

Marks	Grade Point	Letter Grade	Marks	Grade Point	Letter Grade
80>	4.00	A+	55-59	2.75	B-
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F

Daffodil Polytechnic Institute, Institute, Code: 50238
Lesson Plan – Academic session: February 2023 to August 2023

Subject Teacher : Pulak Biswas
 Instructor, Electrical Technology.

Subject Name : Basic Electricity

Subject Code : 26711

Technology : Electrical

Semester : 1st

BTEB Text Book Name : (Publisher: HAQUE PUBLICATION)

Reference Book : A text book of electrical technology – B. L. Theraja

Class Timing Distribution	
Particulars	Time
Greeting with students	10 Minutes
Previous Class Review	10 Minutes
Present Class Topic Discussion and Lecture Delivery	60 Minutes
Present Class Topics Review	10 Minutes

Mark Distribution (for 150 Marks)			
Theory Marks		Practical Marks	
C.Asses.	10	PC	25
Class test	10	PF	25
Quiz test	10	-	-
Final	120	-	-
Total	150	Total	50

AIMS

- To familiarize the basic electrical quantities & laws and to apply them in solving problems of electrical circuits.
- To acquaint with electro-chemistry, electro-magnetism, electro-magnetic induction and electrostatic.
- To develop skill in electrical wiring.
- To appreciate the safety measures to be taken for electrical wiring.

SHORT DESCRIPTION

Electric current and ohm's law; conductors and insulators; basic electrical circuits; power and energy; basic electro-chemistry; electro-magnetism; electro-magnetic induction; electrostatics; wires and cables; hand tools used in wiring; house wiring; controlling devices; protective devices; earthing.

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	01	Understand electricity and its nature.	1.1 state the meaning of electricity. 1.2 describe the structure of atom.	After the Class, Students will be able to know about the ABC of current, voltage and resistance.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=08YugQce90A

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
			1.3 define current, voltage and resistance. 1.4 state the units of current, voltage and resistance		
	02	Understand Conductor and Insulator.	2.1 Define conductor and insulator. 2.2 Explain the conductor and insulator according to electron theory. 2.3 List at least 5 conductors and 5 insulators. 2.4 Describe the factors upon which the resistance of a conductor depends. 2.5 State laws of resistance. 2.6 Prove the relation $R = \rho L/A$ 2.7 Explain the meaning of resistivity and name the unit of resistivity. 2.8 Solve problems relating to laws of resistance	After the Class, Students will be able to know about the laws of resistance	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=FoTWEuOSxSg
	03	Understand ohm's law	3.1 state ohm's law. 3.2 deduce the relation between current, voltage and resistance. 3.3 solve problems relating to ohm's law	After the Class, Students will be able to know about the relation between current, voltage and resistance.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=rSHqvjDksg
	04	Understand electric circuit.	4.1 define electric circuit. 4.2 name the different types of electric circuits. 4.3 define series circuit, parallel circuit and mixed ckt. 4.4 describe the characteristic of series circuit and parallel circuit.	After the Class, Students will be able to know about the Series & Parallel Circuit	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=azK-vVuLwCc https://www.youtube.com/watch?v=xNKBp9u9_8M

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	05	Understand electric circuit.	4.5 calculate the equivalent resistance of series circuit, parallel circuit and mixed circuit. 4.6 solve problems relating to series circuit parallel circuit. Mixed ckt .	After the Class, Students will be able to know about the Problems of Series & Parallel Circuit	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=h_yPktKnHq4
	06	Review Class	Review Class of Lecture 1,2,3,4,5	Through the review class, students can solve their problem.	Basic Class Materials
	07	Quiz Test 1	Examination Topic: Chapter 1,2,3 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	1) Basic Class Materials 2) Examination Copy
	08	Class Test 1	Examination Topic: Chapter 1,2&3 Examination mark: 10 Passing Mark:4	Through class tests students will learn to evaluate themselves on their own	1) Basic Class Materials 2) Examination Copy
	09	Lab-1	Identifies and uses electrical measuring instrument.	After the Class, Students will be able to know about the electrical measuring instrument.	Basic Class Materials.
	10	Apply the concept of electrical power and energy.	5.1 define electrical power and energy. 5.2 State the unit of electrical power and energy. 5.3 Show the relation between electrical power and energy. 5.4 List the name of instruments for measuring of electrical power and energy. 5.5 Draw the connection	After the Class, Students will be able to know about to electrical power and energy calculation.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=PEhkDrhWapI https://www.youtube.com/watch?v=r-SCyD7f_zI

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			diagram of wattmeter and energy meter in an electrical circuit. 5.6 Solve problems relating to electrical power and energy calculation.		
	11	Understand the principles of joule's law.	6.1 Explain joule's law regarding the development of heat in electrical circuit. 6.2 Describe meaning of "j". 6.3 Solve problems relating to joule's law. 6.4 Solve problems relating to joule's law	After the Class, Students will be able to know about the joule's law.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=ZKhS3Imp_OM
	12	Understand the concept of cells.	7.1 describe the meaning of potential difference. 7.2 define the meaning of cell. 7.3 classify the cell 7.4 define primary cell 7.5 list the different types of primary cell 7.6 describe the construction and principle of action of a simple voltaic cell. 7.7 list the defects of a simple voltaic cell. 7.8 describe the causes of defects of a simple voltaic cell. 7.9 describe the methods of removing the defects of a simple voltaic cell.	After the Class, Students will be able to know about the primary cell.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=dOBddKPmBpg https://www.youtube.com/watch?v=dVGuHgbvN-Y

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	Lab-2	Verification of ohm's law.	Sketch the circuit diagram for the verification of ohm's law. List tools, equipment and material required for the experiment. Prepare the circuit according to the circuit diagram using proper equipment.		Basic Class Materials
	13	Understand the construction and principle of action of secondary cell	8.1 define secondary cell. 8.2 describe the construction and principle of action of a lead acid cell. 8.3 list the uses of lead acid cell. 8.4 list the advantages of secondary cell. 8.5 distinguish between a cell and a battery. 8.6 describe the series and parallel grouping of cells. 8.7 distinguish between primary & secondary cell	After the Class, Students will be able to know about the principle of action of a lead acid cell.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=HHgPBMMZ26w https://www.youtube.com/watch?v=pXwnnlzhKSE
	14	Understand the concept of capacitors and capacitance.	9.1 define capacitor and capacitance. 9.2 name the unit of capacitance. 9.3 name the different types of capacitor. 9.4 write the uses of capacitor. 9.5 determine the equivalent capacitance of a number of capacitors connected in series. 9.6 determine the equivalent capacitance of a number of capacitors connected in parallel. 9.7 explain the energy stored in a capacitor.	After the Class, Students will be able to know about the equivalent capacitance of a number of capacitors connected in series.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=PPhSmZ6w9WY

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			9.8 solve problems relating to capacitor connected in series and in parallel.		
	15	Understand electro - magnetism.	10.1 describe magnetic field, magnetic lines of force and its properties. 10.2 describe field intensity and magnetic flux density. 10.3 distinguish between absolute permeability and relative permeability. 10.4 describe the concept of magnetic effect of electrical current. magnetic field and current.	After the Class, Students will be able to know about the magnetic effect of electrical current. magnetic field and current.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=XaglAjE7kHM
	16	Understand electro - magnetism	10.5 explain the force experienced in a current carrying conductor placed in a magnetic field. 10.6 State Fleming's left-hand rule. 10.7 Explain the work done by a moving conductor in a magnetic field. 10.8 Explain the force between two parallel current carrying conductor.	After the Class, Students will be able to know about the wires and cables.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=8li1Vp8vLaI
	17	Review Class	Review Class of Lecture 10-16 (Regarding students' problem)	Through the review class, students can solve their problem.	Basic Class Materials
	18	Quiz Test 2	Examination Topic: Chapter 5,6,7,8 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	3) Basic Class Materials 4) Examination Copy

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	19	Class Test 2	Examination Topic: Chapter 5,6,7,8 Examination mark: 10 Passing Mark: 04	Through class tests students will learn to evaluate themselves on their own	3) Basic Class Materials 4) Examination Copy
	Lab-3	Verify the characteristics of series and parallel circuits.			Basic Class Materials
	20	Exam Syllabus Review			
Mid Exam					
	21	Understand magnetic circuit	11.1 Define a magnetic circuit. 11.2 Define the terms magnetizing force, magnetomotive force, ampere – turns, reluctance, permeance, permeability, magnetic linkage and leakage. 11.3 Show the relation between magnetomotive force, reluctance and magnetic field intensity or magnetizing force. 11.4 Compare a magnetic circuit with an electrical circuit	After the Class, Students will be able to know about the magnetizing force, magnetomotive force, ampere –turns, reluctance, permeance, permeability, magnetic linkage and leakage.	Basic Class Materials & Projector YouTube Link https://www.youtube.com/watch?v=VDoCC-JDOEA
	22	Understand electro-magnetic induction.	12.1 Define faraday's laws of electro-magnetic induction. 12.2 Describe the magnitude of dynamically induced emf and statically induced emf 12.3 Solve problems relating to emf generation. 12.4 Define lens's law and Fleming's right-hand rule for determining the direction of induced emf and current.	After the Class, Students will be able to know about the lens's law and Fleming's right-hand rule for determining the direction of induced emf and current	Basic Class Materials & Projector YouTube Link https://www.youtube.com/watch?v=OdMUPjDjkdY https://www.youtube.com/watch?v=LDOa7UdfcMQ

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
			12.5 Define self-induced emf and self-inductance. 12.6 Explain inductance of a iron cored inductor. 12.7 Define mutual inductance and co-efficient of coupling.		
	23	Understand the uses of wires and cables.	13.1 Define electrical wires and cables. 13.2 Distinguish between wires and cables. 13.3 Describe the construction and uses of pvc, vir, trs or cts and flexible wires 13.4 Describe the procedure of measuring the size of wires and cables by wire gauge. 13.5 Describe the current carrying capacity of a wire.	After the Class, Students will be able to know about the wires and cables.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=O83NQsqDvtk
		Understand the usefulness of joints and splices.	14.1 Define the meaning of joints and splices. 14.2 State the five steps of making a joint. 14.3 Describe the procedure to make a pig tail joint, western union joint, britannia joint, duplex joint, tap joint, simple splice. 14.4 Give example of uses of above-mentioned joints.	After the Class, Students will be able to know about the joints and splices.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=yScMj9gBWG4
	Lab-4	Show skill in measuring the power of an electric circuit.	Prepare the circuit according to the circuit diagram using ammeter, voltmeter and wattmeter. Record the power, measured by the wattmeter and verify t reading with that of calculated from ammeter and voltmeter		Energy Meter & Basic Lab equipment's

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	24	Understand the different methods of house wiring.	15.1 State the meaning of wiring. 15.2 List the types of wiring. 15.3 State the procedure for channel wiring, surface conduit wiring and concealed wiring. 15.4 State the types of wiring used in: a) Residential building. b) Workshop c) Cinema hall/auditorium d) Temporary shed 15.5 List the name of fittings used in different types of electrical wiring.	After the Class, Students will be able to know about the concept of House Wiring	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=JmwL-3rhgwY&t=510s
	25	Review Class	Review Class of Lecture 21-24 (Regarding students' problem)	Through the review class, students can solve their problem.	Basic Class Materials
	26	Quiz Test 3	Examination Topic: Chapter 13,14,15 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	5) Basic Class Materials 6) Examination Copy
	27	Class Test 3	Examination Topic: Chapter 13,14,15 Examination mark: 10 Passing Mark: 04	Through class tests students will learn to evaluate themselves on their own skill.	5) Basic Class Materials 6) Examination Copy
	28	Understand the construction and uses of controlling devices. .	16.1 Define controlling device. 16.2 Name the different types of controlling devices. 16.3 Describe the constructional features and uses of tumbler switch, iron clad switch, push button switch and gang switch.	After the Class, Students will be able to know about the controlling devices.	Basic Class Materials

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
		Understand the construction and uses of protective devices	17.1 Define protective devices. 17.2 Name the different types of protective devices. 17.3 Name the different types of fuses used in house wiring. 17.4 Describe the construction and uses of renewable fuse. 17.5 Name the different types of circuit breaker used in house wiring.	After the Class, Students will be able to know about the protective devices.	Basic Class Materials
	29	Understand the necessity of ear thing.	18.1 Define ear thing 18.2 Explain necessity of ear thing 18.3 Name different types of ear thing	After the Class, Students will be able to know about necessity of ear thing.	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=05k-6six33U
	30	Apply the principle of controlling electrical circuit by switch. .	19.1 Sketch the wiring diagram of one lamp controlled by one spst switch and describe its uses. 19.2 Sketch the wiring diagram of one lamp controlled by two spdt switch and describe its uses. 19.3 Draw the wiring diagram of one calling bell with a lamp controlled from one point. 19.4 Draw the wiring diagram of a fluorescent tube light circuit. 19.5 Describe the working principle of fluorescent tube light	After the Class, Students will be able to know about working principle of fluorescent tube light	Basic Class Materials & Projector YouTube Link: https://www.youtube.com/watch?v=z55566ep0Hg
	31	Understand electricity act/rule of Bangladesh	20.1 State electricity act/rule of Bangladesh to be followed in electrical wiring.	After the Class, Students will be able to know about electricity act/rule.	Basic Class Materials & Projector

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		and safety practices	20.2 Describe the importance of electricity act/rule. 20.3 Describe safety procedure against electrical hazards. 20.4 List the performance of safety practices for electrical equipment, machines and accessories.		
	32	Review Class	Review Class of Lecture 28-31 (Regarding students' problem)	Through the review class, students can solve their problem	Basic Class Materials
	33	Quiz Test 4	Examination Topic: Chapter 12,13,14 Examination mark: 10 Passing Mark: 04	Through Quiz Test students will learn the intellectual intelligence on the topics discussed.	7) Basic Class Materials 8) Examination Copy
	34	Class Test 4	Examination Topic: Chapter 12,13,14 Examination mark: 10 Passing Mark: 08	Through class tests students will learn to evaluate themselves on their own	7) Basic Class Materials 8) Examination Copy
	35	Presentation	Short presentation by individual student.	Be confident on practical life.	Laptop, projector
	36	MODEL TEST	All Syllabus	After the Class, Students will be highly confident for Final exam	Basic Class Materials
	37	Final Exam Syllabus Review			
	38	Final Exam Syllabus Review			

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	39	Final Exam Syllabus Review			