



**Daffodil Polytechnic Institute, Institute Code: 50238**

**Lesson Plan Academic session: JANUARY to JUNE 2024**

**Subject Teacher** : Rubel Hossen  
**Instructor, Electrical Technology.**  
**Subject Name** : Testing & Maintenance of Electrical Equipment  
**Subject Code** : 66775  
**Technology** : Electrical  
**Semester** : 7<sup>th</sup>  
**BTEB Text Book Name** : (Publisher: HAQUE PUBLICATION)  
**Google Class Code** :

#### Aims

To provide the students opportunities to acquire knowledge, skills and attitude in the area of Testing and Maintenance of electrical equipment with the special emphasizes on:

- Troubleshooting and maintenance of electrical equipment,
- Faults findings and remedy the faults of Battery, DC Generators, DC motors,
- Faults findings and remedy the troubles Transformers, Induction motors, Alternators,
- Faults findings and remedy the troubles Synchronous motor and Circuit breaker

#### Short description

Troubleshooting and maintenance of electrical equipment, Identification of trouble and remedy the troubles of Battery, DC Generators, DC motors, Identification of trouble and remedy the troubles of Transformers, Induction motors, Alternators, Identification of trouble and remedy the troubles Synchronous motor and Circuit breaker

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

Mark Distribution (for 150 Marks)			
Theory Marks		Practical Marks	
Midterm	12	PC	25
Class test	04	PF	25
Quiz test	04	-	-
Final	30	-	-
<b>Total</b>	<b>50</b>	<b>Total</b>	<b>100</b>

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

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	1.	Identify the hand tools and equipment for troubleshooting and maintenance of electrical equipment.	1.1Mention the name of hand tools and their uses 1.2Name the equipment used for trouble findings and troubleshooting for electrical appliances and electrical machines 1.3Name the equipment used for trouble findings and troubleshooting for electrical machines	After the Class, Students will be able to know  ✓ Mention the name of hand tools and their uses	Basic Class Materials & Projector, hand tools YouTube Link:  <a href="https://www.youtube.com/watch?v=bkM_lwVv_yI">https://www.youtube.com/watch?v=bkM_lwVv_yI</a>
	2.	Find the trouble and repair the troubles of Batteries, DC Generator and DC Motors	2.1Identify the troubles of Batteries 2.2Explain the troubles of the storage Batteries 2.3Describe the process of repair and maintenance of storage batteries	After the Class,  ✓ Identify the troubles of Batteries	Basic Class Materials & Projector, Batteries <a href="https://www.youtube.com/watch?v=tbEfhPbqTDE">https://www.youtube.com/watch?v=tbEfhPbqTDE</a>
	3.	Find the trouble and repair the troubles of Batteries, DC Generator and DC Motors	2.4Identify the Faults of DC Generator and Dc Motor 2.5Explain the faults of the Dc Generator and Dc Motor 2.6Describe the process of repair and maintenance of DC Generator and Dc Motor	After the Class, ✓ Identify the Faults of DC Generator and Dc Motor Describe the process of repair and maintenance of DC Generator and Dc Motor	Basic Class Materials & Projector, DC Generator and Dc Motor YouTube Link: <a href="https://www.youtube.com/watch?v=a3FdcCR6RHE">https://www.youtube.com/watch?v=a3FdcCR6RHE</a>
	4.	Practical 01	Identify the tools and equipment for testing and Maintenance of electrical works	After the Class, Student will be learn about hand tools used in electrical testing Draw and write down the operation of electrical maintenance equipment	Must be submitted within two classes

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	5.	<b>Review Class</b>	Review Class of <b>Chapter 1,2</b> (Regarding students problem)	Through the review class, students can solve their problem	Basic Class Materials
	6.	<b>Quiz Test 1</b>	Examination Topic: <b>Chapter 1,2</b> Examination mark: 10 Passing Mark: 04	Through the Quiz Test students will learn intellectual intelligence on the topics discussed.	1) Basic Class Materials 2) Examination Kata
	7.	<b>Assignment -01</b>	<b>Chapter: 01,02</b>		Must be submitted within two classes
	8.	<b>Class Test 1</b>	Examination Topic: <b>Chapter 1,2</b> Examination mark: 10 Passing Mark: 04	Through class tests students will learn to evaluate themselves on their own	1) Basic Class Materials 2) Examination Kata
	9.	<b>Practical 02</b>	Perform the different test of Battery	After the Class, Student will be learn about Draw the circuit diagram , Measure the emf of each cell of storage Battery .Measure the specific gravity of the electrolyte of storage battery.Record the reading of test data	Must be submitted within two classes
	10.	Indicate the faults and remedy the faults of single phase and three phase transformer	3.1List the name the Faults of single phase Transformer 3.2Explain the faults of single phase Transformer 3.3Describe the process of repair and maintenance of single phase Transformer	After the Class,  ✓ the name the Faults of single phase Transformer	Basic Class Materials & Projector, Transformer YouTube Link: <a href="https://www.youtube.com/watch?v=eVg-JuQx64k">https://www.youtube.com/watch?v=eVg-JuQx64k</a>

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	11.	Indicate the faults and remedy the faults of single phase and three phase transformer	3.4Mention the Faults of three phase Transformer 3.5Explain the faults of three phase Transformer 3.6Describe the process of repair and maintenance three phase Transformer	After the Class,  ✓ Students will be able to Mention the Faults of three phase Transformer	Basic Class Materials & Projector, three phase Transformer
	12.	Outline the probable faults of single phase and three phase Induction motors.	4.1List the name the Faults of single phase Induction Motor 4.2Illustrate the faults of single phase Induction Motor 4.3Describe the process of repair and maintenance of single phase Induction Motor	After the Class,  ✓ They will be the name the Faults of single phase Induction Motor	Basic Class Materials & Projector, Induction Motor
	13.	<b>Practical 03</b>	Measure E M F generation of DC Generator	After the Class, Student will be learn about Measuring E M F, Draw circuit diagram and connect for measuring emf .Measure the emf of a dc generator. Mention the reasons of failure of emf generation	Must be submitted within two classes
	14.	<b>Assignment -02</b>	<b>Chapter: 03</b>		Must be submitted within two classes

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	15.	Outline the probable faults of single phase and three phase Induction motors.	4.4Mention the Faults of three phase Induction Motor 4.5Explain the faults of three phase Induction Motor 4.6Demonstrate the process of repair and maintenance three phase Induction Motor	After the Class,  ✓ Students will be able to Mention the Faults of three phase Induction Motor	Basic Class Materials & Projector, <a href="https://www.youtube.com/watch?v=Jyhd78SH8Sg">https://www.youtube.com/watch?v=Jyhd78SH8Sg</a>
	16.	<b>Review Class</b>	Review Class of <b>Chapter 3,4</b> (Regarding students problem)	Through the review class, students can solve their problem	Basic Class Materials
	17.	<b>Quiz Test 2</b>	Examination Topic: <b>Chapter 3,4</b>  Examination mark: 10 Passing Mark: 04	Through the Quiz Test students will learn intellectual intelligence on the topics discussed.	3) Basic Class Materials 4) Examination Kata
	18.	<b>Class Test 2</b>	Examination Topic: <b>Chapter 3,4</b> Examination mark: 10 Passing Mark: 04	Through class tests students will learn to evaluate themselves on their own	3) Basic Class Materials 4) Examination Kata
	19.	Midterm Exam Syllabus Review			
	20.	Recognize the trouble and remedy the troubles of Alternators and Synchronous motors	5.1List the name the Faults of Alternators 5.2Illustrate the faults of Alternators	After the Class,  ✓ Students will be able to the name the Faults of Alternators	Basic Class Materials & Projector, Alternators  <a href="https://www.youtube.com/watch?v=1bK0De9XOP0">https://www.youtube.com/watch?v=1bK0De9XOP0</a>

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	21.	<b>Practical 04</b>	Detect the causes of failure of running DC motors	After the Class, Student will be learn about Different tests for finding the faults of DC Motor. Identify the mechanical faults of DC motors. Find the electrical faults of DC Motor. Draw circuit diagram and connect for continuity test .Perform the continuity test of the DC motor .Perform the short circuit test of DC Moto	Must be submitted within two classes
	22.	Recognize the trouble and remedy the troubles of Alternators and Synchronous motors	5.3Describe the process of repair and maintenance of Alternators 5.4Mention the Faults of Synchronous motors	After the Class, ✓ Students will be able to Describe the process of repair and maintenance of Alternators	Basic Class Materials & Projector, YouTube Link: <a href="https://www.youtube.com/watch?v=1bK0De9XOP0">https://www.youtube.com/watch?v=1bK0De9XOP0</a>
	23.	<b>Assignment -03</b>	<b>Chapter: 04,05</b>		Must be submitted within two classes
	24.	Recognize the trouble and remedy the troubles of Alternators and Synchronous motors	5.5Explain the faults of Synchronous motors 5.6Demonstrate the process of repair and maintenance Synchronous motors	After the Class, ✓ Students will be able to know about Explain the faults of Synchronous motors	Basic Class Materials & Projector,
	25.	<b>Practical 05</b>		After the Class,	

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
			<b>Determine the common faults of High Voltage Circuit Breaker</b>	<p>Student will be learn about</p> <p>Different test of a HV Circuit Breaker. Collect the tools and equipment for testing the HV Circuit Breaker. Draw circuit diagram and connect for insulation resistance test for HVCB .Perform the Insulation resistance test by using megger. Record the data and result of the Insulation resistance test</p>	Must be submitted within two classes
	26.	<b>Review Class</b>	Review Class of <b>Chapter 5</b> (Regarding students problem)	Through the review class, students can solve their problem	Basic Class Materials
	27.	<b>Quiz Test 3</b>	Examination Topic: <b>Chapter 5</b> Examination mark: 10 Passing Mark: 04	Through the Quiz Test students will learn intellectual intelligence on the topics discussed.	5) Basic Class Materials 6) Examination Kata
	28.	<b>Class Test 3</b>	Examination Topic: <b>Chapter 5</b> Examination mark: 10 Passing Mark: 04	Through class tests students will learn to evaluate themselves on their own	5) Basic Class Materials 6) Examination Kata
	29.	Express the trouble and remedy the troubles of Circuit breaker	6.1List the name the Faults of Circuit breaker 6.2Illustrate the faults of Circuit breaker	After the Class, ✓ Students will be able to know about the name the Faults of Circuit breaker	Basic Class Materials & Projector <a href="https://www.youtube.com/watch?v=1il4ScI6vJ8">https://www.youtube.com/watch?v=1il4ScI6vJ8</a>
	30.	<b>Practical 06</b>	<b>Point out the faults of an Induction motors</b>	After the Class, Student will be learn about Faults of an Induction Motor. Mechanical faults of an Induction Motor. Mention the Electrical faults of an Induction Motor.	Must be submitted within two classes

Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
				Testing an Induction Motor Continuity test by using Megger, Avometer and Test lamp of an Induction motor. Perform insulation resistance between two coils and between phase and earth test of an	
	31.	Express the trouble and remedy the troubles of Circuit breaker	6.3Describe the process of repair and maintenance of Circuit breaker	After the Class, ✓ Students will be able to describe the process of repair and maintenance of Circuit breaker.	Basic Class Materials & Projector, semiconductor. YouTube Link: <a href="https://www.youtube.com/watch?v=1il4ScI6vJ8">https://www.youtube.com/watch?v=1il4ScI6vJ8</a>
	32.	Assignment -04	Chapter: 06		Must be submitted within two classes
	33.	Review Class	Review Class of <b>Chapter 6</b> (Regarding students problem)	Through the review class, students can solve their problem	Basic Class Materials
	34.	Quiz Test 4	Examination Topic: <b>Chapter 6</b> 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 Kata
	35.	Practical 07	Perform the testing of HV circuit breaker	After the Class, Student will be learn about Different faults of a HV Circuit Breaker. Testing the HV Circuit Breaker. Circuit diagram and connect for insulation resistance test for HVCB. Resistance test with micro-ohm tester. Insulation resistance test	Must be submitted within two classes



Date	Lecture	Chapter/ Exam / Industrial Visit	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
	36.	<b>Class Test 4</b>	Examination Topic: <b>Chapter 6</b> Examination mark: 10 Passing Mark: 04	Through class tests students will learn to evaluate themselves on their own	7) Basic Class Materials 8) Examination Kata
	37.	<b>Presentation</b>	Short presentation by individual students.	Be confident in practical life.	<b>Laptop, projector</b>
	38.	MODEL TEST	All Syllabus	After the Class, Students will be highly confident for Final exam	Basic Class Materials
	39.	Final Exam Syllabus Review			
	40.	Final Exam Syllabus Review			
	41.	Final Exam Syllabus Review			