B. Voc. in Electrical Appliances Services and Maintenance

Semester: Second

SYLLABUS- GENERATION OF ELECTRICAL POWER

STEAM POWER STATION: Schematic arrangement, advantages and disadvantages, choice of site, efficiency of steam power station, Types of prime movers, characteristic, speed control & auxiliaries. Environmental aspects for selecting the sites and locations of thermal power stations.

HYDRO POWER STATION: Schematic arrangement, advantages and disadvantages, choice of site constituents of hydro power plant, Hydro turbine. Environmental aspects for selecting the sites and locations of hydro power stations.

NUCLEAR POWER STATION: Schematic arrangement, advantages and disadvantages, selection of site, types of reactors, Hazards, Environmental aspects for selecting the sites and locations of nuclear power stations.

TARIFF AND ECONOMIC ASPECTS IN POWER GENERATION: Terms commonly used in system operation, various factors affecting cost of generation: Load curves, load duration curves, Connected load, maximum load, Peak load, base load and peak load power plants, load factor, Plant capacity factor, Plant use factor, Demand factor, diversity factor, Cost of power plant, Tariffs.

SYLLABUS- ENERGY CONVERSION - I

BASICS OF TRANSFORMER: Working principle of transformer, Transformer Construction, Arrangement of core & winding in different types of transformer, Brief ideas about transformer accessories such as conservator, tank, breather explosion vent etc., types of cooling methods, procedures for Care and maintenance.

EQUIVALENT CIRCUIT: EMF equation, Ideal transformer voltage transformation, Transformer on no load and on load phasor diagrams, Equivalent Resistance, Reactance and Impedance. pf., Equivalent circuit.

VOLTAGE REGULATION: Approximate & exact voltage drop of a Transformer, Regulation of various loads and power factor. Different types of losses in a Transformer.

TESTING: Open circuit test, Short circuit test, Efficiency, efficiency at different loads and power factors, condition for maximum efficiency, All Day Efficiency (solve problems), determination of load corresponding to Maximum efficiency, parallel operation of single-phase transformer.

AUTO TRANSFORMER: Constructional features. Working principle of single-phase Auto Transformer, Comparison of Auto transformer with a two-winding transformer, Uses of Auto transformer. Tap changer with transformer (on load and off load condition)**.**

SYLLABUS- ELECTRICAL MEASUREMENT

MEASURING INSTRUMENTS: Accuracy, precision, Errors, Resolutions Sensitivity and tolerance, Classification of measuring instruments, Deflecting, controlling and damping arrangements in indicating type of instruments, Calibration of instruments.

INSTRUMENT TRANSFORMER: Current Transformer and Potential Transformer, Ratio error, Phase Angle error and Burden, Clampon Ammeters, Use of CT and PT.

MEASUREMENT OF RESISTANCE: Classification of resistance , Measurement of low resistance by voltage drop and potentiometer method , four terminal resistance, Measurement of medium resistance by wheat Stone bridge method and substitution Method, Measurement of high resistance by loss of charge method. , construction & principle of operations of megger, insulation resistance & Earth resistance , construction and principles of Multimeter.

MEASUREMENT OF INDUCTANCE NAD CAPACITANCE: measurement of inductance by Maxewell's Bridge method, Owen Bridge method, measurement of capacitance by De Sauty Bridge method and Schering Bridge method.