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| **DAY** | **TOPIC / SUB – TOPIC** | **RPK / OBJECTIVES** | **TEACHER – LEARNER ACTIVITIES** | **T/LSM** | **CORE POINTS** | **EVALUATION / REMARKS** |
| Mon | TRANSFORMER LOSSES | **RPK**Students know the principles of operation of a transformer**Objectives**By the end of the lesson, the student will be able to;* Identify the losses in a transformer.
* Demonstrate methods of minimizing losses in a transformer.
* Identify and demonstrate various methods of cooling a power transformer.
* Explain the importance of cooling a transformer.
 | Introduce the lesson by asking students to explain the working principles of the transformer.Group students to discuss the losses in a transformer.Assist students to understand the methods of minimizing losses in a transformer.Discuss with students the methods of cooling a power transformer and demonstrate each method.Assist students to appreciate the importance of cooling a power transformer. | Chalkboard illustrationReal objects:TransformerDigital Multimeter | **Transformer losses**: . Hysteresis losses. Copper losses. Eddy current losses**Method of reducing losses:** . Lamination of core. Increasing coil diameter. Using soft magnetic material for the construction of the core.**Method of cooling Transformers**. Air cooling. Oil cooling. Air and oil circulation cooling**Importance of cooling the transformer**. To improve transformer efficiency. To prevent transformer breakdown due to excessive temperature. Increase transformer life span | 1. State and explain two losses in a transformer.
2. Explain how to minimize the losses stated in question one.
3. List two methods of cooling a transformer and explain how it is done.
4. Give two importance of cooling a transformer.
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| **DAY** | **TOPIC / SUB – TOPIC** | **RPK / OBJECTIVES** | **TEACHER – LEARNER ACTIVITIES** | **T/LSM** | **CORE POINTS** | **EVALUATION / REMARKS** |
| Fri | TRANSFORMER VOLTAGE REGULATION | **RPK**Students know the effect of carrying heavy loads for long distance.**Objectives**By the end of the lesson, the student will be able to;* Explain voltage regulation.
* Explain the effects of load on voltage regulation of a transformer.
* Solve problems involving voltage regulation of a transformer.
 | Introduce the lesson by asking students to state the relationship between voltage and load in electric circuit.Assist students to understand voltage regulation.Assist students to understand the principles of operation of the transformer.Discuss with students the effects of load on voltage regulation of a transformer.Assist students to calculate voltage regulation of a transformer.Go over the salient points and encourage students to ask questions. | Chalkboard illustrationScientific CalculatorRealia: Transformer Model/Kit, Digital Multimeter, Rheostat | **Voltage Regulation**: It is the percentage change in the output voltage from no load to full load of a transformer.**Effect of load on voltage regulation:** If the power factor of the load is small, the load will draw more current from the transformer and thus output voltage of the transformer will differ (reduce) as compared to no load.Voltage regulation is higher with excessive load or loads with poor power factor.**Calculation of transformer voltage regulation** VR = $\frac{Vno load – Vfull load}{V no load} $ | 1. Explain the term voltage regulation.
2. What will happen when a transformer is connected to a load with poor power factor?
3. A transformer has a no-load voltage of 24V. If the output voltage dropped to 21V when connected to a load, calculate the voltage regulation.
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