DETAILED SYLLABUS FOR THE POST OF JUNIOR INSTRUCTOR - WIREMAN IN INDUSTRIAL TRAINING DEPARTMENT

(Cat.No: 673/2023) - (TOTAL MARKS - 100)

MODULE - 1 (a)	**FUNDAMENTALS OF ELECTRICITY:-** Effects of electric current, fundamental terms, definition, solder, flux, definition and properties of conductors, insulators, semi conductors, different types of insulators, type of wires and cables, specification of wires and cables - insulators, low medium and high voltage various type of cables.	**10 Marks**
MODULE - 1 (b)	**LAW OF RESISTANCE, OHM'S LAW, KIRCHHOFF'S LAWS:-** Resistance,pd, current, specific resistance, laws of resistance, ohm's law, series and parellel circuit, kirchhoff's laws, wheat stone bridge, effects of variation of temperature on resistance, work, power, energy, efficiency, heating effect of electric currents.	
MODULE - 2	**CELLS AND BATTERIES:-** Electrolysis, faradays laws of electrolysis, basic principle of electro plating and electro chemical equivalents. Primary cell and secondary cell lead acid cell, methods of charging care and maintaince of cells, grouping of cells of specified voltage and current, inverter, battery charger nickel alkalicell, efficiency of cells, power and capacity of cells.	**10 Marks**
MODULE - 3	**HOUSE WIRING AND EARTHING** :- Differnt method of earthing IE, pipe, plate importance of earthing, improving earth resistance, E L C B type of wiring and their uses, IE rules wiring accessories, Such as lamp holder, switch, plug, bracket, ceiling rose cutout, ICTP, ICDP.	**10 Marks**
	ILLUMINATION :- Construction working and application of incandesent lamp floursent tube, cfl, neon sign, halogen mercury vapour lamp, sodium vapour lamp.	
MODULE - 4	**MAGNETISM:-** Classification of magnets, method of magnetising magnetic materials, properties, care and maintance para and diamagnectic, and ferro magnetic, materials principle of electro magnetism, max well's cork screw rule, fleming's left and right hand rules. magnetic field of current carring conductor, solenoid M.M.Fluxdensity reluctance, hysteresis,eddy current, principle of electro magnetic induction, faradays laws, lenz's law, electro statics capasitor, different types of function and uses.	**10 Marks**
MODULE - 5	**ALTERNATING CURRENT AND POLY PHASE:-** Comparison and advantage AC and DC related terms, frequency, instantaneous value R M S value, average value, peack factory, form factor, sine wave, phase and phase difference inductive and capacitive reactance, impedance power factor , active and reactive power single phase and 3 phase system, power consumption series and parallel, PF, three phase star delta connection line and phase voltage, current and power in 3 phase circuits with balanced and un balanced load.	**10 Marks**
MODULE - 6	**BASIC ELECTRONICS:-** Semi conducter, atomic structure P type and N type types of materials, P N junction classification diodes, reverse and forward bias, heat sink specification of diode, PIV rating, half wave, full wave and bridge circuit, fitter circuits passive filter . L E D, diade types of transistor UJT, SCR, regulator ics and zener diode uses and its application, ic voltage regulator JFET, logic gate, AND gate.	**10 Marks**

MODULE - 7	**DC GENERATOR AND MOTORS:-** Introduction to dc generator and working principle, parts of DC generator, classification of generator self excited and seperatly excited their application types and characteristics of DC generator, series shunt and compound their application, emf equation DC motor working principle, types of motor, torque, speed back emf. Characteristics, speed control of DC motor, necessity of starter types of starters. 2 point, 3 point, 4 point starters protective device used method of speed control.	**10 Marks**
MODULE - 8	**AC GENERATORS, MOTORS AND STARTERS:-** Parts and construction of alternator principles of working, types of alternator, emf equation, various applications and power rating of alternator, general idea of loading and regulation of alternator, parallel operation of alternators, synchronizing method. AC single phase motor and types, capasitors start/run - start and run FHP motors and their uses various application of AC single phase motors. **THREE PHASE MOTORS:** construction principle of operation of three phase induction motors squirrel cage and slipring induction motors rotors slip, rotor frequency and motor torque starting method, speed control method importance of phase sequence in three phase induction motor single phasing preventere starters, DOL starters, delta starters and auto transformer starter rotor resisitence starter.	**10 Marks**
MODULE - 9	**TRANSFORMERS:-** **POWER TRANSFORMERS:-** Its construction working parallel operation of transformer their connection, cooling transformer, EMF equation, transformation ratio, ideal transformer, construction of core, shell, berry type, auxiliary parts, breather, conservator, Buchholz's relay, other protective device, transformer oil testing OFF load and ON load, auto transformer, its construction, working and uses, CT, PT, losses and efficiency.	**10 Marks**
MODULE - 10	**MEASURING INSTRUMENT:-** **TYPES OF MEASURING INSTRUMENT:-** MC and MI construction and working principles of ammeter, volte meter, om meter, waltt meter, energy meter, PF meter, Megger, earth tester, CT, and PT tong tester / clip on meter multi meter. **GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRICITY GENERATION** :- Diesel power station, stream power station, hydro electric power station, nuclear power station. **SUBSTATION** : - Indoor, outdoor, pole mounting, EHT sub station, HT substation, medium and low voltage substation. **UG CABLE** : - Construction of cable, types ,testing.	**10 Marks**

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.