Rajasthan ILD Skills University

B.VOC in Electrical Appliances Services and Maintenance

Semester-III

STRUCTURE TABLE

S.N.	Paper Title	Paper Category	Credits			Total Credits	EOSE Duration (Hrs.)		
			Theory	Practical	Self/ Project/ Industry		T	P	S
1	Digital Electronics	Skill	4	2	-	6			
2	Electrical DC Machines	Skill	4	2	-	6			
3	Electrical Ac Machines –I	Skill	4	2	-	6			
		TOTAL	12	6		18			

Syllabus: Electrical Appliances Services and Maintenance

Digital Electronics

- Features of logic algebra, Theorems of Boolean algebra. Boolean function. Derived logic gates: Exclusive-OR, NAND, NOR gates, their block diagrams and truth tables. Logic diagrams from Boolean expressions and vica-versa.
- Combinational Systems: Combinational logic circuit design, half and full adder, subtractor.
- Binary serial and parallel adders. BCD adder. Binary multiplier.
- Decoder: Binary to Gray decoder, BCD to decimal, BCD to 7-segment decoder.
- Multiplexer, demultiplexer, encoder.Octal to binary . Design of logic circuits by multiplexers, encoders, decoders and de-multiplexers.

ELECTRICAL DC MACHINES

- Magnetic circuits: Magnetic circuits, magneto motive force magnetic field strength
- Permeability, reluctance, analogy between electric and magnetic-circuits, B-H curve, hysteresis, series and parallel magnetic circuits
- Practical magnetic circuits, permanent magnet and their applications.
- Basic principles, conservation of energy, physical phenomenon involved in conversion, energy balance.
- DC Generators: Introduction, construction, types, emf equation, lap and wave windings, armature reaction, commutation, methods of improving commutation, equalizer rings.
- Demagnetizing and cross magnetizing ampere turns, voltage build up, losses and efficiency, condition for maximum efficiency.
- DC Motors: Introduction, principals, back-emf, torque of motor, types, characteristics of shunt, series and compound motors, speed control (field and armature control methods), basic idea of solid state devices in controlling of DC motors
- Starting of DC motors, three point and four point starters, losses and efficiency, testing (brake test and swimburnes test), electric braking of DC motors, Applications.

ELECTRICAL AC MACHINES-I

- Transformer: Construction, Principal, Types, Emf equation, no load and short circuit test
- Equivalent circuits, back-to-back (Sumpner's test), phasor diagram, Voltage regulation, Efficiency, Condition for maximum efficiency, all day efficiency, parallel operation , auto-transformer, basic idea of welding transformer
- Current and potential transformer, separation of losses.
- Polyphase Transformer: Construction, Various connections and groups, choice of connections, open delta connection, Scott connection, three phase to two phase conversion and vice-versa.
- Applications, Parallel operation and its conditions Three to six phase conversion. Excitation phenomenon in transformers, magnetizing harmonic currents and their effects, switching currents in transformers, inrush of magnetizing current. Three winding transformer