

COMMON SYLLABUS FOR BELOW DEGREE LEVEL (ELECTRICAL & ELECTRONICS ENGINEERING)

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

1. ELEMENTS OF ELECTRICAL ENGINEERING:-

Electric current and ohm's law - Resistance and temperature effects - Work, power and energy - Electrostatics - Capacitors - Secondary cells and batteries - Electrical engineering materials.

2. ELECTRICAL CIRCUITS:-

DC circuits - Magnetism and magnetic circuits - Electromagnetic induction - AC principles - Vector algebra - Single phase AC circuits - Polyphase AC circuits.

3. ELECTRONICS - I :-

Semiconductors - Diodes - Transistors - Optoelectronic devices - IC fundamentals - Digital principles - Boolean algebra and logic gates - IC logic families.

4. ELECTRONICS - II :-

Basic electronic circuits - Amplifiers and oscillators - Operational amplifiers and timers - Arithmetic circuits - Flip flop - Shift registers - Counters - Encoders, decoders, Multiplexer and demultiplexer - D/A and A/D converters - Semiconductor memories.

5. ELECTRICAL MACHINES - I :-

DC Generators:-

Working principle of DC generator - Construction and types - Armature windings - Induced EMF - Armature reaction - Commutation - Characteristics - Efficiency and regulation.

DC Motors:-

Construction and working principle of DC motor - Types of DC motors - Torque in DC motors - Characteristics of DC motor - Speed control - Starting Devices.

Special Motors:-

construction and working principle, applications of special motors

Alternators:-

Construction and working principle - Armature winding - EMF equation - Armature reaction - Vector Diagram - Voltage regulation - Excitation systems - Parallel operation - Hunting and cooling.

6. ELECTRICAL MACHINES – II :-

Transformers:-

Working principle of transformer - EMF equation - Operation on no load and on load - Equivalent Circuit - Regulation and efficiency - Three phase transformers - Cooling of transformer - Welding transformer - Auto transformer - Parallel operation.

Induction Motors:-

Working principle - Types of induction motor and their constructional details - Torque slip curves - Equivalent circuit - Power output - Circle diagram - Starting of Induction motor - Types of starting - Soft starters - Different methods of speed control - Linear induction motor - Induction Generator.

Synchronous motors:-

Working principle - Operation on load - Characteristics - Hunting - Starting method - Applications - Permanent Magnet Synchronous motor.
Single Phase motors:- Split phase and capacitor motors

7. ELECTRICAL AND ELECTRONICS MEASUREMENTS :-

Characteristics of instruments - Classification and essentials of measuring instruments - Ammeters and Voltmeters - Wattmeters - Energy meters - Galvanometers - Range extension of meters - Special meters - Measurement of resistance - Measurement of Inductance and Capacitances - Calibration of meters - Transducers - Telemetry.

8. COMMUNICATION AND COMPUTER NETWORKS :-

Communications:-

Communication basics - Fiber optic communications - Microwave techniques - Satellite communication .

Computer Networks:-

Networks - Transmission media - Network Architecture - Ethernet - Wireless LANs- Network internet work connectivity - WAN technologies - Basic Computer Skills.

9. ELECTRICAL POWER GENERATION :-

Hydroelectric power plant - Thermal power plant - Nuclear power plant - Diesel power Plant - Gas power plant - Solar power plant - Wind power plant - Tidal power plant - Biomass power plant - Fuel cells - Power plant operation - Economics of power generation - Power factor improvement.

10. POWER ELECTRONICS :-

Power semiconductor devices - SCR controlled circuits - Controlled rectifiers - Choppers - Inverters - Cycloconverters - Device Protection - Power supplies and stabilizers - Switch mode converters - Power electronic s application.

11. SWITCHGEAR AND PROTECTION :-

Introduction to switchgear - Symmetrical fault calculations - Circuit breakers - Fuses - Protective relays - Protection of Alternators and Transformers - Protection of Busbars and lines.

12. INDUSTRIAL DRIVES AND CONTROL :-

Industrial drives:-

Electric motor drives - Driven machine mechanism - Process flow diagram and process and selection of motors - Selection of control motors.

Electric Traction:-

Different systems of traction - Electric traction advantages and disadvantages - System of electric traction - Speed time curve - Mechanism of train movement - Motor for electric traction - Control of motors - Braking - Current collection gear - Train lighting system.

13. UTILIZATION OF ELECTRICAL ENERGY AND MANAGEMENT :-

Electric heating - Refrigeration and air conditioning - Electric welding - Electrochemical process - Illumination - Energy management and audit.