

ADMISSION-CALL-0761-4007445 / 6541666 / 09425068494
E-MAIL:-mnpedu@rediffmail.com
WEBSITE:- www.maanarmadaedu.org

SYLLABUS
DIPLOMA IN ELECTRICAL ENGINEERING
SEMESTER – V

DESIGN AND MAINTENANCE OF ELECTRICAL MACHINES

Sub. Code: DEE 501

Credits: 02

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Unit 1:

Basic Principles of Electrical Machine Design; Factors and Limitations in Design; Main Dimensions; Output Equations and Output Coefficient; Classification of Magnetic Materials and Allowable Flux Densities, Classification of Insulation Materials and their Temperature Ranges.

Unit 2:

General Features of Armature Windings; Single Layer and Double Layer and Commutator Windings; Integral and Fractional Slot Windings; Winding Factors.

Unit 3: Heat Dissipation; Heat Flow; Heating Cooling Curves; Heating Cooling Cycles; Estimation of Maximum Temperature Rise; Cooling Media

Unit 4:

Power Transformers and Distribution Transformer; Induction Machines and Synchronous Machines.

Unit 5:

Maintenance and Repair: Introduction; Transformer Inspection; Periodical Overhauling of Transformer; Location of Transformer Defects; Winding and Core Repairs; Bushing Repairs; Repair and Maintenance of Conservator; Dismantling and Assembling of Transformer;

Unit 6:

Identification of Terminals of D.C. Compound Motors; Testing of Armature and Commutator; Over Hauling of D.C. Machine. Repairing of Field Winding.

Unit 7:

Different Tests on 1 ϕ Capacitor Type A.C. Motor; Open Capacitor; Short Capacitor ; Change of Value; Test for Open and Short Circuits Faults; Checking of Centrifugal Switch; Over Hauling,

Suggested Readings:

1. Electrical Machine Design, A.K. Sawhney, Kluwer Academic Publishers
2. A Course in Electrical Machine. Design, A. K.Sawhney, Danpat Rai & Co.

Note:

1. Eight questions are to be set. Students will have to attempt five questions in all.
2. Use of non-programmable scientific calculator is allowed in Examination Hall.

**SYLLABUS
DIPLOMA IN ELECTRICAL ENGINEERING
SEMESTER – V**

POWER ELECTRONICS

Sub. Code: DEE 502

Credits: 02

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Unit 1:

Principles, Construction, Characteristics and Ratings of: SCR, DIAC, TRIAC, UJT and LASCR
UJT as a Relaxation Oscillator.

Unit 2:

Phase Control of SCR; Different Phase Controlling Circuits: R, RC, UJT(Ramp), UJT (Pedestal and Ramp) and Transformer Circuit; Different Methods of Turn Off of SCR

Unit 3:

Basic Principle of Inverter; Series Inverter; Parallel Inverter; Single Phase Voltage Source Inverter; Three Phase Bridge Inverter; Applications

Unit 4:

Chopper; Cyclo Converter; UPS; SMPS: Types of SMPS, Protection Circuits, Merits and Demerits of SMPS

Unit 5:

AC Stabilizer: Introduction; Working and Basic Circuits: Resonator Stabilizer, Electro Mechanical Stabilizer and Electronic Stabilizer

Suggested Readings:

1. Fundamentals of Power Electronics, S Rama Reddi, Narosa Publishing House.
2. Power Electronics, Circuits Devices and Applications, Mohammad H.Rashid, Prentice Hall.

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 ELECTRICAL ENGINEERING
SEMESTER – V**

TRANSMISSION AND DISTRIBUTION OF ELECTRICAL POWER

Sub. Code: DEE 503

Credits: 02

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Unit 1:

Need and Basic Flow Diagram of Power System; Relative Advantages and Disadvantages of A.C and D.C Transmission; Selection of Transmission Voltage; Comparison of A.C 1phase, A.C, 3-phase 3 Wire, and A.C. 3phase 4 Wire on the Basis of Cost.

Unit 2:

Need, Requirement, Construction and Special Feature of Line Supports; Types of Conductors: Hollow, Stranded; Relative Merits and Demerits; Selection of Size of Conductor, General Rules used in RSEB for Calculation; Types of Insulators

Unit 3:

Mechanical Design: Sag and Span; Sag Calculation in Overhead Lines with Same and Different Level Supports; Effect of Wind, Ice and Temperature on Loading of Conductors; Effect of Sag on Overhead Conductor.

Unit 4: Overhead Line Constants; Classification of Lines; R, L, C, of Over Head Lines. Skin and Ferranti Effect; Corona, its Effect, Suppression, Transmission Lines by T and P Methods; Causes of Low Line Efficiency and its Improvement

Unit 5:

Layout of Distribution System, Feeders, Distributors and Service Mains; Radial and Ring Main Distributors.

Unit 6:

Underground Cables: Types and Construction; Selection of LT and HT Cables; Laying of Underground Cables.

Unit 7:

Overhead Distribution Lines: Survey of LT Lines; Planning of Construction Work; Methods of Erection of Supports; Erection of Conductors Laying Out Conductors.

Suggested Readings:

1. A Course in Electrical Power, Soni, Gupta & Bhatnager, Dhanpat Rai and Sons
2. Transmission & Distribution of Electrical Power, J.B.Gupta, SK Kataria and Sons.
3. Principles of Power System, V.K. Mehta, Morgan Kaufmann.

Note:

1. Eight questions are to be set. Students will have to attempt five questions in all.
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**SYLLABUS
DIPLOMA IN ELECTRICAL ENGINEERING
SEMESTER – V**

INDUSTRIAL MANAGEMENT

Sub. Code: DEE 504

Credits: 02

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Unit 1:

Management; Administration and Organization; Difference between them; Scientific Management: Meaning, Characteristics, Object and Advantage; Taylor's Scientific Management; Types of Organization, Different Types and their Charts; Leadership Qualities; Motivation.

Unit 2:

Introduction, Object and Functions of Human Resource Development Department; Recruitment, Sources and Methods of Selection; Need for Effective Training; Method of Training; Duties of Supervisor / Foreman; Role of HRD in Industries.

Unit 3:

Definition and Requirements of a Good Wage System Method of Wage Payment; Wage Incentives: Type of Incentive, Difference in Wage Incentive and Bonus, Incentive to Supervisor.

Unit 4:

Purchasing Functions and Duties of Purchase Department. Tender: Necessity, Types of Tenders, Tendering Procedure,. Store and Store Keeping: Functions and Duties of Store Department, Location and Layout of Store., Sales: Function and Duties of Sales, Department Sales Promotion Advertisement, Service after Sales.

Unit 5:

Idea of Income Tax, Sales Tax, Excise Duty and Custom Duty; Industrial and Fire Insurance; Procedure for Industrial Insurance.

Unit 6:

Industrial Acts: Factory Act 1948; Workmen's Compensation Act 1923; Apprentices Act 1961; Water Pollution Contract Act 1974 and 1981; Air Pollution Contract Act 1981; Environmental Protection Act 1986; Forest (Animal Conservation Act 1972); Pollution Control Provisions In Motor Vehicle Act.

Suggested Readings:

1. Industrial Management, V.K. Sharma & O.P. Harkut, Khanna Publishers
2. Industrial Engineering. & Management, O.P. Khanana, Dhanpat Rai Publications
3. Industrial Engineering. & Management, T.R. Banga, Khanna Publishers

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**SYLLABUS
DIPLOMA IN ELECTRICAL ENGINEERING
SEMESTER – V**

ELECTRICAL ENGINEERING DRAWING

Sub. Code: DEE 505

Credits: 02

Total Marks: 100

Minimum Pass Marks: 40%

Internal Assessment: 40 Marks

University Examination: 60 Marks

Unit 1:

Electrical and Electronic Symbols used in Electrical and Electronic Installation: Light, Power, Alarm & Control Circuits etc.

Unit 2:

One Lamp Controlled by Two Switches: Staircase Circuit; Two Lamps Controlled by Three Switches: Double Staircase Circuit; Circuit using Master Switch; Fluorescent Tube Controlled from One Switch; One Bell Controlled by One Push Button; Two Ordinary Bells for Day and Night used at a Distant Residence Bell Response Circuit of an Office for Three Rooms; Traffic Light Control System for Two Road Crossing.

Unit 3:

To Draw Installation Plan and Wiring Diagram of Two House; Conductor Size Calculation; List of Material Required with Cost by Doing Market Survey; Description of Various Tests; the Wiring Installation before Commissioning.

Unit 4:

Kit Kat Fuse Base; Kit Kat Fuse Carriers; Bus Bar Post; Pin Type and Shackle Type Insulator; Engineering Transistors; Stay Insulators; M.C.B.; E.L.C.B.; Bobbin of a Small Transformer / Choke.

Unit 5:

Purpose of Earthing; Different Types of Earthing, Drawings of Plate and Pipe Earthing; Procedure of Earthing Test of Materials Required and Costing; Method of Reducing Earth Resistance.

Suggested Readings:

1. Electrical Engineering Design and Drawing, Surjit Singh, Khanna Publishers.
2. Electrical Engineering Design and Drawing, SK Bhattacharya, SK Kataria and Sons.
3. Electrical Engineering Design and Drawing, Ubhi & Marwaha, IPH, New Delhi

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