

Course Name:	Elements of Electrical and Electronics Engineering	Semester:	I
Date of Performance:	/ / 2023	Batch No:	C5_1
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Faculty Sign & Date:		Grade/Marks:	/ 25

Experiment No: 5

Title: Maximum Power Transfer Theorem

Aim and Objective of the Experiment:

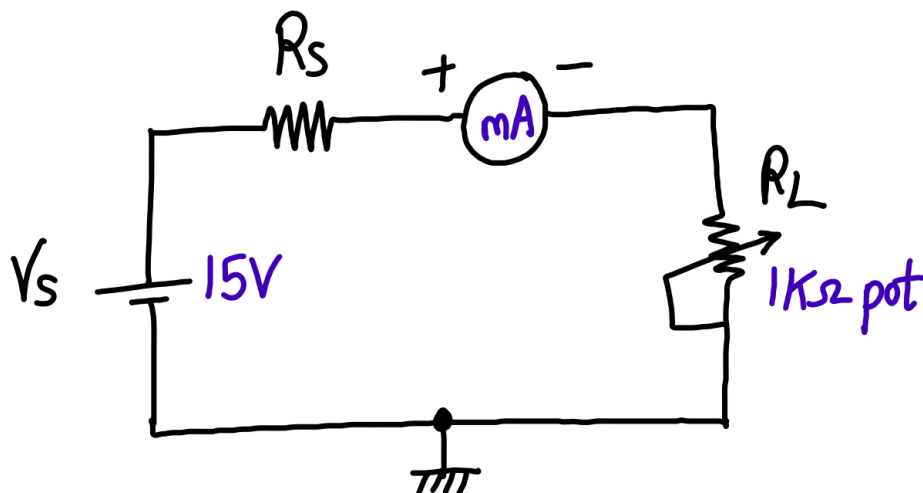
- To observe maximum power transfer across load resistor in a D.C circuit.

COs to be achieved:

CO1: Analyze resistive networks excited by DC sources using various network theorems.

Circuit Diagram:

$V_s = 15\text{ V}$ and $R_s = \underline{\quad 560 \quad} \Omega$



Stepwise-Procedure:

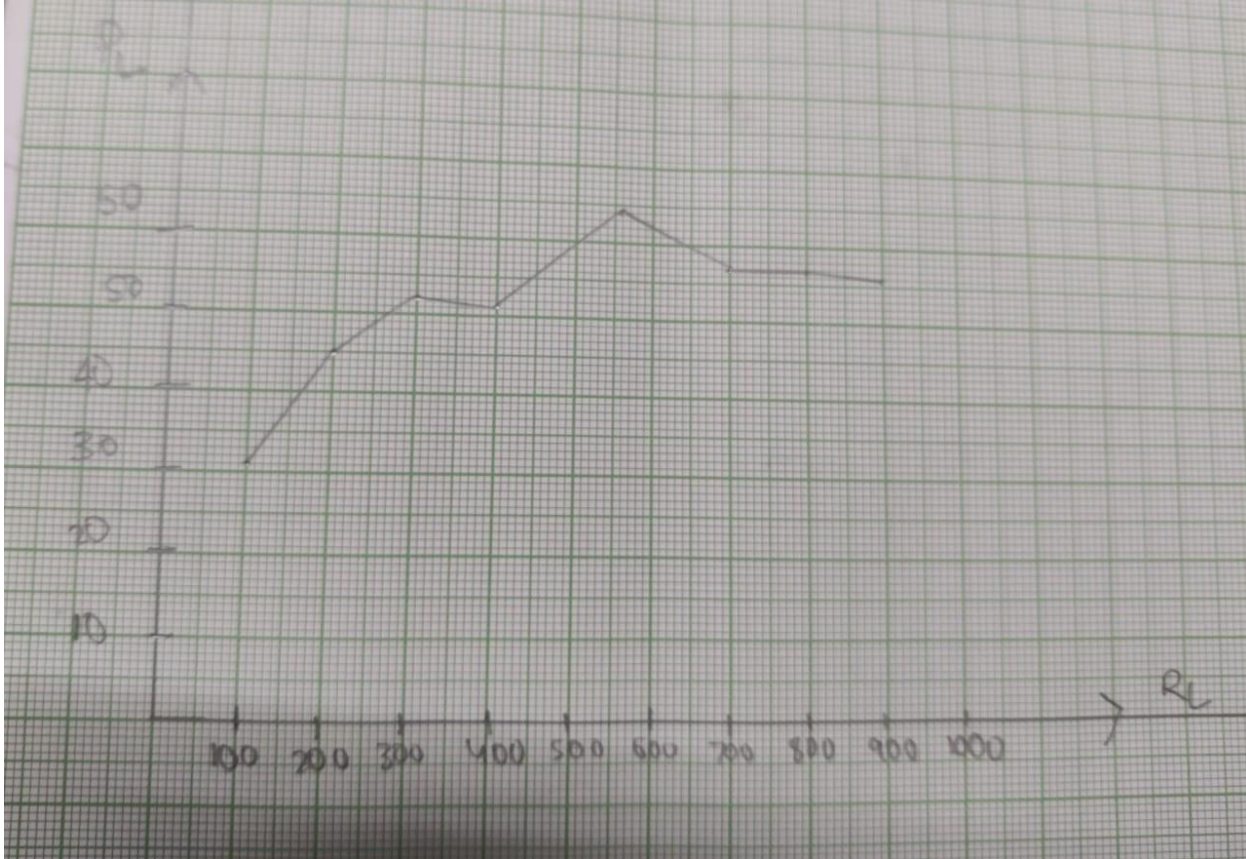
1. Set D.C. supply voltage $V_S = 15\text{ V}$
2. Vary R_L in the range $100\ \Omega - 1\text{ K}\Omega$ in steps of $100\ \Omega$
3. Note down I_L and V_L for each value of R_L . Where I_L and V_L are current through R_L and voltage across R_L respectively.
4. Prepare observation table showing readings of R_L Vs power $P = I_L \cdot V_L$
5. Plot graph of P Vs R_L
6. Locate the point of maximum value of power P and note down corresponding value of R_L .
Verify the results theoretically

Observation Table:

Sr. No.	$R_L\ \Omega$	Circuit Current (I_L) in mA		Voltage (V_L) in Volts	Power absorbed by load (P_L) in mW $P_L = I_L^2 \cdot R_L$	
		Theoretical	Practical		Theoretical	Practical
1.	100	22.7	17.4	1.77	51.529	31.329
2.	200	19.7	14.5	3	77.618	45
3.	300	17.4	12.9	3.95	90.828	52.008
4.	400	15.62	11.5	4.52	97.593	51.076
5.	560	13.89	10	5.40		64.98
6.	700	11.9	9	6.35	99.127	57.8
7.	800	11.02	8.1	6.75	97.152	57.63
8.	900	10.2	7.7	7.19	93.636	56.96
9.	1K	9.615	7.1	7.45	92.448	55.5
10.						

Graph: Draw a graph showing effect of variation in R_L on P_L using observation table. Take R_L on

X-axis and P_L on Y-axis. (Use a graph paper)



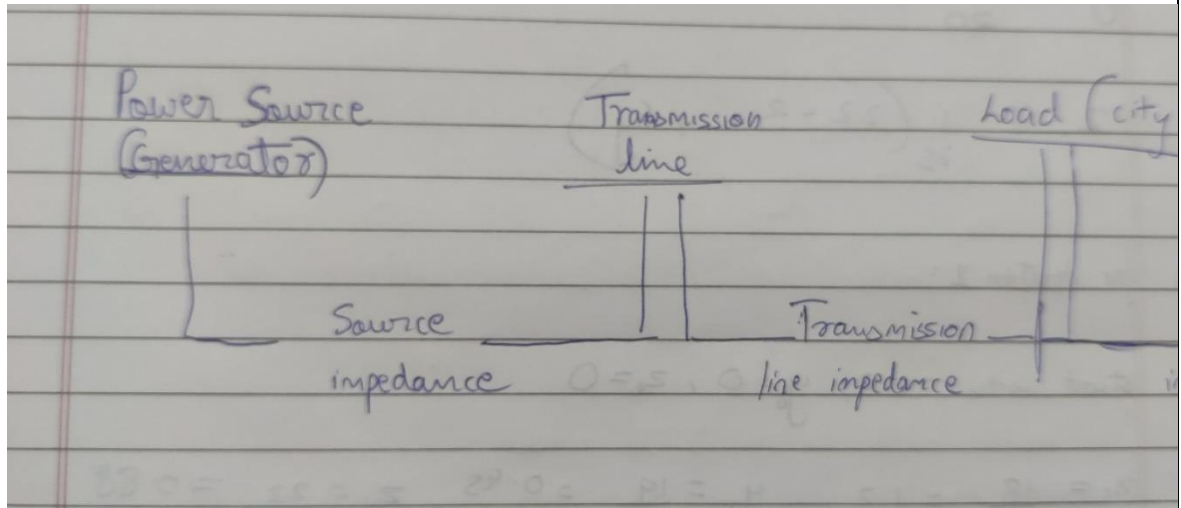
Conclusion-

1. Explore one practical application where Maximum Power Transfer Theorem is used

Ans: Power Transmission Lines

2. Draw a block diagram or circuit diagram of this application.

Ans:



3. Explain in brief.

Ans: The maximum power transfer theorem is applied in the context of power transmission lines, where the goal is to efficiently transfer electrical power from a source (e.g., a power plant) to a load (e.g., a city or industrial facility). The application of this theorem helps in maximizing the power delivered to the load by optimizing the impedance matching between the transmission line and the load.

Signature of faculty in-charge with Date: