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF COURSE:**CHEMISTRY**

PAPER CODE: **2000**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
3.	**ATOMIC STRUCTURE AND RADIOACTIVITY**	Discovery of electron, proton ,neutron and nucleus. Ruther ford's and Bohr's model of an atom. Bohr Burry scheme of filling the electrons in various orbits. Idea of s,p,d,f orbital .Alfa, Gamma and Beta rays, theory of radio activity, Group displacement law, half life period, numerical problems on half life period, fission and fusion.
4.	**SURFACE CHEMISTRY AND ITS APPLICATION**	True solution, colloidal solution and suspension, lyophobic and lyophillic colloids, optical and electrical properties of colloids, coagulation, coagulants, idea about gels and emulsions.
6.	**ELECTROCHEMISTRY**	Electrolysis, Faraday's laws of electrolysis, Numerical problems on Faradays Law, electroplating of copper and nickel.
4.	**COLLIGATIVE PRPOPERTIES**	Osmosis & osmatic pressure, Relative vapour pressure and Routls law. Internal energy (enthalpy) Entrophy, Entrophy fusion free energy, Effect of change in temperature catalysis.
7.	**CHEMICAL BONDING AND CATALYSIS**	(A) Bonding: Nature of bonds- Electrovalent, Co-valent, co-ordinate and hydrogen bond.

S.NO.	TOPIC	CONTENTS
		9. Catalysis : Types , theory characteristic, positive , negative, auto and induced catalyst. Catalytic Promoter, and catalytic inhibitors. Industrial Application of catalysis.
6.	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. Hener's, EDTA and soap solution method
7.	METALS AND ALLOYS	Physical and chemical properties of metals, copper, iron, aluminum, tin, nickel. General principal of metallurgy, minerals/ ores, ore dressing, roasting ,smelting, bassemerisation, 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.
8.	IONIZATION, PH VALUE CORROSION AND PROTECTION	Arhenius theory of ionization, factors affecting ionization. pH meaning (numerical), Buffer solutions and Buffer actions, choice of indication (acidimetry and alkalimetry). Explanation of corrosion, types of corrosion, factors effecting corrosion, corrosion control (protection against corrosion), metal and organic coating for corrosion control.
9.	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.
11.	HIGH POLYMERS, RUBBER AND INSULATORS	Polymerization and condensation, classification of plastics, Compounding and Moulding constituents of plastics. Preparation Properties and uses of PVC, polyethene, polystyrene, polyamides, polyesters , Bakelite. Synthetic fibers –

S.NO.	TOPIC	CONTENTS
		nylon, rayon, decron, and polyesters.
		Definition characteristics , classification and properties of insulators. Glass, wool and thermocole.
		Idea about rubber and vulcanization .
11.	**LUBRICANTS, PAINTS AND VARNISHES**	Lubricants: Meaning , type and theory of lubricants, properties of a good lubricants, 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
12.	**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.
13.	**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.**

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
 NAME OF COURSE: **CHEMISTRY**

PAPER CODE: **2000**

LIST OF EXPERIMENTS

S.NO.	NAME OF THE EXPERIMENT
12.	To identify one Anion and Cation in a given sample.
2.	Determination of flesh point and fire point of a given sample of oil by Abel's apparatus.
-	Determination of viscosity by Red Wood Viscometer no. 1 and no.2.
4.	Redoximetry Titration : – Percentage of Iron in given sample of alloy. – Determination of strength of ferrous ammonium sulphate. – Determination of strength of anhydrous ferrous sulphate and ferrous sulphate.
-	Determination of hardness of water by : a. EDTA Method and Soap Solution Method
6.	Determination of solid content in the given sample of water.
5.	Determination of percentage of moisture in the given sample of coal by proximate analysis.

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF COURSE: **CHEMISTRY**

PAPER CODE: **2000**

REFERENCES

1.   PHYSICAL CHEMISTRY
          – BAHL AND TULI
2.   INORGANIC CHEMISTRY
          – SATYAPRAKASH
3.   MODERN TEXT BOOK OF APPLIED CHEMISTRY
          – DR. G. C. SAXENA, JAIN PRAKASHAN, INDORE
4.   APPLIED CHEMISTRY
           - DR. G. C. SAXENA, DEEPAK PRAKASHAN, GWALIOR
5.   APPLIED CHEMISTRY
           -SHRIVASTAVA & SINGHAL, PBS PUBLICATION, BHOPAL
6.   ENGINEERING CHEMISTRY
           -UPPAL
7.   ENGINEERING CHEMISTRY
           -RAO AND AGARWAL
8.   ENGINEERING CHEMISTRY
           -P.C. JAIN
9.   POLYMER CHEMISTRY
           -O.P. MISHRA
10.   APPLIED CHEMISTRY
           H.N. SAHNI, DEEPAK PRAKASH

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER:
SECOND

NAME OF COURSE:
MATHEMATICS   PAPER CODE: **3000**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS
1.ALGEBRA		1.1 Permutation - Meaning of factorial n - Permutation of 'n' dissimilar thing taken 'r' at a time, 1.2 Combination 7. Combination of n dissimilar things taken 'r' at a time, 1.3 Binomial Theorem 8. Statement of the theorem for positive integer 9. General Term, Middle term, Constant term 1.4 Partial Fractions 8. Define a proper-improper fraction - Break a fraction into partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors. 1.5 Determinant - Concept & principles of determinants - Properties of determinant - Simple examples. 1.6 Complex Numbers - Algebra of Complex Numbers - Polar form
2.	**TRIGONOMETRY**	2.1 Allied angles. 2.2Trigonometrical ratios of sum and difference of angles, (Only statement)

S.NO.	TOPIC	CONTENTS
3.	MATRIX	2.4 Multiple angles (Only double angle and half angle) 2.5 Properties of triangle (without proof) 3.1 Definition of Matrix. 3.2 Types of Matrix. 10. Row, Column, Square, Unit, Upper and lower triangular, Symmetric & Skew Symmetric, Singular and non Singular Matrices. 3.3 Adjoint of a Matrix. 3.4 Inverse of a Matrix.
4.	CO-ORDINATE GEOMETRY	4.1 Co-ordinate System : Cartesian and Polar. 4.2 Distance, Division, Area of a triangle. 4.3 Locus of a point and its equation. 4.4 Slope of St. Line - Angle between two St. lines. - Parallel and perpendicular St. lines. 4.5 Standard and general equation of St. line. Point of intersection of two st lines.
5.	STATISTICS	5.1 Measures of Central tendency (Mean, Mode, Median) 5.2 Measures of Dispersion (Mean deviation, standard deviation)
6.	DIFFERENTIAL CALCULUS	6.1 Define constant, variable, function. 6.2 Value of the function 6.3 Concept of limit of a function. 6.4 Definition and concept of differential coefficient as a limit. 6.5 Standard results. 6.6 Derivatives of sum, difference, product, quotient of two functions. 6.7 Diff. coeff. of function of a function. 6.8 Diff. coeff. of implicit function. 6.9 Logarithmic Differentiation. 6.10 Differential coeff. of Parametric function.
7.	INTEGRAL CALCULUS	7.1 Definition as a inverse process of differentiation 7.2 Standard Results (including inverse function) 7.3 Methods of Integration - Substitution

S.NO.	TOPIC	CONTENTS
8. **VECTOR ALGEBRA**		8. Integration by parts - Breaking up into partial fraction 7.4 Concept of Definite Integral **8.1 Concept of Vector and Scalar Quantities.** **8.2 Different types of vectors.** **8.3 Additionandsubtraction of vectors.** **8.4 Components of a vector** **8.5 Multiplication of two vectors** - **Scalar Product** - **Vector Product** - **Applications (Work done, power & reactive power)**

SARVAPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL (M.P.)

DIPLOMA IN
ENGINEERING (COMMON)

SEMESTER: **SECOND**
NAME OF COURSE:
MATHEMATICS   PAPER CODE: **3000**

REFERENCES

1.   Mathematics for Polytechnics Vol. I and II
        Prepared by T.T.T.I. Bhopal
-       Differential Calculus
        Gorakh Prasad
-       Integral Calculus
        Gorakh Prasad
-       Co-ordinate Geometry
        S.L. Loni
-       Engineering Mathematics (M.P. Hindi Granth Akadami)
        Dr. S.K. Chouksey & Manoj Singh
-       Mathematical Statistics
        Ray and Sharma
-       Higher Engineering Mathematics
        B.S. Grewal