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***THE HASHMITE UNIVERSITY***

***ELECTRICAL ENGINEERING DEPARTMENT***

***ELECTRICAL MACHINES LAP***

*Lab Sheet*

**Single Phase Transformer I.**

|  |  |
| --- | --- |
| **Group number: Students ID:** | |
| **1** |  |
| **2** |  |
| **3** |  |
| **4** |  |
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**Single Phase Transformer- (I**)

**A) Open Circuit Test:-**

Table 2-A

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Applied voltage ( V1) | No load current ( I1 = Im) | Open side voltage (V2) | No load input power () | Calculated | | | | |
|  | Irc | Ixm | Rc | Xm |
| 115V |  |  |  |  |  |  |  |  |
| 90V |  |  |  |  |  |  |  |  |
| 70V |  |  |  |  |  |  |  |  |
| 50V |  |  |  |  |  |  |  |  |

**Results:**

1. Find the no load currents, Irc, Ixm, , Rc and Xm **at the rated voltage (115V)**.
2. Plot the applied voltage V1 against Im .

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**Questions:**

* 1. Why does the wattmeter in no load test read the iron losses only?

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* 1. Why the no load test is usually done with supply given to the low voltage side?

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**B) Turns Ratio Test:-**

Depending on the measured values of V1 and V2 in Table 2-A, calculate the ratio: ****.

|  |  |  |
| --- | --- | --- |
| Applied voltage ( V1) | Open side voltage (V2) |  |
| 115V |  |  |
| 90V |  |  |
| 70V |  |  |
| 50V |  |  |

**Questions:**

1. How does the transformer change the voltage from one value to the other?

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1. What is the voltage ratio? Is it same for all condition?

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**C) Polarity Test:-**

Read the value of the voltage V from supply side and the voltage V1 between the other open terminals of the windings.

V **=** ………….. V1 **=** ……………

If V **<** V1 then, the polarity is additive.

If V **>** V1 then, the polarity is subtractive.

The polarity of the tested transformer is …………………

**Questions:**

1. What is meant by the additive polarity of transformer?

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1. Explain the importance of polarity test on transformer?

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**D) Measuring the Resistances of the Transformer Windings:-**

Table 2-B

|  |  |
| --- | --- |
| Winding | Rx |
| High voltage side 0V-220V |  |
| High voltage side 0V-160V |  |
| Low voltage side 110 V |  |

**Conclusions:**

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