



1st YEAR BREAKUP SYLLABUS OF ELECTRICIAN TRADE PRACTICALS

Week	Date	Professional Skills (Trade Practical) With Indicative Hours
1	03-Aug-2019 to 08-Aug-2019	1. Visit various sections of the institutes and location of electrical installations. 2. Identify safety symbols and hazards. 3. Preventive measures for electrical accidents and practice steps to be taken in such accidents. 4. Practice safe methods of fire fighting in case of electrical fire. 5. Use of fire extinguishers.
2	13-Aug-2019 to 19-Aug-2019	6. Practice elementary first aid. 7. Rescue a person and practice artificial respiration. 8. Disposal procedure of waste materials. 9. Use of personal protective equipments. 10. Practice on cleanliness and procedure to maintain it.
3	20-Aug-2019 to 24-Aug-2019	11. Identify trade tools and machineries. 12. Practice safe methods of lifting and handling of tools & equipment. 13. Select proper tools for operation and precautions in operation. Care & maintenance of trade
		TOOLS
4 to 5	26-Aug-2019 to 10-Sep-2019	15. Operations of allied trade tools. 16. Workshop practice on filing and hacksawing. 17. Prepare hand coil winding assembly. 18. Practice on preparing T-joint, straight joint and dovetail joint on wooden blocks. 19. Practice sawing, planing, drilling and assembling for making a wooden switchboard.
6 to 7	11-Sep-2019 to 20-Sep-2019	20. Practice in marking and cutting of straight and curved pieces in metal sheets, making holes, securing by screw and riveting. 21. Workshop practice on drilling, chipping, internal and external threading of different sizes. 22. Practice of making square holes in crank handle. 23. Prepare an open box from metal sheet.
8	21-Sep-2019 to 27-Sep-2019	24. Prepare terminations of cable ends 25. Practice on skinning, twisting and crimping. 26. Identify various types of cables and measure conductor size using SWG and micrometer.
9 to 10	28-Sep-2019 to 05-Oct-2019	27. Make simple twist, married, Tee and western union joints. 28. Make britannia straight, britannia Tee and rat tail joints. 29. Practice in Soldering of joints/lugs.
11 to 12	07-Oct-2019 to 19-Oct-2019	30. Identify various parts, skinning and dressing of underground cable. Make straight joint of different types of underground cable. 31. Test insulation resistance of underground cable using megger. 32. Test underground cables for faults and remove the fault.
13 to 14	21-Oct-2019 to 05-Nov-2019	33. Practice on measurement of parameters in combinational electrical circuit by applying Ohm's Law 34. Different resistor values and voltage sources and analyse by drawing graphs. 35. Measure current and voltage in electrical circuits to verify Kirchoff's Law 36. Verify laws of series and parallel circuits with voltage source in different combinations. 37. Measure voltage and current against individual resistance in electrical circuit. 38. Measure current and voltage and analyse the effects of shorts and opens in series circuit. 39. Measure current and voltage and analyse the effects of shorts and opens in parallel circuit.
15	06-Nov-2019 to 20-Nov-2019	40. Measure resistance using voltage drop method. 41. Measure resistance using wheatstone bridge. 42. Determine the thermal effect of electric current. 43. Determine the change in resistance due to temperature. 44. Verify the characteristics of series parallel combination of resistors.
16 to 17	21-Nov-2019 to 07-Dec-	45. Determine the poles and plot the field of a magnet bar. 46. Wind a solenoid and determine the magnetic effect of electric current. 47. Measure induced emf due to change in magnetic field. 48. Determine direction of induced emf and current. 49. Practice on generation of mutually induced emf.

	07-000 2019	50. Measure the resistance, impedance and determine inductance of choke coils in different combinations. 51. Identify various types of capacitors, charging / discharging and testing. 52. Group the given capacitors to get the required capacity and voltage rating.
18 to 19	09-Dec- 2019 to 25-Dec- 2019	53. Measure current, voltage and PF and determine the characteristics of RL, RC and RLC in AC series circuits. 54. Measure the resonance frequency in AC series circuit and determine its effect on the circuit. 55. Measure current, voltage and PF and determine the characteristics of RL, RC and RLC in AC parallel circuits. 56. Measure the resonance frequency in AC parallel circuit and determine its effects on the circuit. 57. Measure power, energy for lagging and leading power factors in single phase circuits and compare characteristic graphically. 58. Measure Current, voltage, power, energy and power factor in three phase circuits. 59. Practice improvement of PF by use of capacitor in three phase circuit.
20 to 21	26-Dec- 2019 to 13-Jan- 2019	60. Ascertain use of neutral by identifying wires of a 3- phase 4 wire system and find the phase sequence using phase sequence meter. 61. Determine effect of broken neutral wire in three phase four wire system 62. Determine the relationship between Line and Phase values for star and delta connections. 63. Measure the Power of three phase circuit for balanced and unbalanced loads 64. Measure current and voltage of two phases in case of one phase is short-circuited in three phase four wire system and compare with healthy system
	14-Jan- 2019 to 25-Jan- 2019	65. Use of various types of cells. 66. Practice on grouping of cells for specified voltage and current under different conditions and care. 67. Prepare and practice on battery charging and details of charging circuit. 68. Practice on routine, care/ maintenance and testing of batteries. 69. Determine the number of solar cells in series / parallel for given power requirement.
	27-Jan- 2019 to 08-Feb- 2019	70. Identify various conduits and different electrical accessories. 71. Practice cutting, threading of different sizes & laying Installations. 72. Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB, MCCB etc.
	27-Jan- 2019 to 07-Feb- 2019	73. Draw layouts and practice in PVC Casing-capping, Conduit wiring with minimum to more number of points of minimum 15 mtr length. 74. Wire up PVC conduit wiring to control one lamp from two different places. 75. Wire up PVC conduit wiring to control one lamp from three different places. 76. Wire up PVC conduit wiring and practice control of sockets and lamps in different combinations using
	26/1/20 to 8/2/20	77. Wire up the consumers main board with ICDDP switch and distribution fuse box 78. Prepare and mount the energy meter board. 79. Estimate the cost/bill of material for wiring of hostel/ residential building and workshop. 80. Practice wiring of hostel and residential building as per IE rules. 81. Practice wiring of institute and workshop as per IE rules. 82. Practice testing / fault detection of domestic and industrial wiring installation and repair.
	25/2/20 to 10/3/20	83. Prepare pipe earthing and measure earth resistance by earth tester / megger. 84. Prepare plate earthing and measure earth resistance by earth tester / megger. 85. Test earth leakage by ELCB and relay.
		86. Install light fitting with reflectors for direct and indirect lighting. 87. Group different wattage of lamps in series for specified voltage. 88. Practice installation of various lamps e.g. fluorescent tube, HP mercury vapour, LP mercury vapour, HP sodium vapour, LP sodium vapour, metal halide etc. 89. Prepare decorative lamp circuit using drum switches 90. Prepare decorative lamp circuit to produce rotating light effect/running light effect. 91. Install light fitting for show case lighting.
		92. Practice on various analog and digital measuring Instruments. 93. Practice on measuring instruments in single and three phase circuits e.g. multi-meter, Wattmeter, Energy

	94. Measure power in three phase circuit using two wattmeter methods.
	95. Measure power factor in three phase circuit by using power factor meter and verify the same with <u>voltmeter, ammeter and wattmeter readings.</u>
	96. Measure electrical parameters using tong tester in three phase circuits.
	97. Practice for range extension and calibration of various measuring instruments.
	98. Determine errors in resistance measurement by voltage drop method. Test single phase energy meter for
	100. Dismantle and assemble electrical parts of various electrical appliances e.g. cooking range, geyser, <u>washing machine and pump set.</u>
	101. Service and repair of bell/ buzzer.
	102. Service and repair of electric iron, electric kettle, cooking range and geyser.
	103. Service and repair of induction heater and oven.
	104. Service and repair of mixer and grinder.
	105. Service and repair of washing machine.
	106. Verify terminals, identify components and calculate transformation ratio of single phase transformers.
	107. Perform OC and SC test to determine and efficiency of single phase transformer.
	108. Determine voltage regulation of single phase transformer at different loads and power factors.
	109. Perform series and parallel operation of two single phase transformers.
	110. Verify the terminals and accessories of three phase transformer HT and LT side.
	111. Perform 3 phase operation (i) delta-delta (ii) delta-star (iii) star-star (iv) star-delta, by use of three single <u>phase transformers. (6 Hrs)</u>
	112. Perform testing of transformer oil. (6 Hrs)
	113. Practice on winding of small transformer. (8 Hrs)
	114. Practice of general maintenance of transformer. (5 Hrs)
	<p style="text-align: center;">Project work / Industrial visit Broad Areas:</p> <p style="text-align: center;">a) Overload protection of electrical equipment</p> <p style="text-align: center;">b) Automatic control of street light/night lamp</p> <p style="text-align: center;">c) Fuse and power failure indicator using relays</p> <p style="text-align: center;">d) Door alarm/indicator</p> <p style="text-align: center;">e) Decorative light with electrical flasher</p>
50-51	Revision
52	Examination

