SYLLABUS
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
SEMESTER – III

APPLIED MATHEMATICS III

Sub. Code: DECE 301 **Credits: 02**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

BLOCK I

Unit 1: Probability and Statistics

Probability: Interpretation of Probability, Probabilistic Models, Empirical Variability, Events and Sets, Mutually Exclusive Events, Independent Events, Conditional Probability, Sample Space and Probability, Addition Law, Product Law, Baye's Theorem.
Statistics: Binomial Distribution, Normal Distribution and Poisson Distribution, Correlation and Regression.

Unit 2: Trigonometry

Inverse Trigonometric Functions: Definition, Domains and Ranges-Basic Properties, Problems.
Trigonometric Equations: Concept of a Solution, Principal Value and General Solution of Trigonometric Equations: sin x =k, cos x= k, tan x =k, Solutions of Simple Quadratic Equations, Equations involving Multiple Angles and Usage of Transformations, Problems.

Unit 3: Coordinate Geometry

Three Dimensional Geometry: Coordinate System, Distance between Two Points, Ratio Formula, Direction Cosines and Ratios of a Line, Angle between Two Lines, Centroid of a Triangle and Tetrahedron, Simple Equation of a Plane, General Form, Angle between Planes.

Unit 4: Differential Equation

Solutions of Differential Equations of the First Order and First Degree of:

- Homogeneous Equations and Equations Reducible to Homogeneous Form;
- Exact Differential Equations;

- Linear Differential Equation of the Form dy/dx + Py = Q, where P and Q are Functions of x or Constants.
- Bernoulli's Equation (Reducible to Linear Form).

Solution of Second Order Differential Equation of the Type f (D) y=0; Solution of nth Order Differential Equation of the Type.

Unit 5: Laplace Transforms

Laplace Transforms of Elementary Functions; Properties of Laplace Transforms; Existence Conditions; Transforms of Derivatives; Transforms of Integrals; Multiplication by t; and Division by t.

Suggested Readings:

1. Fundamentals of Mathematical Statistics, Gupta SC and Kapoor, VK, Sultan Chand & Sons.
2. Theory and Problems of Probability (Schaum's Outline Series), Lipschutz S, McGraw Hill.
3. Undergraduate Engineering Mathematics, Jana, Vikas Publishing House.
4. Engineering. Mathematics 1, 2, 3, Lakshminarayan, Vikas Publishing House.
5. Higher Engineering Mathematics, Grewal BS, Khanna Publication
6. Advanced Engineering Mathematics, Kreyzig E, John Wiley and Sons.

Note:

1. Eight questions are to be set, at least one question from each unit. Students will have to attempt five questions in all.
2. Use of non-programmable scientific calculator is allowed in Examination Hall.

SYLLABUS
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
SEMESTER – III

ELECTRICAL ENGINEERING MATERIALS AND COMPONENTS

Sub. Code: DECE 302 **Credits: 02**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

BLOCK I

Unit 1: Introduction to Electrical Engineering Materials

General Requirement of Electrical Engineering Materials, Introduction to Band Theory; Classification of Materials into Conducting Semi conducting and Insulating Materials**.**

Unit 2: Conducting Materials

Resistivity and Factors Affecting Resistivity such as Temperature, Alloying and Mechanical Stressing; Classification of Conducting Materials into Low Resistivity and High Resistivity Materials; Some Examples of each and their Typical Applications.

Unit 3: Insulating Materials

Electrical Properties: Volume Resistivity, Surface Resistance, Dielectric Loss, Dielectric Strength (Breakdown Voltage) and Dielectric Constant.

Thermal Properties: Heat Resistance, Classification according to Temperature Endurance, Thermal Conductivity.

Plastics: Classification into Thermo Plastic and Thermosetting Categories; Examples of Each and their Typical Applications.

Unit 3: Characteristics and Applications

Important Relevant (Electrical, Mechanical and Thermal) Characteristics and Applications of the following Materials: Mica Paper (Dry and Impregnated), Asbestos Rubber, Ceramic Silicon Rubber, Glass PVC, Cotton Polythene, Jute Polyester, Teflon, Acrylics, Silicon Grease, Bakelite Phosphor, Bronze Alloy, Epoxy Glass Beryllium Copper Alloy, Varnish Soldering Lead Alloy, Lacquer Copper, Enamel Silver, Gold.

BLOCK II

Unit 4: Magnetic Materials

Different Magnetic Materials (Dia, Para, Ferro); their Properties; Ferromagnetism; Ferrimagnetism; Domains; Permeability; Hysterisis Loop: Coercive Force, Residual Magnetism, Hard and Soft Magnets: Examples and Typical Applications.

Unit 5: Components-1

Capacitor: Polyester, Metallized Polyester, Ceramic, Paper, Mica and Electrolytic Types, Constructional Details and Testing, Specifications, Temperature and Frequency Stability and other Limitations, Mutual Comparison.

Resistors: Carbon Film, Metal Film, Carbon Composition Wire Wound and Variables Types (Presets and Potentiometers), Constructional Details and Testing, Specifications, Temperature and Frequency Dependence, Noise Considerations. Mutual Comparison

Unit 6: Components-2

Transformers: Inductors and RF Coils, Methods of Manufacture of Inductors, RF Coils and Small Transformers (up to 1 KVA) and their Testing. Properties of Cores, Need and Types of Shielding.

Surface Mounted Devices (SMDs), Connectors, Relays and Switches:

Suggested Readings:

1. Electrical Engineering Materials, T.T.T.I. Madras.
2. Electrical Engineering Materials, Raina, Bhattacharya, New Age International (P) Ltd.
3. Electrical and Electronics Engineering. Materials, B.R. Sharma and Others, Satya Parkashan.
4. Electrical Engineering Materials, PL Kapoor, Khanna Publishers.

Note:

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SYLLABUS
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
SEMESTER – III

BASIC ELECTRONIC CIRCUIT AND DEVICES

Sub. Code: DECE 303 **Credits: 02**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

BLOCK I

Unit 1:
Electronic Components; Passive Components; Resistors: Fixed and Variable, Colour Coding, Uses; Capacitors: Fixed and Variable, Uses; Inductors: Fixed and Variable Factors affecting the

Unit 2:
PN Junction Diode; Forward and Reverse Bias Characteristics; Specifications; Zener Diode; Construction & Working

Unit 3:
Transistor Biasing; CB, CE, CC Configurations; Characteristics; RC Coupled Amplifier; Multi-stage Amplifier; Stability Considerations; Selectivity.

Unit 4:
Transistor Oscillator; Classifications; Condition for Oscillation (Barkhausen Criterion).

BLOCK II

Unit 5:
Field Effect Transistor: Construction, Working Principle of FET, UJT: Construction, UJT as a Relaxation Oscillator

Unit 6:
SCR: Introduction, Working, , V- I Characteristics, Switch, .DIAC: Construction, Working, Characteristics; TRIAC: Basic Working Principle, Characteristics, MOSFET: Construction, Characteristics; IGBT: Basic Principle, IGBT as a Switch.

Unit 7:
LDR; LED; 7 Segment LED; LCD; Opto Coupler; Opto Interrupter; Avalanche Photodiode; Photo Transistor; Solar Cell

Suggested Readings:

1. Principle of Electronics, V.K. Mehta, Morgan Kaufmann.
2. Electronics principles, Malvino, Tata McGraw Hill.
3. Electronics Devices and Circuits, Allen Mottershed, Tata McGraw Hill.
4. Electronics Devices and Circuits, Jacob Millman and Halkies, Tata McGraw Hill.
5. Optical Fiber Communication, Gerd Keiser, Tata McGraw Hill.

Note:

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SYLLABUS
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
SEMESTER – III

ELECTRICAL MACHINES

Sub. Code: DECE 304 **Credits: 02**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

BLOCK I

Unit 1:
Advantage of Three-Phase System over Single-Phase System; Star Delta Connections.

Unit 2:
Principle of Operation and Constructional Details of Single Phase and Three-Phase Transformer, Core Type and Shell Type Transformers, Current Transformer and Potential Transformer.

Unit 3:
Introduction to Rotating Electrical Machines; E.M.F Induced in a Coil Rotating in a Magnetic Field; Common Features of Rotating Electrical Machines.

BLOCK II

Unit 4:
Principle of Working of D.C Motors and D.C Generator; their Constructional Details Characteristics of Different Types of DC Machines; Application of DC Machines.

Unit 5:
Revolving Magnetic Field Produced by Poly Phase Supply; Brief Introduction about Three Phase Induction Motors, its Principle of Operation. Principle and Working of Synchronous Machines; Application of Synchronous Machines.

Unit 6:
Introduction; Principle of Operation of Single Phase Motors; Single Phase Synchronous Motors: Reluctance Motor, Hysteresis Motor.; Motors and Stepper Motors; Concept of Micro-Motors.

Suggested Readings:

1. Electrical Machine, SK Bhattacharya, Tata McGraw Hills.

2. Electrical Machines, Nagrath and Kothari, Tata McGraw Hills.
3. Experiments in Basic Electrical Engineering, S.K. Bhattacharya, KM Rastogi: New Age International (P) Ltd. Publishers.

Note:

1. Eight questions are to be set, at least one question from each unit. Students will have to attempt five questions in all.
2. Use of non-programmable scientific calculator is allowed in Examination Hall.

SYLLABUS
DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING
SEMESTER – III

FUNDAMENTALS OF COMPUTER PROGRAMMING AND APPLICATION

Sub. Code: DECE 305 **Credits: 02**

Total Marks: 100 **Minimum Pass Marks: 40%**

Internal Assessment: 40 Marks **University Examination: 60 Marks**

BLOCK I

Unit 1:
Need for Information Storage and Retrieval; Creating Data Base File; Querying Database File on Single and Multiple Keys; Ordering the Data on a Selected Key; Programming a Very Simple Application

Unit 2:
Basic Structure of C Programs; Executing a C Program; Constants Variables and Data Types; Operators and Expressions; Managing Input-Output Operations like Reading a Character; Writing a Character; Formatted Input; Formatted Output through Print, Scan, Getch, Putch Statement etc.; Decision Making and Branching Using IF, else, switch; go to Statements; Decision Making and Looping using do-while, and for Statements; Arrays-One Dimensional and Two-Dimensional; Functions; Concept of Ponters, Structures and Files

Unit 3:
Commercial and business data processing application such as Tally, Munim Ji, Lotus etc.; Engineering computation; CAD,CAM and CAI

Unit 4:
Students will be demonstrated some application software in the field of Electronic/ Electrical Engineering for awareness and use such as MATLAB, PSIM, MULTISIM, PSPICE in Electronics/Electrical Engineering

Suggested Readings:

1. Programming in C, Sachaum Series, McGraw Hills
2. The Essentials of Computer Organizing and Architecture, Linda Null and Julia Labur, Narosa Publishing House.
3. Programming in C, Kerning Lan and Ritchie, Prentice Hall of India,
4. Programming In C, Balaguru Swamy, Tata McGraw Hill.

5. Let Us C, Yashwant Kanetkar, BPB Publication.
6. Elements of C, M. H. Lewin, Khanna Publishers.
7. Programming in C, R Subburaj, Vikas Publishing House.
8. Programming in C, Kris A Jansa, Galgotia Publication.
9. Programming in C, BPB Mahapatra, Khanna Publishers.

Note:

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