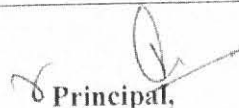


**Syllabus of
Basic Course in Motor Winding
(300 HOURS)**

Sr. No.	Practical Competencies	Underpinning Knowledge (Theory)	Duration in Hours
1.	Safety Precaution <ul style="list-style-type: none"> • First aid box • Safe handling of stripping/winding tools • BIS rules for winding/rewinding 	<ul style="list-style-type: none"> • Identify different tools for stripping old wire • Practice proper and safe use of tools 	22 Hours
2.	Electrical supply system <ul style="list-style-type: none"> • AC single phase and 3-phase supply • Difference between single and three phase supply in respect of voltage, current and power 	<ul style="list-style-type: none"> • Measure/Test single phase supply by multimeter/ test lamp • Measure/Test three phase supply by multimeter/ double test lamp 	30 Hours
3.	Introduction to re-winding <ul style="list-style-type: none"> • Types of winding wires • Types of insulating materials • Terminology used in winding like pole pitch, coil pitch, etc. 	<ul style="list-style-type: none"> • Identify different winding wires • Identify different insulating material • Dismantle electrical fan/motor • Identify the damaged/burnt part of winding in fan/motor 	28 Hours
4.	<ul style="list-style-type: none"> • Method of stripping the old winding • Methods of preparing the winding former and the coils. 	<ul style="list-style-type: none"> • Prepare the winding former and the coils of different size and shape • Record the winding data like size/gauge of wire, number of turns, coil connection, coil pitch, etc. 	28 Hours
5.	Rewinding procedure of motor <ul style="list-style-type: none"> • Procedure followed for re-winding of all kind of electric motors like single phase AC motors, pump motors, ceiling fan motors, table fan motors, submersible pump motor, etc. • Testing for continuity and insulation 	<ul style="list-style-type: none"> • Prepare insulating paper and wooden /insulating stick as per the slot of motor • Prepare the coil as per size, number of turns and coil pitch of the given motor • Test for continuity and winding insulation • Assemble the motor and run (without varnishing) 	36 Hours
6.	Varnishing and final test <ul style="list-style-type: none"> • Types of varnishes • Methods of impregnation 	<ul style="list-style-type: none"> • Practice varnishing of re-winded motor. • Make proper connections 	30 Hours


	<ul style="list-style-type: none"> • Methods of insulation resistance improvement 	and check the performance of motor	
7.	<p>Rewinding procedure of transformer</p> <ul style="list-style-type: none"> • Basic construction and coil arrangement in primary and secondary side of transformer (single phase & three phase) • Procedure for placing insulation between coils and core Connection and IR testing of primary and secondary • Varnish impregnation and its advantages 	<ul style="list-style-type: none"> • Measure and determine the size of winding wire/strip for primary and secondary • Test and identify the faults in coil of primary and secondary • Test the transformer for insulation, transformation ratio and performance 	36Hours
8.	<p>Armature winding</p> <ul style="list-style-type: none"> • Concept of DC supply • Types of armature winding like lap and wave winding • Terminology used in armature winding like pole pitch, coil pitch, back and front pitch, progressive and retrogressive winding etc. • Impregnation and testing of armature winding 	<ul style="list-style-type: none"> • Dismantle the DC motor and identify the parts of armature • Check and test the armature • Record the winding data and coil connections • Clean and insert the insulation in the slots • Prepare and insert the coil in slots • Test for continuity and IR of winding • Varnish the armature winding 	42 Hours
9.	<p>Repair of electrical power tools</p> <ul style="list-style-type: none"> • Types of electrical power tools as per their application like hand drilling machine, angle grinder, rotary hammer, sander/polisher, blower, heavy duty cutter, portable cut off saw etc. 	<ul style="list-style-type: none"> • Dismantling and reassembling of electrical power tools used like hand drilling machine, angle grinder, rotary hammer, marble cutter, heavy duty mini grinder, sander/polisher, blower, heavy duty cutter, portable cut off saw etc. 	48 Hours


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**Syllabus of
Basic Course in Motor Winding
(150 HOURS)**

Sr. No.	Practical Competencies	Underpinning Knowledge (Theory)	Duration in Hours
1.	Safety Precaution <ul style="list-style-type: none"> • First aid box • BIS rules for winding/rewinding 	<ul style="list-style-type: none"> • Identify different tools for stripping old wire • Practice proper and safe use of tools 	11 Hours
2.	Electrical supply system <ul style="list-style-type: none"> • AC single phase and 3-phase supply • Difference between single and three phase supply in respect of voltage, current and power 	<ul style="list-style-type: none"> • Measure/Test single phase supply by multimeter/ test lamp. 	15 Hours
3.	Introduction to re-winding <ul style="list-style-type: none"> • Types of winding wires • Types of insulating materials • Terminology used in winding like pole pitch, coil pitch, etc. 	<ul style="list-style-type: none"> • Identify different winding wires • Identify different insulating material • Dismantle electrical fan/motor. 	14 Hours
4.	<ul style="list-style-type: none"> • Method of stripping the old winding • Methods of preparing the winding former and the coils. 	<ul style="list-style-type: none"> • Prepare the winding former and the coils of different size and shape • Record the winding data like size/gauge of wire, number of turns, coil connection, coil pitch, etc. 	14 Hours
5.	Rewinding procedure of motor <ul style="list-style-type: none"> • Procedure followed for re-winding of all kind of electric motors like single phase motor ceiling fan motors, table fan motors, submersible pump motor, etc. • Testing for continuity and insulation 	<ul style="list-style-type: none"> • Prepare insulating paper and wooden /insulating stick as per the slot of motor • Prepare the coil as per size, number of turns and coil pitch of the given motor • Assemble the motor and run (without varnishing) 	18 Hours
6.	Varnishing and final test <ul style="list-style-type: none"> • Types of varnishes • Methods of impregnation • Methods of insulation resistance improvement 	<ul style="list-style-type: none"> • Practice varnishing of re-winded motor. • Make proper connections and check the performance of motor 	14 Hours
7.	Rewinding procedure of transformer <ul style="list-style-type: none"> • Basic construction and coil arrangement in primary and secondary side of transformer (single phase & three phase) 	<ul style="list-style-type: none"> • Measure and determine the size of winding wire/strip for primary and secondary 	18 Hours

	<ul style="list-style-type: none"> • Procedure for placing insulation between coils and core Connection and IR testing of primary and secondary 	<ul style="list-style-type: none"> • Test and identify the faults in coil of primary and secondary • Test the transformer for insulation, transformation ratio and performance 	
8.	<p>Armature winding</p> <ul style="list-style-type: none"> • Concept of DC supply • Type of armature winding like lap and wave winding • Terminology used in armature winding like pole pitch, coil pitch, back and front pitch, progressive and retrogressive winding etc. 	<ul style="list-style-type: none"> • Dismantle the DC motor and identify the parts of armature • Check and test the armature • Prepare and insert the coil in slots • Test for continuity and IR of winding 	20 Hours
9.	<p>Repair of electrical power tools</p> <ul style="list-style-type: none"> • Types of electrical power tools as per their application like hand drilling machine, angle grinder, rotary hammer, sander/polisher, blower, heavy duty cutter, portable cut off saw etc. 	<ul style="list-style-type: none"> • Dismantling and reassembling of electrical power tools used like hand drilling machine, angle grinder, rotary hammer, marble cutter, heavy duty mini grinder, sander/polisher, blower, heavy duty cutter, portable cut off saw etc. 	26 Hours


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11.	Perform appropriate sheet metal operation to make different shapes (Shearing, Cutting, Bending, Folding, Seaming, Wire edging)	Types of seams and allowances, Types of flux and selection criteria, Types of rivets and riveting methods	12 Hours
12.	Perform sheet metal joining operations, Join sheets using folding and appropriate seaming (Single seam, Double seam, Groove seam, Lap seam, Dovetail seam)	Knowledge of Limits, Fits and Tolerance, Systematic steps of different operations and safety considerations of each operation.	46 Hours
13.	Select appropriate rivet for riveting operation (Snap head, Pan head, Countersunk head, Mushroom head, Flat head)	Arc welding – Equipments, Principles, Electrodes, safety, applications, Advantages & Limitations	24 Hours
14.	Perform riveting using appropriate joint	Gas welding – Equipments, Principles, Filler rods, Fluxes, safety, applications, Advantages & Limitations	22 Hours


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