

**UNIT 1****Chapter 1 : Distribution Systems 1-1 to 1-36**

**Syllabus :** Classification of supply systems (State Only) (i) DC, 2-wire system, (ii) Single phase two wire ac system, (iii) Three phase three wire ac supply system, (iv) Three phase four wire ac supply system. Comparison between overhead and underground systems (For above mentioned systems) on the basis of volume requirement for conductor. AC Distribution System : Types of primary and secondary distribution systems, calculation of voltage drops in ac distributors (Uniform and Non Uniform Loading) (Numerical) Economics of power transmission : Economic choice of conductor (Kelvin's law) (Derivation and Numerical) Distribution Feeders: Design considerations of distribution feeders; radial and ring types of primary feeder's voltage levels, energy losses in feeders.

1.1	Single Line Diagram of A.C. Power Supply Scheme.....	1-1	1.4.4	3-Phase, 4-Wire System .....	1-7
1.2	Classification of Transmission System .....	1-2	1.4.5	Comparison of Volume required for Conductors in "Under-ground" System w.r.t to Volume of 2-Wire d.c. System .....	1-8
1.2.1	Advantages of High Voltage for Power Transmission.....	1-3	1.4.6	Comparison of Overhead Line and Underground Cables.....	1-8
1.2.2	Disadvantages of High Voltage for Power Transmission.....	1-3	1.4.6.1	Advantages and Disadvantages of Overhead and Underground Systems.....	1-9
1.2.3	Classification of Distribution System.....	1-3	1.4.7	Examples on Conductor Volume .....	1-9
1.2.4	Comparison on the Basis of Conductor Volume .....	1-3	1.5	General Classification of Transmission Systems.....	1-10
1.3	Volume of Conductor Required for Different Overhead Systems and Comparison of Volume .....	1-3	1.5.1	Introduction (Feeder and Distributors) .....	1-10
1.3.1	D.C. 2-Wire System with Mid-Point Earthed .....	1-3	1.6	Classification of Distribution System.....	1-11
1.3.2	A.C. Single Phase 2-Wire System with Mid-Point Earthed.....	1-4	1.6.1	Selection of Scheme of Distribution System .....	1-11
1.3.3	Three Phase, 3-Wire System .....	1-4	1.6.2	Primary Distribution System (Feeder Lines) .....	1-12
1.3.4	Three Phase, 4-Wire Systems.....	1-5	1.6.2.1	Types of Primary Distribution .....	1-12
1.3.5	Comparison of Volume required for Conductors in Overhead System w.r.t to Volume of 2-Wire d.c. System .....	1-6	1.6.3	Secondary Distribution (Distributor Lines).....	1-12
1.4	Conductor Volume and Comparison of the Same in Different Systems of Underground Cables.....	1-6	1.6.4	Radial System .....	1-13
1.4.1	Two-Wire d.c. System with Mid-point Earthed .....	1-6	1.6.5	Ring Main System .....	1-13
1.4.2	A. C. Single Phase, 2-Wire with Mid-point Earthed.....	1-6	1.6.6	Interconnected System.....	1-13
1.4.3	3-Phase 3-Wire System .....	1-7	1.7	Requirements of Feeder/Distribution System .....	1-14
			1.7.1	Comparison of Feeder and Distributor.....	1-14
			1.8	Design Considerations of Feeder/Distributor .....	1-14
			1.8.1	Size of Feeder and Voltage Drops and Energy Losses.....	1-16
			1.9	D.C. Distribution .....	1-17
			1.10	A. C. System Calculation.....	1-18
			1.10.1	Methods of Solving A. C. Distribution Problems .....	1-18
			1.10.1.1	Power Factor Referred to the Receiving End Voltage.....	1-18
			1.10.1.2	Power Factor Referred to the Respective Load Voltages .....	1-20
			1.10.2	3-Phase A. C. Distribution .....	1-22
			1.10.3	Example with Point Load and a 3-Phase Motor .....	1-22
			1.11	Economics of Power Transmission.....	1-26
			1.11.1	Economic Choice of Conductor Size .....	1-27
			1.11.2	Graphical Illustration of Kelvin's.....	1-28



1.11.3	Limitations of Kelvin's Law .....	1-28
1.12	Economic choice of A. C. Transmission Voltage .....	1-29

## UNIT 2

### Chapter 2 : Substation and Earthing 2-1 to 2-33

**Syllabus :** Substation : Classification of substations, Various equipments used in substation with their specifications, Bus bar arrangements in the substation: Simple arrangements like single bus bar, sectionalized single bus bar, main and transfer bus bar system with relevant diagrams. Earthing : Necessity of Earthing, Types of earthing system (Equipment and Neutral), and Maintenance Free Earthing system. Methods of testing earth resistance, Different electrode configurations (Plate and Pipe electrode), Tolerable step and touch voltages, Steps involved in design of substation earthing grid as per IEEE standard 80 – 2000.

2.1	Introduction (What is a Sub-station?) .....	2-1
2.2	Classification and Types of Substations .....	2-1
2.2.1	According to Service Requirements.....	2-1
2.2.2	According to the Constructional Features.....	2-2
2.3	Comparison of Outdoor and Indoor Substation.....	2-2
2.4	Location of Substation and Site Selection .....	2-2
2.4.1	Outdoor Substations.....	2-2
2.5	Standard Symbols for Equipment Used in Substation .....	2-3
2.6	Bus-bar Arrangements in Substations .....	2-5
2.6.1	Bus-Bars System Arrangement in Sub-Stations .....	2-5
2.6.1.1	Single Bus-Bar System .....	2-5
2.6.1.2	Single Bus-Bar System with Sectionalisation.....	2-5
2.6.1.3	Duplicate Bus-Bar System.....	2-6
2.6.1.4	One and Half Breaker Arrangement for Bus-Bar.....	2-7
2.6.1.5	Mesh Arrangement of Bus-Bars in Substation .....	2-7
2.6.1.6	Main and Transfer Bus-bar System .....	2-8
2.7	Sub-Station Equipments their Locations and Functions.....	2-8
2.8	Single Line Diagram Showing Different Substation Apparatus.....	2-9
2.9	Indoor/Outdoor Substation Main Components and their Purpose.....	2-10
2.10	Layouts of Substations .....	2-10
2.10.1	Floor Mounted Outdoor Substation.....	2-11
2.10.2	Platform Mounted Outdoor Substation.....	2-11
2.10.3	Pole Mounted Substation .....	2-11
2.10.4	Indoor Substation Layout.....	2-12
2.10.5	Underground Substation Layout .....	2-12
2.11	Big Size Double Circuit Substation.....	2-13
2.12	Electric Installation and Earth Testing .....	2-13
2.12.1	Necessity of Earthing .....	2-13
2.12.2	Types of Earthing .....	2-14
2.12.2.1	Plate Earthing .....	2-15
2.12.2.2	Pipe Earthing .....	2-15
2.12.3	Indian Electricity Rules for Earthing.....	2-15
2.12.4	What Can Happen if the Neutral is not Grounded ? .....	2-18
2.12.5	Earth Fault.....	2-18
2.12.6	System Grounding and Advantages of Grounding (Objectives of Sub-Station Grounding) .....	2-19
2.13	Methods of Neutral Grounding.....	2-20
2.13.1	Solid Grounding.....	2-20
2.13.2	Resistance Grounding.....	2-21
2.13.3	Reactance Grounding.....	2-21
2.13.4	Arc Suppression Coil Grounding (Peterson Coil Grounding) .....	2-22
2.13.5	Voltage Transformer Earthing.....	2-22
2.13.6	Symbolic Representation of Neutral Earthing for Different Equipments.....	2-23
2.13.7	Comparison of Different Types of Neutral Grounding Systems .....	2-23
2.14	Sub-Station Earthing .....	2-24
2.14.1	Equipment Earthing for Safety-Earthing System.....	2-24
2.14.2	Grounding of Sub-Stations .....	2-27
2.15	Design of Earthing Grid .....	2-28
2.15.1	Earth Fault Current.....	2-28
2.15.2	Soil Resistivity .....	2-28
2.15.3	Fault Clearing Time .....	2-29
2.15.4	Area Covered by Sub-Station .....	2-29
2.16	Various Methods of Measuring / Testing of Earth- Resistance .....	2-29



2.16.1	Testing of Installation for Earthing .....	2-29
2.16.2	Effectiveness of Earthing.....	2-29
2.16.3	Measurement of Insulation Resistance.....	2-30
2.16.3.1	Fall of Potential Method.....	2-30
2.16.3.2	Earth Tester .....	2-30
2.16.3.3	Earth Loop Tester.....	2-31
2.16.4	Methods of Reducing Earth Resistance.....	2-31
2.17	Testing and Commissioning of Sub-Station.....	2-32
2.17.1	Maintenance of Sub-Station .....	2-32

### UNIT 3

#### Chapter 3 : Maintenance & Condition Monitoring

**3-1 to 3-29**

**Syllabus :** Importance and necessity of maintenance, different maintenance strategies like breakdown maintenance, planned/preventive maintenance and condition based maintenance. Planned and preventive maintenance of transformer, Induction motor and Alternators. Insulation stressing factors, Insulation deterioration, polarization index, dielectric absorption ratio. Concept of condition monitoring of electrical equipments. Advance tools and techniques of condition monitoring, Thermography.

Failure modes of transformer, Condition monitoring of oil as per the IS/IEC standards, Filtration/reconditioning of insulating oil, Condition monitoring of transformer bushings, on load tap changer, dissolved gas analysis, degree of polymerization. Induction motor fault diagnostic methods

– Vibration Signature Analysis, Motor Current Signature Analysis.

Hot Line Maintenance - Meaning and advantages, special types of non-conducting Materials used for tools for hot line maintenance.

3.1	Maintenance.....	3-1
3.1.1	Importance of Maintenance .....	3-1
3.1.2	Advantages of Maintenance .....	3-1
3.2	Attention for Rotating Machines.....	3-1
3.2.1	Attention for Static Machine (Transformer) .....	3-2
3.3	Different Maintenance Strategies (Classifications).....	3-3
3.3.1	Routine Maintenance.....	3-3
3.3.2	Preventive Maintenance .....	3-3
3.3.2.1	Basic aspects in Preventive Maintenance.....	3-4

3.3.2.2	Procedure of Developing Preventive Maintenance Schedule .....	3-4
3.3.2.3	Factors Affecting Preventive Maintenance.....	3-4
3.3.2.4	Advantages and Disadvantages of Preventive Maintenance.....	3-5
3.3.3	Breakdown Maintenance (Corrective).....	3-5
3.3.4	Planned Maintenance (Scheduled Maintenance).....	3-6
3.3.5	Predictive or Condition Based Maintenance .....	3-6
3.3.5.1	Advantages and Disadvantages of Predictive (Condition based) Maintenance .....	3-6
3.4	Frequency of Inspection .....	3-7
3.5	Total Productive Maintenance .....	3-7
3.6	Comparison of Breakdown Maintenance with Preventive Maintenance .....	3-8
3.7	Comparison of Condition Based Maintenance with Preventive Maintenance .....	3-8
3.8	Preventive Maintenance of Induction Motor.....	3-8
3.8.1	Importance (Objectives) of Preventive Maintenance of Motor.....	3-8
3.8.2	Effect of Absence of Maintenance or Ignorance Towards Maintenance .....	3-9
3.8.3	Maintenance Schedule for Induction Motors (Planned Schedule).....	3-9
3.8.4	Preventive Maintenance of Induction Motor.....	3-10
3.8.5	Activities in Preventive Maintenance of Motors.....	3-10
3.9	Maintenance Schedule for Synchronous Machine (Alternator) .....	3-11
3.10	Factors Affecting Life of Transformers.....	3-12
3.10.1	Maintenance Schedule for Transformers of Capacities Less than 1000 kVA (as per IS 1886-1967).....	3-13
3.10.2	Maintenance Schedule for Transformers 1000 kVA and Above (Planned Schedule) .....	3-13
3.10.3	Routine Preventive Maintenance of a Transformers.....	3-15
3.11	Insulation.....	3-15



3.11.1	Introduction .....	3-15	3.22	Transformer Oil and its Impurities .....	3-34
3.11.2	Properties of Insulating Materials .....	3-15	3.22.1	Testing of Transformer Oil.....	3-34
3.12	Factors Affecting Life of Insulating Materials (Insulation Stressing Factors).....	3-17	3.23	Factors Reducing Breakdown Strength of Transformer Oil .....	3-36
3.13	Insulation Failure (Deterioration of Insulation).....	3-18	3.23.1	As per IS Standard, Specification of Transformer Oil .....	3-36
3.14	Properties of Liquid Insulation (Transformer-Oil) .....	3-18	3.23.2	Testing (Condition Monitoring) of Transformer Oil .....	3-36
3.14.1	Deterioration (Contamination) of Liquid Insulation (Transformer Oil) .....	3-19	3.23.2.1	Oil Test Cell.....	3-37
3.15	Measurement of Insulation Resistance.....	3-19	3.23.3	Various Components of Test-cell and Function of these Components.....	3-38
3.15.1	By using Megger .....	3-19	3.23.3.1	Procedure of Testing the Oil in Test Cell (As per IS).....	3-39
3.15.2	Insulation Resistance Measurement by Voltmeter Method .....	3-20	3.24	Oil Purification, Reconditioning and Filtering Methods.....	3-39
3.15.3	Dielectric Absorption Test by using Hand Driven Megger.....	3-20	3.24.1	Centrifugal Purifier.....	3-39
3.15.4	Polarization Index by Megger .....	3-21	3.24.2	Stream Line Filter (Vacuum Type).....	3-40
3.15.5	Insulation Resistance by Two Meggers .....	3-21	3.24.3	Filters using Activated Earth Media .....	3-42
3.16	Condition Monitoring.....	3-21	3.25	High Voltage Bushing.....	3-42
3.16.1	Meaning of Condition Monitoring (Or Concept of Condition Monitoring) .....	3-21	3.25.1	The Types of Bushing are .....	3-42
3.16.2	Purpose of Condition Monitoring (Objectives).....	3-22	3.25.2	Measurement of Power Factor and $\tan \delta$ .....	3-45
3.16.3	Role of Condition Monitoring .....	3-22	3.25.2.1	Power Factor Test.....	3-45
3.16.4	General Benefits of Condition Monitoring .....	3-22	3.25.2.2	Partial Discharge Test : .....	3-46
3.16.5	Difference between Condition Monitoring and Preventive Maintenance .....	3-22	3.25.2.3	Infrared Thermography.....	3-46
3.17	Types of Condition Monitoring Systems .....	3-22	3.26	Condition Monitoring of ON-Load Tap-Changer.....	3-46
3.18	Tools and Techniques of Condition Monitoring.....	3-23	3.26.1	Introduction to Tap-Changer of a Transformer.....	3-46
3.19	Thermography .....	3-24	3.26.2	ON-Load Tap-Changer (OLTC) .....	3-48
3.19.1	Thermography Instrument .....	3-25	3.26.3	Cause of Failure are Due to.....	3-48
3.19.2	Role of thermography in Electrical field .....	3-28	3.26.4	Common Problems on ON-Load Tap Changer.....	3-49
3.20	Various Failure Modes of Transformer .....	3-29	3.26.5	Preventive cares are taken as follows .....	3-49
3.20.1	Detailed Study of Failures Causes, Remarks etc.....	3-30	3.26.6	Condition Monitoring [Different Diagnostic Techniques].....	3-49
3.20.2	Failures due to Structural Defects .....	3-32	3.26.6.1	Differential Temperature Measurement .....	3-49
3.20.3	Over Fluxing Failure .....	3-32	3.26.6.2	Dissolved Gas-Analysis.....	3-49
3.21	Condition Monitoring of Transformer .....	3-32			





<p>4.3.8 Documents to be attached with Detailed Estimate.....4-3</p> <p>4.4 Concept of Contract .....4-4</p> <p>4.4.1 Contractors.....4-4</p> <p>4.4.2 Qualities of a Good Contractor .....4-4</p> <p>4.4.3 Types of Contracts .....4-4</p> <p>4.5 Tender.....4-4</p> <p>4.5.1 Earnest Money .....4-4</p> <p>4.5.2 Tender Notice.....4-4</p> <p>4.6 Inviting Tenders(Guidelines for Inviting Tenders).....4-5</p> <p>4.6.1 Tender Form .....4-5</p> <p>4.6.2 Specimen Tender .....4-5</p> <p>4.6.3 Procedure to be followed by Contractor to Fill the Tender .....4-6</p> <p>4.6.4 Procedure of Opening Tender .....4-7</p> <p>4.6.5 Comparative Statement.....4-8</p> <p>4.7 Quotations.....4-8</p> <p>4.7.1 Quotation Format .....4-8</p> <p>4.7.2 Comparative Statement of Quotation.....4-9</p> <p>4.7.3 Proforma of Comparative Statement .....4-9</p> <p>4.8 Comparison of Quotation and Tender.....4-9</p> <p>4.9 Price Catalogue.....4-10</p> <p>4.10 Labor Rates, Schedule of Rates and Estimating data .....4-10</p> <p>4.11 Labor Change / Rates / Cost .....4-10</p>	<p>5.3.1.1 Sequence .....5-11</p> <p>5.3.2 Schedule of Labour Rates .....5-11</p> <p>5.3.3 Schedule of Rates and Estimating Data .....5-11</p> <p>5.3.4 Determination of Size of Conductor for the Line .....5-12</p> <p>5.3.4.1 Current Carrying Capacity .....5-12</p> <p>5.3.4.2 Voltage Drop .....5-12</p> <p>5.3.4.3 Minimum Permissible Size .....5-12</p> <p>5.4 Conductor Size Calculation for Residential and Commercial Wiring.....5-12</p> <p>5.4.1 Examples on Conductor Size .....5-13</p> <p>5.5 Internal Wiring For Residential and Commercial Purposes .....5-14</p> <p>5.5.1 Wires used for Wiring Purpose.....5-14</p> <p>5.5.2 Wiring System .....5-14</p> <p>5.5.3 General Guidelines For Residential Wiring.....5-14</p> <p>5.6 General Rules for Residential and Commercial Work .....5-15</p> <p>5.7 Residential Wiring Methods.....5-15</p> <p>5.7.1 Looping out from Switch and Ceiling Rose .....5-15</p> <p>5.7.2 Looping out from Switch.....5-15</p> <p>5.7.3 Looping out from Ceiling Rose .....5-16</p> <p>5.7.4 Looping out from Junction Box .....5-16</p> <p>5.8 Residential Wiring Procedure.....5-17</p> <p>5.9 Before Energizing the New- Electrical Installation the Following Different Tests Must be Carried Out .....5-17</p> <p>5.10 Estimation of Wiring Work for Residential Wiring .....5-18</p> <p>5.11 Service Lines.....5-24</p> <p>5.11.1 Overhead Service Line .....5-24</p> <p>5.11.1.1 Estimation for Service Line of Fig. 5.11.1 .....5-25</p> <p>5.11.1.2 Estimation for 3-phase Overhead Service Line.....5-25</p> <p>5.11.2 Underground Low Tension (LT) Service Line.....5-27</p> <p>5.12 Installation and Estimation of Material and Costing of L.T. Service Line (Underground).....5-28</p> <p>5.13 Estimation for Commercial Installation .....5-29</p>
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**UNIT 5**

**Chapter 5 : Installation and Estimation of Distribution System 5-1 to 5-34**

**Syllabus :** Introduction cable sizing, Estimation and conductor size calculations of internal wiring for Residential and Commercial (Numerical) installations and estimate for underground LT service lines.

5.1 Construction of Cable.....5-1
5.2 Cable Conductors.....5-1
5.2.1 Cable Insulation.....5-2
5.3 Estimation .....5-2
5.3.1 Steps in Estimation (OR Factors to be considered) .....5-2



5.14	Price Catalogue.....	5-34
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### UNIT 6

#### Chapter 6 : Testing and Electrical Safety 6-1 to 6-40

**Syllabus :** Understanding CAT Ratings & Using CAT rated Instrument, Electrical Installation Testing Procedures- Insulation resistance test between installation and earth, Insulation resistance test between conductors (use of GUARD Terminal in IR test & Application) (methods used for IR Testing) Testing of polarity, Testing of earth continuity paths (Applications of PAT Tester “Portable Appliance Tester” in commercial like hotels, hospital & Industry also) and Earth resistance test (methods for earth testing 2-pole, 3-pole new methods clamp on type where we can performs test in Live)

Contents of first aid box, treatment for cuts, burns and electrical shock. Procedures for first aid (e.g. removing casualty from contact with live wire and administering artificial respiration). Various statutory regulations (Electricity supply regulations, factory acts and Indian electricity rules of Central Electricity Authority (CEA), Classification of hazardous area. ( Introduction to OSHA )

6.1	Understanding CAT Ratings and Using CAT rated Instruments .....	6-1	6.9.1.4	Earth Bond Test Or Earth Continuity Test .....	6-11
6.2	Electrical Installation Testing Procedures .....	6-3	6.9.1.5	Low Current Continuity Test: .....	6-11
6.3	Insulation resistance test between installation and earth. ....	6-4	6.9.1.6	High Current Bond Test.....	6-11
6.4	Insulation Resistance Test Between Conductors.....	6-4	6.9.1.7	Insulation Test.....	6-12
6.5	Testing of polarity. ....	6-5	6.9.1.8	Differential Leakage Test.....	6-12
6.6	Earth resistance test or Testing of Earth continuity paths .....	6-6	6.9.1.9	Leakage Current Test.....	6-12
6.7	Precautions to be taken during IR Testing.....	6-6	6.9.1.10	Load Test .....	6-12
6.8	Use of Guard terminal in IR test .....	6-7	6.9.1.11	Flash Testing.....	6-12
6.9	Portable Appliance Tester (PAT) .....	6-8	6.10	Earthing for Electrical Installation- .....	6-12
6.9.1	Electrical classes in PAT testing.....	6-8	6.10.1	Testing of Installation for Earthing .....	6-12
6.9.2	Pat Testing Process .....	6-10	6.10.2	Effectiveness of Earthing.....	6-13
6.9.1.1	Checking by the operator.....	6-10	6.11	Methods of Measuring Earth Resistance .....	6-13
6.9.1.2	Formal visual inspections .....	6-10	6.11.1	3 pole method .....	6-13
6.9.1.3	Visual inspections And Electrical Testing .....	6-11	6.11.1.1	Earth Tester .....	6-14
			6.11.2	2-point (dead earth) method .....	6-15
			6.12	Clamp on type (Live measurement) of Earth resistance .....	6-15
			6.13	Contents of First Aid Box.....	6-16
			6.14	Objectives of Safety .....	6-16
			6.14.1	Terms and Definitions in Safety.....	6-17
			6.14.2	Electric Accidents (Meaning and Reasons) .....	6-18
			6.14.3	How Electrical Accidents can be Avoided ?.....	6-19
			6.14.4	Tools used in Electrical Works and also Safety Devices .....	6-19
			6.15	Reasons for Getting Electric Shocks .....	6-22
			6.15.1	Factors Affecting the Severity of Shock and Body Resistance (R) .....	6-22
			6.16	Procedure for first aid, Removing Casualty from Contract with Liver Wire and Administering Artificial Respiration .....	6-23
			6.16.1	Cure of Electric Shock (Rescuing Electrocuted Person) .....	6-24
			6.16.2	Different Methods of Artificial Respiration to be Administered .....	6-24
			6.17	Precaution to be Taken while Working on Electrical Installation.....	6-27





6.17.1	Concept of Permit System.....	6-28	6.20.1	For Major works in Factories, maintenance, Repairshops .....	6-34
6.17.2	Causes of Fire due to Electric Faults and Precautions to be taken.....	6-28	6.21	Additional Important Topics .....	6-36
6.17.2.1	Attack on the Fire .....	6-29	6.21.1	Precautions to be Taken to Safe Guard Equipments .....	6-36
6.18	Electric Hazards, Types and their Effects on Human Bodies.....	6-29	6.21.2	Types of Different Fire Extinguishers.....	6-37
6.18.1	Hazard due to Electric Shock .....	6-30	6.21.2.1	Advantages of CO2 Extinguisher over Other Types .....	6-38
6.18.2	Hazard due to an Electric Arc.....	6-31	6.21.2.2	Operation of Fire Extinguisher .....	6-38
6.18.3	Hazard due to Blast.....	6-31	6.22	General Safety Principles about Chemical Substances and Water .....	6-39
6.19	General Safety Principles about Chemical Substances and Water .....	6-32			
6.19	Stratutory Regulations .....	6-32			
6.20	Central Electricity Authority (CEA).....	6-32			

•	<b>Lab Manual .....</b>	<b>L-1 to L-22</b>
	<b>List of Experiment.....</b>	<b>L-1</b>
	<b>Experiment 1 :</b> Single line diagram of 132 or 220 or 400 kV substation (based on actual field visit) Symbols, Plate or Pipe earthing.....	L-2
	<b>Experiment 2 :</b> Estimation for 11 kV Feeders and Substation .....	L-3
	<b>Experiment 3 :</b> Project report on area electrification. (Design of Earthing Grid).....	L-3
	<b>Experiment 4 :</b> Measurement of Dielectric Absorption Ratio and Polarization Index of Insulation.....	L-6
	<b>Experiment 5 :</b> Study of troubleshooting of electrical equipment based on actual visit to repair workshop (i) Three phase induction motor (ii) Transformer (iii) Power Cable.....	L-6
	<b>Experiment 6 :</b> Study of thermograph images and analysis based on these images .....	L-7
	<b>Experiment 7 :</b> Assignment-Construction, working and troubleshooting of any two household electrical equipments (Fan, Mixer, Electric Iron, Washing machines, Electric Oven, Microwave-Limited to electrical faults.) .....	L-12
	<b>Experiment 8 :</b> Study the various types of earthing for electrical appliances / systems, Practice of earthing and Measurement of Earth resistance of Campus premises .....	L-16
	<b>Experiment 9 :</b> Design, Estimation and costing of earthing pit and earthing connection for computer lab, Electrical machines lab, HT Substation.....	L-17
	<b>Experiment 10 :</b> Measurement of insulation resistance of motors and cables.....	L-22
•	<b>University In-Sem Exam Questions and Answer .....</b>	<b>I-1 to I-23</b>
•	<b>Exam Oriented Key Points.....</b>	<b>K-1 to K-12</b>

