

8

Lesson Exemplar for TLE

Quarter 4

Lesson

7

GOVERNMENT PROPERTY
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Lesson Exemplar for TLE Grade 8
Quarter 4: Lesson 7 (Week 7)
SY/TP 2025-2026

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I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	Demonstrate an understanding of the concepts and principles in performing simple diagnostics and simple troubleshooting in industrial arts services.
B. Performance Standards	The learners perform simple diagnostics and simple troubleshooting in industrial arts services.
C. Learning Competencies and Objectives	<p>Learning Competency</p> <ul style="list-style-type: none"> • Discuss simple diagnostics in industrial arts services. • Perform simple troubleshooting in industrial arts services. <p>Learning Objectives</p> <p>At the end of the lesson, the students are expected to:</p> <ol style="list-style-type: none"> 1. Recognize diagnostic techniques used in electrical and electronics systems to facilitate effective diagnostics and troubleshooting. 2. Apply diagnostic techniques to identify faults, malfunctions, and performance issues in electronic products, electrical installations, and domestic refrigeration and air conditioning systems, utilizing systematic approaches and testing methods. 3. Use diagnostic tools and instruments to analyze and diagnose electrical and electronic problems accurately.
D. Content	<ul style="list-style-type: none"> • Diagnostics and troubleshooting in Electrical and Electronics Services • Diagnostics and troubleshooting in Refrigeration and Air-conditioning Services
E. Integration	Integrating electrical-electronics diagnostics and troubleshooting practices into SDG 7 (Affordable and Clean Energy) and 12 (Responsible Consumption and Production) synergistically fosters a sustainable energy ecosystem and promotes resource-efficient consumption patterns. By identifying and rectifying faults in electrical systems, technicians facilitate the efficient utilization of energy resources, thereby reducing energy wastage and reliance on fossil fuels, ultimately mitigating greenhouse gas emissions and environmental degradation. Moreover, extending the lifespan of electronic devices through effective maintenance and repair diminishes the generation of electronic waste, aligning with circular economy principles and encouraging responsible consumption behaviors. Through these combined efforts, the integration of diagnostics and troubleshooting contributes to advancing global objectives for accessible, clean energy and sustainable consumption and production, promoting a greener, more equitable future.

II. LEARNING RESOURCES

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III. TEACHING AND LEARNING PROCEDURE

NOTES TO TEACHERS

A. Activating Prior Knowledge

DAY 1

1. Short Review

Multi-tester Reading

Divide students into groups and assign each group a specific measurement task.

Tasks may include:

- Measuring the voltage across a resistor or electronic component.
- Determining the resistance of various resistors using the VOM multi-tester's resistance measurement function.
- Testing continuity of wires or circuits by checking for a complete path using the continuity mode.

Encourage students to record their measurements and observations. Then, check if their measurement is correct.

The teacher can use any of the following materials available in the classroom:
Assorted resistors (varying values)
Power source (e.g., batteries)
Wires and connectors
Electrical components (e.g., switches, bulbs)

	<p>Facilitate a review of best practices for using the VOM multi-tester effectively and emphasize the importance of proper measurement techniques and systematic troubleshooting approaches.</p> <p>2. Feedback (Optional)</p>	
B. Establishing Lesson Purpose	<p>1. Lesson Purpose The purpose of learning electrical-electronics diagnostics and troubleshooting in high school is twofold. Firstly, it empowers students with practical skills to understand and manage electrical systems daily. Students become more self-reliant and capable of handling basic electrical repairs safely and effectively by learning how to diagnose and fix common issues such as malfunctioning appliances or faulty wiring. Secondly, mastering these skills lays a foundation for future careers in engineering, technology, or related fields. Electrical-electronics diagnostics and troubleshooting provide valuable problem-solving abilities applicable across various industries, fostering critical thinking and analytical skills that are highly sought after in today's job market. By engaging in hands-on activities and real-world scenarios, students gain confidence in their technical abilities and develop a deeper appreciation for the role of electricity in modern society and the importance of responsible usage and maintenance of electrical systems.</p> <p>2. Unlocking Content Vocabulary</p> <ul style="list-style-type: none"> • Diagnostics - used for discovering the characteristics or cause of a problem in a system or machine (Cambridge Dictionary, 2024) • Troubleshooting - is a systematic approach to problem-solving that is often used to find and correct issues with complex machines, electronics, computers and software systems. (What Is Troubleshooting and Why Is It Important?, n.d.) • Voltage - refers to electrical potential, representing the "push" exerted on electrons within a circuit. For instance, a voltmeter indicating 12 volts signifies the energy difference between the meter's two connections. (Electrical Troubleshooting Fundamentals Key to Diagnostics, 2008) • Amperage - denotes the flow of electrons, measured in amperes, through a conductor. It assesses the rate of electrical consumption of components within a circuit, comparing it against specified standards. (Electrical Troubleshooting Fundamentals Key to Diagnostics, 2008) 	

	<ul style="list-style-type: none"> ● Resistance - signifies a circuit's opposition to current flow. All conductors impede current flow to varying degrees, measured in ohms. One ohm of resistance permits one ampere of current when the electrical potential is one volt. (Electrical Troubleshooting Fundamentals Key to Diagnostics, 2008) 	
C. Developing and Deepening Understanding	<p>DAY 1 AND 2</p> <p>SUB-TOPIC 1: Electrical and Electronics diagnostics and troubleshooting</p> <p>1. Explicitation</p> <p>Electrical-electronics diagnostics and troubleshooting involve systematically identifying and resolving issues within electrical and electronic systems. Technicians employ various tools and techniques, including visual inspections, testing equipment such as multimeters and oscilloscopes, and diagnostic tools like continuity testers and thermal imaging cameras to pinpoint faults. Common problems addressed include component failure, short circuits, intermittent faults, and power supply issues. Repairs may entail replacing defective components, soldering and desoldering operations on printed circuit boards, and troubleshooting signal degradation or power quality disturbances. Overall, electrical-electronics diagnostics and repair prioritize safety, thoroughness, and adherence to industry standards to ensure the reliability and functionality of electrical and electronic systems.</p> <p>BASIC TECHNIQUES IN DIAGNOSTIC AND TROUBLESHOOTING</p> <p>Information Gathering</p> <p>Before proceeding with troubleshooting, ensure that the issue within the circuit has been confirmed. Primarily, the technician verifies the presence of an owner's manual or technical documentation for the system, fixture, or appliance. This resource contains comprehensive information essential for troubleshooting the issue, including potential steps to be taken. Identify the main components of the system, such as power sources, control units, sensors, actuators, and any associated circuits. This could relate to either achieving the intended outcomes or encountering irregular circuit operation.</p> <p>Safety Precautions</p> <ol style="list-style-type: none"> 1. Prioritize safety by wearing appropriate personal protective equipment (PPE) such as insulated gloves, safety goggles, and non-conductive footwear. 	<p>Additional video resources that can be used:</p> <p>Electrical Troubleshooting Basics. (n.d.). Www.youtube.com. Retrieved March 16, 2024, from https://www.youtube.com/watch?v=zdrUX6_LGmE Lecture 7: Electrical Testing and Fault Finding. (n.d.). Www.youtube.com. Retrieved March 16, 2024, from https://www.youtube.com/watch?v=wAc8PPw-peI</p>

	<p>2. Ensure the power is completely turned off before beginning any diagnostic or repair work. This involves switching off devices, disconnecting them from power sources, and locking out/tagging out electrical circuits if necessary.</p> <p>Diagnosis</p> <p>Visual Inspection. Conduct a thorough visual inspection of the system to identify any obvious signs of damage, loose connections, or burnt components. Inspect the circuit for signs of damage such as exploded or burnt components, utilizing both visual observation and olfactory detection. Examine for loose or faulty connections, ensuring proper grounding paths are maintained. Assess the printed circuit board (PCB) for any overlapping traces. Evaluate soldered joints for proper adherence and alignment. Additionally, scrutinize for short circuits or unintended connections between neighboring soldered points.</p> <ul style="list-style-type: none"> • Sense of smell. Burned components emit a distinct and unpleasant odor and may exhibit discoloration or carbonization. Additionally, the printed circuit board (PCB) beneath the component may show signs of discoloration. • Sense of touch. Detect any excessively hot components by carefully feeling them. Exercise caution to avoid burning your fingers. If any component feels hot enough to cause discomfort or burns, it likely indicates a problem. • Testing Equipment. Utilize specialized testing equipment such as multimeters, oscilloscopes, and signal generators to measure voltage, current, resistance, frequency, and other relevant parameters. • Diagnostic Tools. Employ diagnostic tools like continuity testers, logic analyzers, and thermal imaging cameras to pinpoint faults and anomalies within the system. <p>Common Electrical-Electronics Problems</p> <ul style="list-style-type: none"> • Component Failure-Identify and replace malfunctioning components such as resistors, capacitors, transistors, integrated circuits (ICs), relays, and switches. • Short Circuits and Open Circuits-Diagnose and repair short circuits (unintended connections between conductors) and open circuits (broken connections) using continuity testing and visual inspection techniques. • Intermittent Faults-Troubleshoot intermittent faults that occur sporadically by monitoring system behavior over time and using diagnostic tools to capture transient events. 	
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	<ul style="list-style-type: none"> • Signal Degradation-Investigate issues related to signal degradation, noise interference, signal distortion, and signal attenuation in electronic circuits and communication networks. • Power Supply Problems-Address issues related to power supply instability, voltage fluctuations, overvoltage/undervoltage conditions, and power quality disturbances. <p>Repair and Replacement</p> <ul style="list-style-type: none"> • Component Replacement. Substitute faulty components with suitable replacements, ensuring adherence to correct polarity, voltage ratings, current ratings, and other relevant specifications. • Soldering and Desoldering. Execute soldering and desoldering procedures as necessary to exchange surface-mount devices (SMDs) and through-hole components on printed circuit boards (PCBs). • Circuit Board Restoration. Rectify damaged traces, pads, vias, and solder joints on PCBs using methods like solder bridging, wire bonding, and PCB rework. • Module and Subsystem Substitution. Exchange malfunctioning modules, subsystems, or assemblies if repair proves impractical or uneconomical. <p>CHECK YOUR WORK</p> <ul style="list-style-type: none"> • Upon completion of repairs, execute functional and performance assessments to ensure proper system operation and compliance with predefined criteria. • Employ diagnostic tools and specialized testing protocols to confirm system functionality, calibration precision, and adherence to pertinent standards and specifications. <p>2. Worked Example Let the students think and reflect: Show a video about troubleshooting an electrical/electronic circuit. After showing the short video, ask them the following questions:</p> <ol style="list-style-type: none"> 1. What strategies did the electrician/technician use to identify and resolve the issue? 2. What concepts or techniques were particularly enlightening? 	<p>The teacher can use this sample video for the think and reflect worked example:</p> <p>PAANO MALALAMAN KUNG TAMA ANG PAG-WIRING NG ILAW Pinoy Electrical Warrior. (n.d.). Www.youtube.com. https://www.youtube.com/watch?v=3jYugCtJU0w falcon transistor radio no signal paano etrace agad ang sira. (n.d.). Www.youtube.com.</p>
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	<p>3. Lesson Activity</p> <p>Activity Title: Electrical/Electronic Circuit Diagnostics Challenge</p> <p>Objective:</p> <p>This activity aims to provide students with hands-on experience in diagnosing and troubleshooting electrical circuits to identify and resolve common issues.</p> <p>Materials Needed:</p> <ul style="list-style-type: none"> Assorted lamps, wires, switches, and other electrical/electronic components (for replacement). Pre-made electrical/electronic circuits with short circuits, open circuits, or incorrect component placement. Multi-tester <p>Scenario/Instructions:</p> <ol style="list-style-type: none"> Divide the class into groups of 3-4 members Assign each group an installed circuit deliberately altered to include faults like short circuits, open circuits, or incorrect component placement. Challenge students to detect and resolve the faults present in their designated circuits. Recommend students utilize multimeters to assess voltage, current, and resistance at different locations within the circuit to aid in diagnosing the issue. Offer guidance and assistance as necessary while students work on rectifying the faults within their circuits. Lead a post-troubleshooting discussion to analyze the obstacles faced and the approaches employed by students in addressing the issues. Prompt students to contemplate the troubleshooting process and share insights from participating in the activity. <p>The students must complete the table below based on the identified problem and the troubleshooting solution. The remarks will show if the solution that they have given is correct.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">Circuit Name:</div>	<p>https://www.youtube.com/watch?v=JT1gkxFCfME</p> <p>RSP Supply. (2021, March 12). <i>Electrical Troubleshooting Basics</i> [Video]. YouTube. https://www.youtube.com/watch?v=zdrUX6_LGmE</p> <p>The teacher may choose what circuit he/she will use for the activity, depending on the availability of tools, devices, supplies, and materials.</p> <p>The teacher should ensure that all the learners are already skilled in using diagnostic tools and instruments.</p> <p>Safety is a must.</p>
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	<table border="1"> <tr> <th data-bbox="479 145 790 244">Problem/Issues found</th><th data-bbox="790 145 1357 244">Troubleshooting Solution</th><th data-bbox="1357 145 1644 244">Remarks</th></tr> <tr> <td data-bbox="479 244 790 501"> The bulb does not light Busted bulb </td><td data-bbox="790 244 1357 501"> Tested the circuit for continuity. No continuity Tested the bulb for continuity. No continuity. Replaced with a new bulb. The bulb lit up </td><td data-bbox="1357 244 1644 501"> Replace the busted bulb </td></tr> <tr> <td data-bbox="479 501 790 600"></td><td data-bbox="790 501 1357 600"></td><td data-bbox="1357 501 1644 600"></td></tr> <tr> <td data-bbox="479 600 790 668"></td><td data-bbox="790 600 1357 668"></td><td data-bbox="1357 600 1644 668"></td></tr> </table> <p>DAY 3 AND 4 SUB-TOPIC 2: Refrigeration and Air-Conditioning diagnostics and troubleshooting</p> <p>1. Explicitation Refrigeration and air conditioning diagnostics and troubleshooting are all about figuring out and fixing problems in systems that keep our spaces cool and comfortable. Think of it like when your fridge at home stops working or the air conditioning in your car isn't as cold as it should be. In those situations, someone needs to figure out what's wrong and how to fix it so everything can work properly again. To do this, experts in refrigeration and HVAC (heating, ventilation, and air conditioning) systems use their technical skills and special tools to find out what's causing the issue. It's like being a detective, searching for clues to solve a mystery. They might check things like the temperature and pressure levels, look for leaks, test electrical parts, and make sure air is flowing correctly. By using these methods, they can identify the problem and fix it efficiently, making sure the system works well and doesn't waste energy. So, refrigeration and air conditioning diagnostics and troubleshooting are all about keeping things cool and comfortable while also making sure systems run efficiently, saving energy and money in the process.</p>	Problem/Issues found	Troubleshooting Solution	Remarks	The bulb does not light Busted bulb	Tested the circuit for continuity. No continuity Tested the bulb for continuity. No continuity. Replaced with a new bulb. The bulb lit up	Replace the busted bulb							
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	<p>TECHNIQUES IN DIAGNOSIS AND TROUBLESHOOTING</p> <ul style="list-style-type: none"> Visual Examination Conduct a thorough visual inspection of the system to identify any visible signs of damage, leaks, or worn-out components such as hoses, pipes, or seals. Temperature and Pressure Monitoring Use specialized equipment such as thermometers and pressure gauges to measure temperature and pressure levels at various points within the system. Deviations from standard operating parameters may indicate potential issues. Refrigerant Leak Identification Employing leak detection tools such as electronic leak detectors or ultraviolet (UV) dyes to pinpoint and repair refrigerant leaks, can reduce system efficiency and harm the environment. Electrical Component Evaluation Utilizing multimeters and other diagnostic tools to assess electrical components such as compressors, capacitors, and relays for proper functionality and voltage levels. Airflow Assessment Checking airflow rates and distribution using anemometers and airflow meters to ensure adequate ventilation and temperature control within the conditioned space. System Performance Analysis Analyzing system performance data, including temperature variations, superheating, and subcooling, to diagnose inefficiencies or malfunctions. Condensate Drain Inspection Examining condensate drains for obstructions or blockages that may lead to water damage or microbial growth within the system. Thermostat Calibration Verifying the accuracy and calibration of thermostats to ensure they accurately sense and regulate temperature levels. System Controls Testing Evaluating and troubleshooting system controls such as thermostats, pressure switches, and control boards to identify and correct any malfunctions or programming errors. 	<p>The teacher may use the Common Refrigeration and Air-Conditioning Problems for the flash card, and use the solutions as a guide in giving points to the students' answers. Also, it is up to the teacher how many points he/she will give to the learners, and the teacher has the liberty to choose how many flashcards he/she will create.</p> <p>The teacher may add other RAC System problems to have variations for another group of students</p> <p>Worksheet no. 2 with possible causes and solutions.</p> <p>Problem 1: Insufficient Cooling</p> <p>Description: The refrigeration system is running, but the temperature inside the refrigerated space remains higher than the desired set temperature. Identify</p>
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	<p>Common Refrigeration and Air-Conditioning Problems</p> <ul style="list-style-type: none"> • Refrigerant Leak: The system has a refrigerant leak, resulting in insufficient cooling or improper temperature control. Solution: Locate and repair the refrigerant leak, then recharge the system with the appropriate amount of refrigerant. • Frozen Evaporator Coil: The evaporator coil is covered in ice or frost, leading to reduced airflow and inadequate cooling. Solution: Turn off the system to allow the coil to thaw. Check for airflow restrictions, such as dirty air filters or blocked vents. Address any issues and ensure proper airflow. • Compressor Failure: The compressor fails to start or stops working, causing the system to malfunction and produce warm air. Solution: Check for electrical issues, such as blown fuses or tripped circuit breakers. If the compressor is faulty, it may need to be repaired or replaced by a professional. • Improper Airflow: The system experiences restricted or inadequate airflow, resulting in uneven cooling or reduced cooling capacity. Solution: Inspect and clean air filters, vents, and ductwork. Remove any obstructions to ensure proper airflow throughout the system • Electrical Issues: Electrical problems, such as faulty wiring or a malfunctioning thermostat, disrupt the system's operation. Solution: Check for loose connections, damaged wiring, or faulty components. Repair or replace as necessary. Ensure proper functioning of the thermostat. • Contaminated Condenser Coil: The condenser coil is dirty or clogged, reducing heat transfer and impacting system efficiency. Solution: Clean the condenser coil using a soft brush or a specialized coil cleaner. Remove any debris or vegetation around the outdoor unit to ensure proper airflow. • Faulty Fan Motor: The fan motor fails to operate correctly, leading to reduced airflow and poor cooling performance. Solution: Check the fan motor for proper functioning. Lubricate if necessary or replace the motor if it's faulty. • Thermostat Malfunction: The thermostat does not accurately sense or control the temperature, resulting in improper cooling or heating. 	<p>possible causes and propose troubleshooting solutions.</p> <p>Possible Causes:</p> <ul style="list-style-type: none"> • Insufficient airflow due to dirty or blocked evaporator coil. • Restricted heat transfers due to a dirty or clogged condenser coil. • Low refrigerant levels or refrigerant leak. • Compressor malfunction or electrical issues. <p>Troubleshooting Solutions:</p> <ul style="list-style-type: none"> • Thaw the evaporator coil if ice or frost is present. • Clean the evaporator coil to improve airflow. • Clean the condenser coil to enhance heat transfer. • Check and refill refrigerant levels if necessary. • Inspect and repair the compressor or electrical connections as needed. <p>Problem 2: Uneven Temperature Distribution</p>
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	<p>Solution: Calibrate or replace the thermostat if it's not functioning correctly. Ensure proper placement away from heat sources or drafts.</p> <ul style="list-style-type: none"> • Blocked or Leaky Ductwork: The ductwork is obstructed or has leaks, causing reduced airflow and inefficient cooling or heating. Solution: Inspect the ductwork for any obstructions or leaks. Clear obstructions and seal any leaks using appropriate duct tape or mastic sealant. • Excessive Noise or Vibration: The system produces unusual noises or excessive vibrations during operation, indicating a potential issue. Solution: Check for loose or damaged components, such as fan blades or mounting brackets. Tighten or replace components as necessary to reduce noise and vibration. <p>2. Worked Example Refrigeration and Air-Conditioning Techniques Flash Cards Create flashcards with different Refrigeration and Air-conditioning (RAC) problems and solutions. Divide the class into small teams. Each team will be given a set of flashcards with different RAC problems and solutions. Set a timer for each round. During each round, one team will draw a flashcard and read the problem aloud. They will have a set amount of time (e.g., 3 minutes) to discuss and propose a diagnosis and solution using refrigeration and air-conditioning techniques. Rotate through the teams and problems until all the flashcards have been used. The team with the most points at the end of the game wins. You can offer extra points/credit as a reward for the winners.</p> <p>3. Lesson Activity Activity Title: RAC Diagnostic and Troubleshooting Activity Objective: To apply refrigeration and air-conditioning techniques in diagnosing and troubleshooting common problems in RAC systems.</p> <p>Materials Needed: RAC diagnostic and troubleshooting worksheet (created by the teacher)</p> <p>Instructions:</p> <ol style="list-style-type: none"> 1. Distribute the worksheets to the students. Explain that they will be working in small groups to diagnose and troubleshoot the problems presented. 	<p>Description: Some areas of the room are significantly cooler or warmer than others, creating temperature variations. Identify possible causes and propose troubleshooting solutions.</p> <p>Possible Causes:</p> <ul style="list-style-type: none"> • Improperly balanced air distribution system • Leaky or blocked ductwork • Inadequate insulation in certain areas • Undersized or oversized AC system <p>Troubleshooting Solutions:</p> <ul style="list-style-type: none"> • Balance the air distribution system by adjusting dampers or registers. • Seal any leaks or repair damaged ductwork. • Improve insulation in areas with temperature variations. • Consider resizing the AC system if it is not appropriate for the space.
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	<ol style="list-style-type: none"> Instruct the students to carefully read each problem and analyze the information provided. Encourage them to use their knowledge of refrigeration and air-conditioning techniques to identify potential causes of the problem. Should document their diagnostic process on the worksheet, including the steps they would take to identify the root cause of the problem. <p>After students finish the worksheet, conduct a class review of the answers. Explore the various methods employed by students and evaluate the efficiency of their suggested solutions. Foster an environment where students feel comfortable asking questions and participating in conversations about the diagnostic and troubleshooting methods utilized.</p>	
D. Making Generalizations	<p>DAY 4</p> <p>1. Learners' Takeaways</p> <p>Summary Questions:</p> <ul style="list-style-type: none"> What are the key steps involved in electrical-electronics diagnostics and troubleshooting? How do you identify common issues in electrical and electronic systems? What are some key takeaways or lessons learned from engaging in refrigeration and air conditioning diagnostics and troubleshooting? <p>2. Reflection on Learning</p> <p>The learners will answer the following reflection questions:</p> <ul style="list-style-type: none"> What are some challenges you might face during electrical-electronics diagnostics, and how do you overcome them? How do you identify and prioritize issues within refrigeration and air conditioning systems? 	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		NOTES TO TEACHERS
A. Evaluating Learning	<p>DAY 4</p> <p>1. Formative Assessment</p> <p>Multiple Choice</p> <p>Directions: Choose the letter of the correct answer.</p>	<p>Answer key:</p> <ol style="list-style-type: none"> c) Conducting a visual inspection c) Testing electrical components

	<p>1. Which of the following is a common step in electrical-electronics diagnostics and troubleshooting?</p> <ul style="list-style-type: none"> a) Applying random solutions b) Ignoring safety protocols c) Conducting a visual inspection d) Avoiding the use of diagnostic tools <p>2. What is a primary purpose of using multimeters in electrical diagnostics?</p> <ul style="list-style-type: none"> a) Measuring temperature b) Assessing system airflow c) Testing electrical components d) Detecting refrigerant leaks <p>3. What is the significance of a systematic approach in troubleshooting electrical circuits?</p> <ul style="list-style-type: none"> a) It increases the likelihood of causing further damage. b) It helps in identifying faults more efficiently. c) It disregards the importance of safety measures. d) It involves skipping steps to save time. <p>4. What is a common cause of insufficient cooling in an air conditioning system?</p> <ul style="list-style-type: none"> a) Clogged air filters b) Dirty condenser coil c) Low refrigerant levels d) All of the above <p>5. What should you check if an air conditioning system is producing excessive noise during operation?</p> <ul style="list-style-type: none"> a) Fan motor b) Compressor c) Refrigerant levels d) Thermostat <p>2. Homework (Optional)</p>	<p>3. b) It helps in identifying faults more efficiently.</p> <p>4. d) All of the above</p> <p>5. a) Fan motor</p>
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B. Teacher's Remarks	<i>Note observations on any of the following areas:</i>	Effective Practices	Problems Encountered	<p>The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff.</p> <p>Teachers may also suggest ways to improve the different activities explored/ lesson exemplar.</p>
	strategies explored			
	materials used			
	learner engagement/ interaction			
	Others			
C. Teacher's Reflection	<p><i>Reflection guide or prompt can be on:</i></p> <ul style="list-style-type: none"> ▪ <u>principles behind the teaching</u> What principles and beliefs informed my lesson? Why did I teach the lesson the way I did? ▪ <u>students</u> What roles did my students play in my lesson? What did my students learn? How did they learn? ▪ <u>ways forward</u> What could I have done differently? What can I explore in the next lesson? 			<p>Teacher's reflection in every lesson conducted/ facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</p>