Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
1	1	Theory	Scope of the electrician trade.	Visit various sections of the institutes and location of electrical installations. (05 hrs)
	2		Safety rules and safety signs.	Identify safety symbols and hazards. (05 Hrs)
	3	W/Shop calculation	Classification of Unit System Fundamental and Derived Units F.P.S, C.G.S, M.K.S and SI Units ,Measurement Units and Conversion,Factors, HCF, LCM and Problems	Preventivemeasures for electrical accidents and practice steps to be taken in such accidents. (05 hrs)
	4	Engg. Drawing	Engineering Drawing – Introduction Introduction to Engineering Drawing and Drawing Instruments – -> Conventions -> Viewing of engineering drawing sheets. -> Method of Folding of printed Drawing sheet as per BIS SP: 46-2003	Practice safe methods of fire fighting in case of electrical fire. (05 hrs)
	5	ES	Behavioural Skill-Creating a focused and responsible learning envirnment-Chart paper Activity.	Theory : 3 hrs - Types and working of fire extinguishers. Extra curricular activity : 2 hrs
	6	ES	Self-awareness and confidence building, display professionalism at the institute and work place	Use of fire extinguishers. (05 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
2	1	Theory	First aid safety practice. Hazard identification and prevention.	Practice elementary first aid. (05 hrs)
	2		Personal safety and factory safety.	Rescue a person and practiceartificial respiration. (05 Hrs)
	3	W/Shop calculation	Fractions – Addition, Subtraction, Multiplication and Division -> Decimal Fractions - Addition, Subtraction, Multiplication and Division -> Solving Problems by using calculator	Disposal procedure of waste materials. (05 Hrs)
	4	Engg. Drawing	Drawing Instrument -> Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.	Use of personal protective equipments. (05 hrs)
	5	ES	Increased Social initiations relationships and networks . Acceptance of peers from different cultures and social groups and work with them . Collaboration with team to priroritise the common goal and compromise individual prirorities.	Theory : 3 hrs -Response to emergencies e.g. power failure, system failure and fire etc. Extra curricular activity : 2 hrs
	6	ES	Characteristic of a responsible citizen- Display the same by respecting self, others, environment, care for duty and value for time.	Practice on cleanliness and procedure to maintain it. (05 hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
3	1	Theory	Concept of Standards and advantages of BIS/ISI.	Identify trade tools and machineries. (5 Hrs)
	2		Trade tools specifications.	Identify trade tools and machineries. (5 Hrs)
	3	W/Shop calculation	Square and Square Root -> Simple problems using calculator -> Application of Pythagoras Theorem and related problems	Practice safe methods of lifting and handling of tools & equipment. (05 Hrs)
	4	Engg. Drawing	Free hand drawing of – -> Lines, polygons, ellipse etc.	Select proper tools for operation and precautions in operation. (05 Hrs)
	5	ES	Adopting best practices and aspire to follow success stories of individual for personal development.	Theory : 3 hrs - Introduction to National Electrical Code-2011. Extra curricular activity : 2 hrs
	6	ES	English literacy:-Importance of learning english	Care & maintenance of trade tools. (05 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
4	1	Theory	Allied trades: Introduction to fitting tools, safety precautions.	Operations of allied trade tools. (05 Hrs)
	2		Description of files, hammers, chisels	Workshop practice on filing and hacksawing. (5 Hrs)
	3	W/Shop calculation	Monthly Test WCS	Workshop practice on filing and hacksawing. (5 Hrs)
	4	Engg. Drawing	Monthly Test ED	Prepare hand coil winding assembly. (5 Hrs)
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Different naming words, word used for replacing names, action words, describing people, place and their use.	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
5	1	Theory	hacksaw frames, blades, their specification and grades	Practice on preparing T-joint, straight joint and dovetail joint on wooden blocks. (15Hrs)
	2		Marking tools description and use.	Practice on preparing T-joint, straight joint and dovetail joint on wooden blocks. (15Hrs)
	3	W/Shop calculation	Ratio and Proportions -> Direct and Indirect proportion -> Percentage -> Changing percentage to decimal	Practice sawing, planing, drilling and assembling for making a wooden switchboard. (15Hrs)
	4	Engg. Drawing	Geometrical figures and blocks with dimension	Practice sawing, planing, drilling and assembling for making a wooden switchboard. (15Hrs)
	5	ES	Introduction to punctuation-comma, full stop, question mark.	Theory : 3 hrs - Types of drills, description & drilling machines. Various wooden joints. Extra curricular activity : 2 hrs
	6	ES	Singular plural	Practice sawing, planing, drilling and assembling for making a wooden switchboard. (15Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
6	1	Theory	Marking tools; calipers Dividers, Surface plates, Angle plates, Scribers,	Practice in marking and cutting of straight and curved pieces in metal sheets, making holes, securing by screw and riveting. (10 Hrs)
	2		punches, surface gauges Types, Uses, Care and maintenance.	Practice in marking and cutting of straight and curved pieces in metal sheets, making holes, securing by screw and riveting. (10 Hrs)
	3	W/Shop calculation	Types of metals -> Physical and Mechanical Properties of metals	Workshop practice on drilling, chipping, internal and external threading of different sizes. (20Hrs)
	4	Engg. Drawing	Transferring measurement from the given object to the free hand sketches.	Workshop practice on drilling, chipping, internal and external threading of different sizes. (20Hrs)
	5	ES	Change of tense-simple present, past; present, past progressive	Theory : 3 hrs - Sheet metal tools: Description of marking & cutting tools. Extra curricular activity : 2 hrs
	6	ES	Construction of simple senteces-kinds of sentences	Workshop practice on drilling, chipping, internal and external threading of different sizes. (20Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
7	1	Theory	Types of rivets and rivetedjoints.	Workshop practice on drilling, chipping, internal and external threading of different sizes. (20Hrs)
	2		Use of thread gauge.	Practice of making square holes in crank handle. (5 Hrs)
	3	W/Shop calculation	Types of ferrous and non-ferrous metals -> Introduction of iron and cast iron	Prepare an open box from metal sheet. (15 Hrs)
	4	Engg. Drawing	Solid objects – Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions.	Prepare an open box from metal sheet. (15 Hrs)
	5	ES	Usege of appropriate words to express themselves	Theory : 3 hrs - Description of carpenter's tools Care and maintenance of tools. Extra curricular activity : 2 hrs
	6	ES	Greetings & self indroduction	Prepare an open box from metal sheet. (15 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
8	1	Theory	Fundamentals of electricity, definitions, units & effects of electric current.	Prepare terminations of cable ends,Practice on skinning, twisting and crimping.
	2		Conductors and insulators.Conducting materials and their comparison.	Practice on skinning, twisting and crimping.
	3	W/Shop calculation	Monthly Test WCS	Identify various types of cables and measure conductor size using SWG and micrometer.
	4	Engg. Drawing	Monthly Test ED	Identify various types of cables and measure conductor size using SWG and micrometer.
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Asking & self indtroduction	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
9	1	Theory	Joints in electrical conductors.	Conducting materials and their comparison.
	2		Joints in electrical conductors.	Conducting materials and their comparison.
	3	W/Shop calculation	Difference between iron and steel, alloy steel and carbon steel -> Properties and uses of rubber, timber and insulating materials	Conducting materials and their comparison.
	4	Engg. Drawing	Free hand drawing of hand tools and measuring tools, simple fasteners (nuts, bolts, rivets etc.) trade related sketches	Make britannia straight, britannia Tee and rat tail joints.
	5	ES	Asking & responding to question	Theory : 3 hrs -Techniques of soldering. Extra curricular activity : 2 hrs
	6	ES	Sharing information with others	Make britannia straight, britannia Tee and rat tail joints.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
10	1	Theory	Techniques of soldering.	Make britannia straight, britannia Tee and rat tail joints.
	2		Types of solders and flux.	Make britannia straight, britannia Tee and rat tail joints.
	3	W/Shop calculation	Mass, volume, density, weight & specific gravity	Practice in Soldering of joints / lugs.
	4	Engg. Drawing	Lines -> Definition, types and applications in drawing as per BIS: 46-2003 -> Classification of lines (Hidden, centre, construction, extension, Dimension, Section)	Practice in Soldering of joints / lugs.
	5	ES	Formal and informal communication	Theory : 3 hrs -Types of solders and flux. Extra curricular activity : 2 hrs
	6	ES	Speak and provide information about workplace	Practice in Soldering of joints / lugs.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
11	1	Theory	Underground cables:Description,	Identify various parts, skinning and dressing of underground cable. (15 Hrs)
	2		Underground cables: types, various joints	Identify various parts, skinningand dressing of underground cable. (15 Hrs)
	3	W/Shop calculation	Related problems for mass, volume, density, weight & specific gravity	Identify various parts, skinningand dressing of underground cable. (15 Hrs)
	4	Engg. Drawing	Drawing lines of given length (Straight, curved) -> Drawing of parallel lines, perpendicular line -> Methods of Division of line segment	Make straight joint of different types of underground cable.
	5	ES	Discussions on current happenings. Self, Work, Environment	Theory : 3 hrs - testing procedure of underground cables Extra curricular activity : 2 hrs
	6	ES	Simple writing skills	Make straight joint of different types of underground cable.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
12	1	Theory	Cable insulation & voltage grades	Make straight joint of different types of underground cable.
	2		Cable insulation & voltage grades	Test insulation resistance of underground cable using megger. (05 hrs)
	3	W/Shop calculation	Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	Test underground cables forfaults and remove the fault. (15 Hrs)
	4	Engg. Drawing	Drawing of Geometrical figures: Definition, nomenclature and practice of _	Test underground cables forfaults and remove the fault. (15 Hrs)
	5	ES	Communication Skills:-Interview Skill/Confidence Building	Theory : 3 hrs -Precautions in using various types of cables. Extra curricular activity : 2 hrs
	6	ES	Professionalism and display of same at the institute and work place	Test underground cables forfaults and remove the fault. (15 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
13	1	Theory	Ohm's Law; Simple electrical circuits and problems.	Practice on measurement of parameters in combinational electrical circuit by applying Ohm's Law for different resistor values and voltage sources and analyse by drawing graphs
	2		Kirchoff's Laws and applications.	Practice on measurement of parameters in combinational electrical circuit by applying Ohm's Law for different resistor values and voltage sources and analyse by drawing graphs
	3	W/Shop calculation	Quarterly Test WCS	Measure current and voltage in electrical circuits to verify Kirchhoff's Law (10 Hrs)
	4	Engg. Drawing	Quarterly Test ED	Measure current and voltage in electrical circuits to verify Kirchhoff's Law (10 Hrs)
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Understand the usage of appropriate words to express themselves communicate effectively on telephone.	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
14	1	Theory	Series and parallel circuits.	Verify laws of series and parallel circuits with voltage source in different combinations. (05Hrs)
	2		Open and short circuits in series and parallel networks.	Measure voltage and current against individual resistance in electrical circuit (10 hrs)
	3	W/Shop calculation	Related problems on speed and velocity	Measure voltage and current against individual resistance in electrical circuit (10 hrs)
	4	Engg. Drawing	Triangle: different types	easure current and voltage and analyse the effects of shorts and opens in series circuit. (05 Hrs)
	5	ES	Manage personal hygiene and presentation positive body language:adopt and use it appropriately to build a positive impression	Theory : 3 hrs -Open and short circuits in series and parallel networks. . **Parents instructor meeting**: 2 hrs
	6	ES	Different spatial zones: Understanding and need to maintain it, create safe zones for communication	Measure current and voltage and analyse the effects of shorts and opens in parallel circuit. (05 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
15	1	Theory	Laws of Resistance and various types of resistors. Wheatstone bridge; principle and its applications.	Measure resistance using voltage drop method. (5 Hrs)
	2		Wheatstone bridge; principle and its applications. Effect of variation of temperature on resistance.	Measure resistance using wheatstone bridge. (5 Hrs)
	3	W/Shop calculation	Potential energy, Kinetic Energy and related problems with related problems	Determine the thermal effect of electric current. (5 Hrs)
	4	Engg. Drawing	Rectangle, Square, Rhombus, Parallelogram	Determine the change in resistance due to temperature.
	5	ES	Maintainig appropriate eye-contact in building trust and confidence	Theory : 3 hrs -Different methods of measuring the values of resistance. Series and parallel combinations of resistors. Extra curricular activity : 2 hrs
	6	ES	Impact of touch in a formal environment. Acceptable and unacceptable touch.	Verify the characteristics of series parallel combination of resistors. (5 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
16	1	Theory	Magnetic terms, magnetic materials and properties of magnet.	Determine the poles and plot the field of a magnet bar.
	2		Principles and laws of electro-magnetism.	Determine the poles and plot the field of a magnet bar.
	3	W/Shop calculation	Work, power, energy, HP, IHP, BHP and efficiency	Wind a solenoid and determine the magnetic effect of electric current.
	4	Engg. Drawing	Circle and its elements	Measure induced emf due to change in magnetic field.
	5	ES	Time mangagement and planning skills interview skills its phases & ways to crack interview	Theory : 3 hrs -Self and mutually induced EMFs. Extra curricular activity : 2 hrs
	6	ES	Handing setbacks/rejection and recover from it with an action plan.	Determine direction of induced emf and current. (06 hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
17	1	Theory	Electrostatics: Capacitor- Different types, functions, grouping and uses.	Practice on generation of mutually induced emf. (08 hrs)
	2		Inductive and capacitive reactance, their effect on AC circuit and related vector concepts.	Measure the resistance, impedance and determine inductance of choke coils in different combinations.
	3	W/Shop calculation	Monthly Test WCS	Identify various types of capacitors, charging / discharging and testing. (05 Hrs)
	4	Engg. Drawing	Monthly Test ED	Group the given capacitors to get the required capacity and voltage rating. (05 Hrs)
	5	ES	Monthly test ES	Monthly Test theory
	6	ES	Developing strongs professional contract/network to gain support inl learining process and career as a whole	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
18	1	Theory	Comparison and Advantages of DC and AC systems.	Measure current, voltage and PF and determine the characteristics of RL, RC and RLC in AC series circuits.
	2		Related terms frequency, Instantaneous value, R.M.S. value Average value, Peak factor, form factor, power factor and Impedance etc.	Measure current, voltage and PF and determine the characteristics of RL, RC and RLC in AC series circuits.
	3	W/Shop calculation	Concept of heat and temperature, effects of heat, difference between heat and temperature -> Scales of temperature, Celsius, Farenhieght,Kelvin and Conversion between scales of temperature	Measure the resonance frequency in AC series circuit and determine its effect on the circuit. (07 hrs)
	4	Engg. Drawing	Different polygon and their values of included angles. Inscribed and circumscribed polygons	Measure current, voltage and PF and determine the characteristics of RL, RC and RLC in AC parallel circuits. (08 Hrs)
	5	ES	Literacy:- Indtroduction to computers and its applications hardware and periphersal, srarting and shutting down of computer, basic ofn computer networks.	Theory : 3 hrs -Related terms frequency, Instantaneous value, R.M.S. value Average value, Peak factor, form factor, power factor and Impedance etc. Extra curricular activity : 2 hrs
	6	ES	Basics of Operating System, Types of operating systems, user interface of widows OS/ latest create, copy move and delete files and folders, use of external memory like pen drive, CD,DVD etc, introduction toinbuilt windows apps, tools and features.	Measure current, voltage and PF and determine the characteristics of RL, RC and RLC in AC parallel circuits.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
19	1	Theory	Sine wave, phase and phase difference.	Measure the resonance frequency in AC parallel circuit and determine its effects on the circuit.
	2		Active and Reactive power.	Measure power, energy for lagging and leading power factors in single phase circuits and compare characteristic graphically.
	3	W/Shop calculation	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	Measure power, energy for lagging and leading power factors in single phase circuits and compare characteristic graphically.
	4	Engg. Drawing	Lettering & Numbering – -> Single Stroke	Measure Current, voltage, power, energy and power factor in three phase circuits.
	5	ES	Basic operating of word processing, creating, opening and closing documents, use of shortcuts, creating and editing of text, formatting the text	Theory : 3 hrs -Single Phase and three-phase system. Problems on A.C. circuits. Extra curricular activity : 2 hrs
	6	ES	Creating simple documents like resum, letter writing, job application etc., printing document	Practice improvement of PF by use of capacitor in three phase circuit.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
20	1	Theory	Advantages of AC poly-phase system.	Ascertain use of neutral by identifying wires of a 3-phase 4 wire system and find the phase sequence using phase sequence meter. (10 Hrs)
	2		Concept of three-phase Star and Delta connection.	Ascertain use of neutral by identifying wires of a 3-phase 4 wire system and find the phase sequence using phase sequence meter. (10 Hrs)
	3	W/Shop calculation	Co-efficient of linear expansion and related problems with assignments	Determine effect of broken neutral wire in three phase four wire system.(05 hrs)
	4	Engg. Drawing	Lettering & Numbering – Double Stroke	Determine the relationship between Line and Phase values for star and delta connections. (10Hrs)
	5	ES	Basic of excel worksheet and its importance creating simple worksheets adding and average function, printing of simple excel sheet.	Theory : 3 hrs -Concept of three-phase Star and Delta connection. Extra curricular activity : 2 hrs
	6	ES	Indroduction to world wide web. (www) usefull websides web browser-usege, search engine etc. Using popular sites like bharat skills, skill traing related govt. portals, nokari.com, and other job portals.	Determine the relationship between Line and Phase values for star and delta connections. (10Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
21	1	Theory	Line and phase voltage, current and power in a 3 phase circuits with balanced and unbalanced load.	Measure the Power of three phase circuit for balanced and unbalanced loads. (15 Hrs)
	2		current and power in a 3 phase circuits with balanced and unbalanced load.Phase sequence meter.	Measure the Power of three phase circuit for balanced and unbalanced loads. (15 Hrs)
	3	W/Shop calculation	Monthly Test WCS	Measure the Power of three phase circuit for balanced and unbalanced loads. (15 Hrs)
	4	Engg. Drawing	Monthly Test ED	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.
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Cits Applications , apprenticeship portal (naps), resize images, singing up, online fund transfer, using UPI gateway	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
22	1	Theory	Chemical effectof electric current and Laws of electrolysis.	Use of various types of cells.
	2		Explanation of Anodes and cathodes. Types of cells, advantages / disadvantages and their applications.	Practice on grouping of cells for specified voltage and current under different conditions and care.
	3	W/Shop calculation	Problem of Heat loss and heat gain with assignments -> Thermal conductivity and insulators	Practice on grouping of cells for specified voltage and current under different conditions and care.
	4	Engg. Drawing	Lettering & Numbering – Inclined.	Practice on grouping of cells for specified voltage and current under different conditions and care.
	5	ES	Creating and using an email account like gmail, and any other, usages of cc and bcc, attaching documents checking email and composing email	Theory : 3 hrs - Lead acid cell; Principle of operation and components. Extra curricular activity : 2 hrs
	6	ES	Scaning QR/AR code, sharing bast prictices and downloading trade Related videos using Wi-Fi, fund Transfer through app like BHIM.	Prepare and practice on battery charging and details of charging circuit. (12 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
23	1	Theory	Types of battery charging, Safety precautions, test equipment and maintenance.	Prepare and practice on battery charging and details of charging circuit. (12 Hrs)
	2		Basic principles of Electro-plating and cathodic protection	Prepare and practice on battery charging and details of charging circuit.
	3	W/Shop calculation	Boiling point and melting point of different metals and Nonmetals -> Concept of pressure and its units in different system	Practice on routine, care/ maintenance and testing of batteries.
	4	Engg. Drawing	Dimensioning and its Practice -> Definition, types and methods of dimensioning (functional, non-functional and auxiliary) -> Position of dimensioning (Unidirectional, Aligned)	Determine the number of solar cells in series / parallel for given power requirement.
	5	ES	Enterpreneur skills:- Need of becoming entrepreneur	Theory : 3 hrs - Grouping of cells for specified voltage and current. Principle and operation of solar cell. Extra curricular activity : 2 hrs
	6	ES	Ways to becoming a good entrepreneur	Determine the number of solar cells in series / parallel for given power requirement.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
24	1	Theory	I.E. rules on electrical wiring. Types of domestic and industrial wirings.	Identify various conduits and different electrical accessories.
	2		Study of wiring accessories e.g. switches, fuses, relays, MCB, ELCB, MCCB etc.	Identify various conduits and different electrical accessories.
	3	W/Shop calculation	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC, DC and their comparison, voltage , resistance and their units	Practice cutting, threading of different sizes & laying Installations.
	4	Engg. Drawing	Types of arrowhead -> Leader line with text -> Symbols preceding the value of dimension and dimensional tolerance.	Practice cutting, threading of different sizes & laying Installations.
	5	ES	Enabling environment available to vecome an entrepreneur	Theory : 3 hrs - Study of wiring accessories e.g. switches, fuses, relays, MCB, ELCB, MCCB etc. Extra curricular activity : 2 hrs
	6	ES	Different Govt. institutions/schemes promoting entreprenur viz., Gramin bank, PMMY-MUDRA loan, DIC, SIDA SISI, NSIC, SIDO.	Practice cutting, threading of different sizes & laying Installations.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
25	1	Theory	Study of wiring accessories e.g. switches, fuses, relays, MCB, ELCB, MCCB etc.	Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB, MCCB etc.
	2		Principle of laying out of domestic wiring.Grading of cables and current ratings.	Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB, MCCB etc.
	3	W/Shop calculation	Conductor, Insulator, types of connections- Series and Parallel, -> Ohm's Law, relation between VIR & related problems	Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB, MCCB etc.
	4	Engg. Drawing	Sizes and layout of drawing sheets -> Selection of sizes -> Title Block, its position and content -> Item Reference on Drawing Sheet (Item list)	Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB, MCCB etc.
	5	ES	Day to day monitoring mechanism for maintaing an enterprise.	Theory : 3 hrs - Voltage drop concept. Extra curricular activity : 2 hrs
	6	ES	Different Government shcems supporting entrepreneurship.	Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB, MCCB etc.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
26	1	Theory	PVC conduit and Casing-capping wiring system.	Draw layouts and practice in PVC Casing-capping, Conduit wiring with minimum to more number of points of minimum 15 mtr length.
	2		Different types of wiring	Draw layouts and practice in PVC Casing-capping, Conduit wiring with minimum to more number of points of minimum 15 mtr length.
	3	W/Shop calculation	Quarterly Test WCS	Wire up PVC conduit wiring to control one lamp from two different places.
	4	Engg. Drawing	Quarterly Test ED	Wire up PVC conduit wiring to control one lamp from two different places.
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Examples of successful and unsuccessful entreprenurs.	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
27	1	Theory	Power, control, Communication and entertainment wiring.	Wire up PVC conduit wiring to control one lamp from three different places. (10 Hrs)
	2		Wiring circuits planning,	Wire up PVC conduit wiring to control one lamp from three different places. (10 Hrs)
	3	W/Shop calculation	Electrical power, energy and their units, calculation with assignments	Wire up PVC conduit wiring and practice control of sockets and lamps in different combinations using switching concepts.
	4	Engg. Drawing	Method of presentation of Engg. Drawing -> Pictorial View -> Orthographic View -> Isometric View	combinations using switching concepts.
	5	ES	Maintaning efficiency at workplace:- Factors affecting productivity	Theory : 3 hrs - permissible load in sub-circuit and main circuit. **Parents instructor meeting**: 2 hrs
	6	ES	Improving productivity	combinations using switching concepts.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
28	1	Theory	Estimation of load, cable size,	Wire up the consumers main board with ICDP switch and distribution fuse box. (10 Hrs)
	2		Estimation of load, cable size,	Wire up the consumers main board with ICDP switch and distribution fuse box. (10 Hrs)
	3	W/Shop calculation	Magnetic induction, self and mutual inductance and EMF generation -> Electrical Power, HP, Energy and units of electrical energy	Wire up the consumers main board with ICDP switch and distribution fuse box. (10 Hrs)
	4	Engg. Drawing	Symbolic representation – different symbols used in the trades -> Fastener (Rivets, Bolts and Nuts)	Wire up the consumers main board with ICDP switch and distribution fuse box. (10 Hrs)
	5	ES	Personal finance literacy planning, saving, tax govt. shcems for financial safety e.g. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) etc.	Theory : 3 hrs - bill of material and cost. Extra curricular activity : 2 hrs
	6	ES	Occupational Safety, Health and environment Educaiton:-Introduction ton occupational safety & health at work place, occupational hygiene. Basuc Hazards, chemical, physical (elecrical. Temperature, illumination) ergonomic, biological, vibro acoustic, mechanical, psychoscial hazards, prevention of hazards	Estimate the cost/bill of material for wiring of hostel/ residential building and workshop.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
29	1	Theory	Inspection and testing of wiring installations.	Estimate the cost/bill of material for wiring of hostel/ residential building and workshop.
	2		Inspection and testing of wiring installations.	Practice wiring of hostel and residential building as per IE rules.
	3	W/Shop calculation	Area and perimeter of square, rectangle and parallelogram -> Area an Perimeter of Triangle	Practice wiring of hostel and residential building as per IE rules.
	4	Engg. Drawing	Bars and profile sections -> Weld, Brazed and soldered joints	Practice wiring of hostel and residential building as per IE rules.
	5	ES	Different types of personal protective eauipment (PPE), Accident prevention techniques	Theory : 3 hrs - Special wiring circuit e.g. godown, tunnel and workshop etc. Extra curricular activity : 2 hrs
	6	ES	Care of injured & sick at the workplace first-acid & transportation of sick person Basic provisions of safety & health	Practice wiring of institute and workshop as per IE rules.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
30	1	Theory	Special wiring circuit e.g. godown, tunnel and workshop etc.	Practice wiring of institute and workshop as per IE rules.
	2		Special wiring circuit e.g. godown, tunnel and workshop etc.	Practice wiring of institute and workshop as per IE rules.
	3	W/Shop calculation	Monthly Test WCS	Practice testing / fault detection of domestic and industrial wiring installation and repair.
	4	Engg. Drawing	Monthly Test ED	Practice testing / fault detection of domestic and industrial wiring installation and repair. (15 Hrs)
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Introduction to environment, ecosystem and factors causing imbalace, polution and pollutant including liquid, gageous, solid and hazardous waste, protecting the environment-energy , conservation,ground water, global warming, responsibility about the environment, segregation and disposal of waste	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
31	1	Theory	Importance of Earthing. Plate earthing	Prepare pipe earthing and measure earth resistance by earth tester / megger. (10 Hrs)
	2		pipe earthing methods and IEE regulations.	Prepare pipe earthing and measure earth resistance by earth tester / megger. (10 Hrs)
	3	W/Shop calculation	Area and Perimeter of Circle, Semi-circle , circular ring, sector of circle, hexagon and ellipse	Prepare plate earthing and measure earth resistance by earth tester / megger. (10 Hrs)
	4	Engg. Drawing	Electrical and electronics element -> Piping joints and fitting	Prepare plate earthing and measure earth resistance by earth tester / megger. (10 Hrs)
	5	ES	Different actions people that affect other and the environment.	Theory : 3 hrs - Earth resistance and earth leakage circuit breaker. Extra curricular activity : 2 hrs
	6	ES	Types, causes & effects, areas in india that are prone to be affected, preparedness & mitigation, dos and don'ts-before, during and after any disaster, how to reduce man-made disasters.	Test earth leakage by ELCB and relay. (5 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
32	1	Theory	Laws of Illuminations.	Install light fitting with reflectors for direct and indirect lighting. (10 Hrs)
	2		Types of illumination system. Illumination factors, intensity of light.	Install light fitting with reflectors for direct and indirect lighting. (10 Hrs)
	3	W/Shop calculation	Surface area and Volume of solids- cube, cuboids, cylinder, sphere and hollow cylinder	Group different wattage of lamps in series for specified voltage. (5 Hrs)
	4	Engg. Drawing	Projections -> Concept of axes plane and quadrant	Practice installation of various lamps e.g. fluorescent tube, HP mercury vapour, LP mercury vapour, HP sodium vapour, LP sodium vapour, metal halide etc.
	5	ES	-> Concept of axes plane and quadrant	Theory : 3 hrs - Type of lamps, Extra curricular activity : 2 hrs
	6	ES	Self-Awareness, articulating personal values, value-based decision making, dilemma situations.	Practice installation of various lamps e.g. fluorescent tube, HP mercury vapour, LP mercury vapour, HP sodium vapour, LP sodium vapour, metal halide etc.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
33	1	Theory	Type of lamps, advantages/ disadvantages and their applications.	Practice installation of various lamps e.g. fluorescent tube, HP mercury vapour, LP mercury vapour, HP sodium vapour, LP sodium vapour, metal halide etc.
	2		Type of lamps, advantages/ disadvantages and their applications.	Practice installation of various lamps e.g. fluorescent tube, HP mercury vapour, LP mercury vapour, HP sodium vapour, LP sodium vapour, metal halide etc.
	3	W/Shop calculation	Finding lateral surface area , total surface area and capacity in liters of hexagonal, conical and cylindrical shaped vessels	Prepare decorative lamp circuit using drum switches. (5 Hrs)
	4	Engg. Drawing	Projections -> Concept of axes plane and quadrant	Prepare decorative lamp circuit to produce rotating light effect/running light effect.
	5	ES	Identify sources and types of stress (positive/negative stress)	Theory : 3 hrs - Calculations of lumens and efficiency. Extra curricular activity : 2 hrs
	6	ES	Managing stress (long term/ short-term)	Install light fitting for show case lighting.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
34	1	Theory	Classification of electrical instruments and essential forces required in indicating instruments.	Practice on various analog and digital measuring Instruments. (5 Hrs)
	2		PMMC and Moving iron instruments.	Practice on measuring instruments in single and three phase circuits e.g. multi-meter, Wattmeter, Energy meter, Phase sequence meter and Frequency meter etc.
	3	W/Shop calculation	Monthly Test WCS	Practice on measuring instruments in single and three phase circuits e.g. multi-meter, Wattmeter, Energy meter, Phase sequence meter and Frequency meter etc.
	4	Engg. Drawing	Monthly Test ED	Practice on measuring instruments in single and three phase circuits e.g. multi-meter, Wattmeter, Energy meter, Phase sequence meter and Frequency meter etc.
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Handling rejection and building resilience, identify day wasters.	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
35	1	Theory	Measurement of various electrical parameters using different analog and digital instruments.	Measure power in three phase circuit using two wattmeter methods.
	2		Measurement of various electrical parameters using different analog and digital instruments.	Measure power factor in three phase circuit by using power factor meter and verify the same with voltmeter, ammeter and wattmeter readings.
	3	W/Shop calculation	Simple machines, Effort and load, mechanical advantage, velocity ratio, efficiency of machine	Measure power factor in three phase circuit by using power factor meter and verify the same with voltmeter, ammeter and wattmeter readings.
	4	Engg. Drawing	Orthographic projections	Measure electrical parameters using tong tester in three phase circuits.
	5	ES	Labour Welfare legislation:-Benefits guaranteed under various acts- Factrories act, apprenticeship act, employees state insurance act(ESI), payment wages act.	Theory : 3 hrs - Measurement of energy in three phase circuit. Extra curricular activity : 2 hrs
	6	ES	Employees provident fund act, the workmen's sompensation act, POSH. Interpret applicable labour and industrial laws.	Measure electrical parameters using tong tester in three phase circuits.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
36	1	Theory	Errors and corrections in measurement.	Practice for range extension and calibration of various measuring instruments. (10 Hrs)
	2		Loading effect of voltmeter and voltage drop effect of ammeter in circuits.	Practice for range extension and calibration of various measuring instruments. (10 Hrs)
	3	W/Shop calculation	relation between efficiency	Determine errors in resistance measurement by voltage drop method.
	4	Engg. Drawing	Orthographic projections	Determine errors in resistance measurement by voltage drop method.
	5	ES	Quality management:-Create awareness on introduction of quality concepts.	Theory : 3 hrs - Extension of range and calibration of measuring instruments. Extra curricular activity : 2 hrs
	6	ES	Concept of Quality Management(QMS), PDCA, Fishbone,5s,5d, kaizen.	Test single phase energy meter for its errors.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
37	1	Theory	Working principles and circuits of common domestic equipment and appliances.	Dismantle and assemble electrical parts of various electrical appliances e.g. cooking range, geyser, washing machine and pump set. (25 Hrs)
	2		Working principles and circuits of common domestic equipment and appliances.	Dismantle and assemble electrical parts of various electrical appliances e.g. cooking range, geyser, washing machine and pump set. (25 Hrs)
	3	W/Shop calculation	velocity ratio and mechanical advantage	Dismantle and assemble electrical parts of various electrical appliances e.g. cooking range, geyser, washing machine and pump set. (25 Hrs)
	4	Engg. Drawing	Method of first angle and third angle projections (definition and difference)	Dismantle and assemble electrical parts of various electrical appliances e.g. cooking range, geyser, washing machine and pump set. (25 Hrs)
	5	ES	Indtroducton of ISO	Theory : 3 hrs - Working principles and circuits of common domestic equipment and appliances. Extra curricular activity : 2 hrs
	6	ES	Preparation to the worid of work:-Identify the difference between job and carrer	Dismantle and assemble electrical parts of various electrical appliances e.g. cooking range, geyser, washing machine and pump set. (25 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
38	1	Theory	Working principles and circuits of common domestic equipment and appliances.	Service and repair of bell/ buzzer. (5 Hrs)
	2		Working principles and circuits of common domestic equipment and appliances.	Service and repair of electric iron, electric kettle, cooking range and geyser.
	3	W/Shop calculation	Lever and its types	Service and repair of electric iron, electric kettle, cooking range and geyser.
	4	Engg. Drawing	Method of first angle and third angle projections (definition and difference)	Service and repair of induction heater and oven. (10 Hrs)
	5	ES	Job roles available in respective trades	Theory : 3 hrs -Working principles and circuits of common domestic equipment and appliances. Extra curricular activity : 2 hrs
	6	ES	Awareness of industries, and the respective professional pathways.	Service and repair of induction heater and oven. (10 Hrs)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
39	1	Theory	Working principles and circuits of common domestic equipment and appliances.	Service and repair of mixer and grinder. (10 Hrs)
	2		Concept of Neutral and Earth.	Service and repair of mixer and grinder. (10 Hrs)
	3	W/Shop calculation	Quarterly Test WCS	Service and repair of washing machine.
	4	Engg. Drawing	Quarterly Test ED	Service and repair of washing machine.
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Awareness of higher education/educaiton/up skilling (short-term) options Steps involved in online application for instructor course,	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
40	1	Theory	Working principle, construction and classification of transformer.	Verify terminals, identify components and calculate transformation ratio of single phase transformers.
	2		Single phase and three phase transformers.	Verify terminals, identify components and calculate transformation ratio of single phase transformers.
	3	W/Shop calculation	Measurement of Angle, Trigonometrical Ratios	Perform OC and SC test to determine and efficiency of single phase transformer.
	4	Engg. Drawing	Symbol of 1st angle and 3rd angle projection in 3rd angle.	Perform OC and SC test to determine and efficiency of single phase transformer.
	5	ES	apprenticeship and different jobs in popular site like the indiagobs.com, naukari.com, monsterindian.com, GOVT.website.	Theory : 3 hrs - Turn ratio and e.m.f. equation. **Parents instructor meeting**: 2 hrs
	6	ES	forms of greeting	Perform OC and SC test to determine and efficiency of single phase transformer.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
41	1	Theory	Series and parallel operation of transformer.	Perform OC and SC test to determine and efficiency of single phase transformer.
	2		Voltage Regulation and efficiency.	Perform OC and SC test to determine and efficiency of single phase transformer.
	3	W/Shop calculation	Trigonometric Table	Perform series and parallel operation of two single phase transformers.
	4	Engg. Drawing	Orthographic projection from isometric projection	Perform series and parallel operation of two single phase transformers.
	5	ES	Use of positive body language	Theory : 3 hrs - Auto Transformer and instrument transformers (CT & PT). Extra curricular activity : 2 hrs
	6	ES	Handling grievances (Use of ask-listen-repeat technique)	Verify the terminals and accessories of three phase transformer HT and LT side.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
42	1	Theory	Method of connecting three single phase transformers for three phase operation.	Perform 3 phase operation (i) delta-delta (ii) delta-star (iii) star-star (iv) star-delta by use of three single phase transformers.
	2		protective devices, bushings and termination etc. Testing of transformer oil.	Perform testing of transformer oil.
	3	W/Shop calculation	Trigonometry-Application in calculating height and distance	Practice on winding of small transformer.
	4	Engg. Drawing	Orthographic projection from isometric projection	Practice on winding of small transformer.
	5	ES	Relationship building with customers, importance of probing.	Types of Cooling, Extra curricular activity : 2 hrs
	6	ES	Use of open-ended/close-ended questions to guage reuirement.	Practice of general maintenance of transformer.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
43	1	Theory	Materials used for winding and winding wires in small transformer.	Practice on winding of small transformer.
	2		Materials used for winding and winding wires in small transformer.	Practice on winding of small transformer.
	3	W/Shop calculation	Quarterly Test WCS	Practice on winding of small transformer.
	4	Engg. Drawing	Quarterly Test ED	Practice on winding of small transformer.
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Revision	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade -ELECTRICIAN

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
44	1	Theory	Revision	Project Work
	2		Revision	Project Work
	3	W/Shop calculation	Trigonometry-(Simple Applications)	Project Work
	4	Engg. Drawing	Reading of fabrication drawing	Project Work
	5	ES	Revision	Theory : 3 hrs - .Revision **Parents instructor meeting**: 2 hrs
	6	ES	Revision	Project Work

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

SYLLABUS BREAKUP OF ELECTRICIAN : SECOND YEAR							
INSTRUCTOR: TULSA RAM CHOUDHARY							
WEEK NO.	**LESSON NO**	**TOPICS**	**EX.NO.**	**PRACTICAL**	**SKILL NO**	**SKILL**	**HOURS**
1	1	DC Generator - principle - parts - types - function - e.m.f. equation Building up of a DC shunt generator	1	Identify terminals, parts and connections of different types of DC machines	1	Use of dc generator	20
	2	Test a DC machine for continuity and insulation resistance Characteristics of DC generator	2	Measure field and armature resistance of DC machines			
2	3	DC motor - principle and types	3	Determine build up voltage of DC shunt generator with varying field excitation and performance analysis on load			20
	4	The relation between applied voltage, back emf, armature voltage drop, speed and flux of DC motor -	4	Test for continuity and insulation resistance of DC machine	2	Use of magger and doing test insulation resistance	
3	5	DC motor starters Relation between torque, flux and armature current in a DC motor Service and maintenance of DC motor starters	5	Start, run and reverse direction of rotation of DC series, shunt and compound motors			22
	6	Characteristics and applications of a DC series motor Characteristic and applications of a DC shunt motor DC compound motor - load characteristics	6	Perform no load and load test and determine characteristics of series and shunt generators.	3	Load and no load test generator	
4	7	Speed control methods of a DC motor and their applications Method of calculation of control resistance and new speed	7	Practice dismantling and assembling in DC shunt motor	4	Repair and maintenance of dc machine	25
	8	Troubleshooting in DC machines Maintenance procedure for DC machines DC motor control system (drives) AC-DC and DC-AC control	8	Practice dismantling and assembling in DC compound generator			
5	9	Materials used for winding - field coil winding Winding wires	9	Conduct performance analysis of DC series, shunt and compound motors			25
	10	Armature winding - terms - types - rewinding of mixer/liquidizer	10	Dismantle and identify parts of three point and four point DC motor starters			
	11	Simplex lap and wave winding - developed diagram	11	Assemble, Service and repair three point and four point DC motor starters.			

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
6	12	Preparation of armature for rewinding	12	Practice maintenance of carbon brushes, brush holders, Commutator and slip-rings			25
7	13	Rewinding of mixer/liquidizer	13	Perform speed control of DC motors - field and armature control method			25
	14	Method of rewinding and balancing the armature	14	Carry out overhauling of DC machines			
8	15	Testing of armature winding	15	Perform DC machine winding by developing connection diagram, test on growler and assemble			25
9	16	Principle of induction motor Construction of a 3-phase squirrel cage induction motor - relation between slip, speed, rotor frequency, copper loss and torque	16	Identify parts and terminals of three phase AC motors	5	Testing of ac motor	35
	17	Classification of squirrel cage motors Insulation test on 3 phase induction motors	17	Make an internal connection of automatic star-delta starter with three contactors			
	18	Starter for 3-phase induction motor - power control circuits - D.O.L starter	18	Connect, start and run three phase induction motors by using DOL, stardelta and auto-transformer starters	6	Ac motor connection, start, run and change of DOR	
10	19	B.I.S. symbols pertaining to contactor and machines	19	Connect, start, run and reverse direction of rotation of slip-ring motor through rotor resistance starter and determine performance characteristic			23
	20	Numerical problems in ac 3-phase induction motors Jogging (inching) control circuits for motors Rotary type switches Manual star-delta starter	20	Determine the efficiency of squirrel cage induction motor by brake test			
11	21	Semi-automatic star-delta starter Automatic star-delta starter	21	Determine the efficiency of three phase squirrel cage induction motor by no load test and blocked rotor test			22
	22	Three-phase, slip-ring induction motor Resistance starter for 3-phase, slip-ring induction motor	22	Measure slip and power factor to draw speedtorque (slip/torque) characteristics			

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
12	23	Method of measurement of slip in induction motor	23	Test for continuity and insulation resistance	7	Testing of ac motor	20
	24	Characteristics of squirrel cage induction motor No-load test of induction motor Blocked rotor test	24	Perform speed control of three phase induction motors by various methods like rheostatic control, autotransformer etc			
13	25	Efficiency from no-load and blocked rotor test Effect of external resistance in slip ring motor rotor circuit Auto-transformer starter	25	Perform winding of three phase AC motor by developing connection diagram, test and assemble.			20
14	26	Single phasing preventer / phase failure relay Braking system of motors Method of speed control of 3 phase induction motor	26	Maintain, service and troubleshoot the AC motor starter	8	Service and troubleshoot the AC motor	25
	27	Fundamental terms used in AC winding Hand winding process 3 phase squirrel cage induction motor winding (single layer	27	Identify parts and terminals of different types of single phase AC motors	9	Testing of ac single phase motor	
	28	Method of placing coils in a basket or distributed winding Three-phase induction motor winding (single layer - concentric type - half coil connection)	28	Install, connect and determine performance single phase AC motors			
15	29	3 phase squirrel cage induction motor - double layer distributed type winding Testing of windings	29	Start, run and reverse the direction of rotation of single phase AC motors	10	Connection, run and DOR change of ac single phase motor	20
	30	Insulating varnish and varnishing process in electric machines Method of connecting end connection, group connection, terminal leads.	30	Practice on speed control of single phase AC motors			
16	31	Maintenance, service and troubleshooting in AC 3 phase squirrel cage induction motor and starters Troubleshooting of motor starters	31	Compare starting and running winding currents of a capacitor run motor at various loads and measure the speed			20
	32	Single phase motors - split phase induction motor - induction-start, induction-run motor Centrifugal switch	32	Carry out maintenance, service and repair of single phase AC motors			
17	33	Single phase, split phase type motor winding (concentric coil winding) Capacitor-start, induction-run motor Capacitors used in single phase capacitor	33	Practice on single/double layer and concentric winding for AC motors, testing and assembling	11	Rewinding of ac motor	25

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
18	34	Permanent capacitor motor - capacitor-start, capacitor-run motor and shaded pole motor The shaded pole motor Universal motor Troubleshooting of universal motor	34	Practice on single/double layer and concentric winding for AC motors, testing and assembling			25
	35	Repulsion motor Stepper motor Hysteresis motor Reluctance motor	35	Carry out maintenance and servicing of universal motor.	12	Maintenance and servicing of single phase motor.	
	36	Alternator - principle - relation between poles, speed and frequency	36	Install an alternator, identify parts and terminals of alternator.	13	Studay of alternator	
19	37	Types and construction of alternators	37	Test for continuity and insulation resistance of alternator.			25
	38	Generation of 3-phase voltage and general test on alternator	38	Connect, start and run an alternator and build up the voltage.	14	Build up the ac voltage.	
	39	Emf equation of the alternator Characteristic and voltage regulation of the alternator	39	Determine the load performance and voltage regulation of three phase alternator			
20	40	Parallel operation and synchronisation of three phase alternators - brushless alternato Synchroscope method Brushless alternator	40	Parallel operation and synchronization of three phase alternators.	15	Parallel operation of three phase alternators.	25
	41	Synchronous motor	41	Install a synchronous motor, identify its parts and terminals	16	Use of synchronous motor.	
21	42	MG set and rotary converter and inverter	42	Connect, start and plot Vcurves for synchronous motor under different excitation and load conditions.			20
	43		43	Identify parts and terminals of MG set			
22	44	Maintenance of MG set	44	Start and load MG set with 3 phase induction motor coupled to DC shunt generator	17	Work on motor genrator set.	20
23	45	Circuit board soldering and resistor colour coding Soldering technique	45	Determine the value of resistance by colour code and identify types			25
	46	Semiconductor theory/active and passive	46	components and its applications			
24	47	PN Junction-semiconductor diodes	47	Determine V-I characteristics of semiconductor diode			20
	48	Rectifiers	48	Construct half wave, full wave and bridge			

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
25	49	Transistor Transistor biasing and characteristics	49	Check transistors for their functioning by identifying its type and terminals			20
	50	Transistor as a switch.	50	Bias the transistor and determine its characteristics			
26	51	voltage regulator and amplifiers	51	Use transistor as an electronic switch and series voltage regulator			22
	52	Function generator.	52	Operate and set the required frequency using function generator			
27	53	Cathode ray oscilloscope (CRO) Printed circuit boards (PCB)	53	Make a printed circuit board for power supply.	18	Make a pcb board.	38
	54	Power electronic devices - UJT and FET	54	Construct simple circuits containing UJT for triggering and FET as an amplifier	19	Construct simple dc circuits.	
	55	Power supplies - troubleshooting	55	Troubleshoot defects in simple power supplies.			
28	56	Power control circuit using SCR,DIAC,TRIAC & IGBT	56	Construct power control circuit by SCR, Diac, Triac and IGBT	20	Control circuit by SCR	25
	57	Integrated circuit voltage regulators	57	Construct variable DC stabilized power supply using IC.			
29	58	Binary numbers, logic gates and combinational circuits	58	Practice on various logics by use of logic gates and circuits	21	Connection logic gates and circuits	25
	59	Wave shapes - oscillators and multivibrators	59	Generate and demonstrate wave shapes for voltage and current of rectifier, single stage amplifier and oscillator using CRO.	22	Amplification and oscillator.	
30	60	Control elements, accessories - layout of control cabinet Power and control circuits for three phase motors	60	Design layout of control cabinet, assemble control elements and wiring accessories for: (i) Local and remote control of induction motor	23	Desige of control and power wiring Circuits of starters.	25
	61	Installation of instruments and sensors in control panel and its performance testing	61	Forward and reverse operation of induction motor.	24	Operation of various type staters.	

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
31	62	Automatic star-delta starter control and power wiring whit single phase priventer.	62	Automatic star-delta starter with change of direction of rotation.			25
			63	Sequential control of three motors			
32	63	Various control elements e.g. circuit breakers, relays,	64	Carry out wiring of control cabinet as per wiring diagram, bunching of XLPE cables, channeling, tying and checking etc	25	Control pannel wiring digram connect to motors.	25
	64	contactors and timers etc	65	Mount various control elements e.g. circuit breakers, relays, contactors and timers etc			
33	65	Wiring of control cabinet as per wiring diagram, bunching of XLPE cables, channeling, tying and checking etc	66	Identify and install required measuring instruments and sensors in control panel			25
			67	Test the control panel for its performance			
34	66	AC/DC drives	68	Perform speed control of DC motor using			50
	67	Speed control of 3 phase induction motor by VVVF/AC drive	69	Perform speed control and reversing the direction of rotation of AC motors by using thyristors / AC drive	26	Speed control and direction of rotation of AC motors by using thyristors / AC drive	
	68	Speed controller using SCR.	70	controller using SCR.			
35	69	Voltage stabilizer and UPS	71	Assemble circuits of voltage stabilizer and UPS			25
	70	Emergency light	72	Prepare an emergency light			
36	71	Troubleshoot battery charger and inverter	73	Assemble circuits of battery charger and inverter			30
			74	Test, analyze defects and repair voltage stabilizer, emergency light and UPS			
	72	Battery charger and inverter	75	Maintain, service and troubleshoot battery charger and inverter			

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
37	73	Stabiliser, battery charger, emergency light, inverter and UPS Installation of inverter in domestic wiring	76	Install an Inverter with battery and connect it in domestic wiring for operation.	27	Install an Inverter with battery	20
38	74	Sources of energy - Thermal power generation	77	Draw layout of thermal power plant and identify function of different layout elements			20
	75	Hydel power plants	78	Draw layout of hydel power plant and identify functions of different layout elements.			
	76	Visiting of electrical substation Electrical substations	79	Draw actual circuit diagram of substation visited and indicate various components	28	Desige of substation	
	77	Electrical power generation by non conventional methods Tidal power generation Magneto hydro dynamic (MHD) power generation	80	Prepare layout plan and Identify different elements of solar power system.			
39	78	Power generation by solar and wind energy Wind power generation	81	Prepare layout plan and Identify different elements of wind power system	29	Prepare of wind power systems.	25
			82	Assemble and connect solar panel for illumination	30	Prepare of solor power systems.	
	79	Electrical supply system - transmission - line insulators	83	Practice installation of insulators used in HT/LT line for a given voltage range	31	Work on over head line installation.	
40	80	Overhead lines /poles erection-fastening of insulator Joining of aluminium conductors	84	Draw single line diagram of transmission and distribution system.	32	Power and distribution transfarmers connections.	20
	81	Domestic service line - IE rules	85	Measure current carrying capacity of conductor for given power supply	33	Current capicity of conductor given power supply.	
	82	Bus-bar system - power tariff terms and definitions	86	Fasten jumper in pin, shackle and suspension type insulators	34	Fixing of over head line accessories.	
41	83	Line protective relays - types - operation	87	phase 230 V distribution system in open space.			25
	84	Circuit breakers - parts - functions- tripping mechanism	88	Practice on laying of domestic service line			
			89	Install bus bar and bus coupler on LT line.	35	Install of bus bar	

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS
42	85	Repair and maintenance of CBs	90	Identify various parts of relay and ascertain the operation			25
			91	Practice setting of pick up current and time setting multiplier for relay operation.	36	Operation of various realy	
			92	Identify the parts of circuit breaker, check its operation.	37	Operation of circuit breaker.	
			93	Test tripping characteristic of circuit breaker for over current and short circuit current			
			94	Practice on repair and maintenance of circuit breaker	38	Repair and maintenance of circuit breaker.	

GOVT ITI BEAWAR

Industrial Training Institue

GANESHPURA ROAD BEAWAR

Industrial Training Institue

WEEK NO.	LESSON NO	TOPICS	EX.NO.	PRACTICAL	SKILL NO	SKILL	HOURS