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**Basic Electrical and Electronics Engineering**

**Experiment No. : 05**

***AC Circuit Analysis***

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**Date of performance : 03 |04 |2021**

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| **Aim:** | A.C through 1) Resistor 2) R-L Series circuit 3) R-C Series circuit |
| **Apparatus:** | Online simulation tools (Suggested Tinkercad) |
| **Theortical Analysis:** | ***Fig. 1(a) A.C through resistor***  ***Theoretical Calculations:***  V=IZ  Since Z=R  I=V/R  Table 1   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Sr. No.** | **Frequency** | **Current** | **Voltage** | **Resistance** | | **1.** | **1000Hz** | **1mA** | **5V** | **1K ohm** | |
| ***Fig. 1(b) R-L Series circuit***  ***Theoretical Calculations:***  ­­  ***Practical Calculations Table:***   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Sr. No.** | **Resistance** | **Current** | **VR** | **VL** | **VT** | | **1.** | **100 ohm** | **47 mA** | **4.7 V** | **1.5 V** | **4.93 V** | | **2.** | **50 ohm** | **82 mA** | **4.1 V** | **2.5 V** | **4.80 V** | | **3.** | **10 ohm** | **150 mA** | **1.4 V** | **4.4 V** | **4.63 V** | |
| ***Fig. 1(c) R-C Series circuit***    ***Practical Calculations Table:***   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Sr. No.** | **Resistance** | **Current** | **VR** | **VC** | **VT** | | **1.** | **100 K ohm** | **0.045 mA** | **4.5 V** | **1.44 V** | **4.72 V** | | **2.** | **50 K ohm** | **0.084 mA** | **4.2 V** | **2.7 V** | **4.99 V** | | **3.** | **10 K ohm** | **0.146 mA** | **1.46 V** | **4.6 V** | **4.826 V** |     ***Conclusion:***   * **We applied properties and formulae of pure R,series R-L and series R-C circuit for theoretical calculations.** * **The practical values have been attained using an online simulation tool, Tinkercad.** * **The theoretical and measured values are almost equal to each other.** |