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| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **I/II** |
| **Date of Performance:** | **19/11/2021** | **Batch No:** | **G3** |
| **Faculty Name:** |  | **Roll No:** | **16010421075** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 25** |

**Experiment No: 4**

**Title:** **Maximum Power Transfer Theorem**

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| **Aim and Objective of the Experiment:** |
| * To observe maximum power transfer in D.C. circuit. |

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| **COs to be achieved:** |
| **CO1:** Analyze resistive networks excited by DC sources using various network theorems.. |

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| **Circuit Diagram/ Block Diagram:** |
| **Circuit Diagram** |

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| **Stepwise-Procedure:** |
| 1.Set D.C. supply voltage V= 15 V.  2. Vary in the range 50 Ω - 10 KΩ in steps of 100 Ω.  3. Note down for each value of Where are current through and voltage across respectively.  4. Prepare observation table showing readings of : .  5. Plot graph of  6. Locate the point of maximum value of power and note down corresponding value of  . Verify the results theoretically |

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| **Observation Table:**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Sr. No.** | **Value of RL (Ω)** | **Load current IL (mA)** | **Power PL=( IL)2RL**  **(Watts)** | **Power Effeciency**  **Pl/Psupplied\*100** | | **1** | **0** | **83.3** | **0** | **0%** | | **2** | **100** | **71.4** | **0.509** | **14.28%** | | **3** | **200** | **62.5** | **0.781** | **25%** | | **4** | **300** | **55.6** | **0.927** | **33.36%** | | **5** | **400** | **50** | **1** | **40%** | | **6** | **500** | **45.5** | **1.035** | **45.5%** | | **7** | **600** | **41.7** | **1.043** | **50.04%** | | **8** | **700** | **38.5** | **1.037** | **53.9%** | | **9** | **800** | **35.7** | **1.019** | **57.12%** | | **10** | **900** | **33.3** | **0.998** | **59.94%** | | **11** | **1000** | **31.3** | **0.979** | **62.6%** | |
| Screenshot of Output:                        GRAPH |

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| **Conclusion:** |
| * The maximum power that can be transferred from source to load is 50%, which occurs when source impedance is exactly matched to load impedance. * The power level of the circuit is Moderate when the load resistance is greater than the source resistance. * We can clearly observe that the power level of the circuit is Maximum when the load resistance is equal to the source resistance. Hence the Maximum Power Transfer theorem is verified. |

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| **Signature of faculty in-charge with Date:** |