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| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **I/II** |
| **Date of Performance:** |  | **Batch No:** | **16010421063** |
| **Faculty Name:** |  | **Roll No:** |  |
| **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** | **Power supplied** | **Power Efficiency**  **(in %)** | | **1** | **0** | **83.3** | **0** | **4.165** | 0 | | **2** | **100** | **71.4** | **0.5098** | **3.57** | 14.28 | | **3** | **200** | **62.5** | **0.78125** | **3.125** | 25 | | **4** | **300** | **55.6** | **0.92741** | **2.78** | 33.36 | | **5** | **400** | **50** | **1** | **2.5** | 40 | | **6** | **500** | **45.5** | **1.03513** | **2.275** | 45.5 | | **7** | **550** | **43.5** | **1.04074** | **2.175** | 47.849977 | | **8** | **590** | **42** | **1.04076** | **2.1** | 49.56 | | **9** | **600** | **41.7** | **1.04333** | **2.085** | 50.04 | | **10** | **610** | **41.3** | **1.04047** | **2.065** | 50.385956 | | **11** | **650** | **40** | **1.04** | **2** | 52 | | **12** | **700** | **38.5** | **1.03758** | **1.925** | 53.9 | | **13** | **800** | **35.7** | **1.01959** | **1.785** | 57.12 | | **14** | **900** | **33.3** | **0.998** | **1.665** | 59.94 | | **15** | **1000** | **31.3** | **0.97969** | **1.565** | 62.6 | |
| Screenshot of Output:    P vs RL 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. * Maximum power transmission theorem is true because maximum power is passed when Load resistance is same as source resistance. |

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