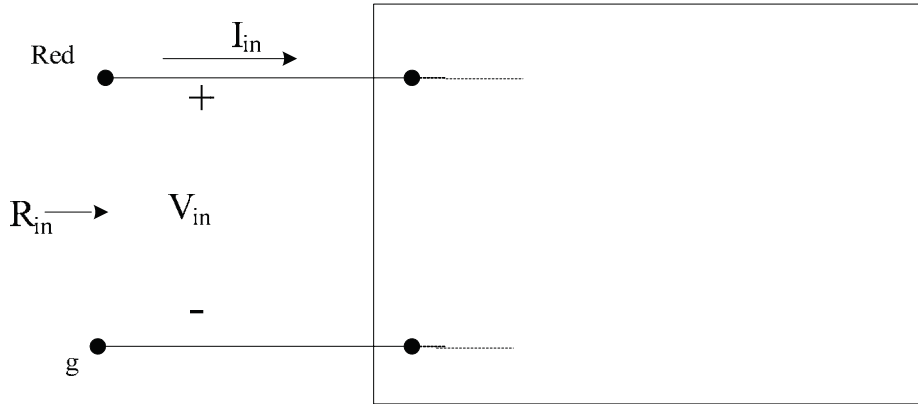


**LAB RECORD (Weight: 30 %)**

**PART A** [Step 3] : Draw the series-parallel circuit, which you have selected in the space within the dotted outline showing all resistance values clearly. **Calculate the theoretical value of  $R_{in}$  for your network.**, ie  $R_{in}$  (calc). **This will be used as a ‘reference’ value .**



[Neatly draw your selected circuit within the block and indicate all R values used]

Measurements [Steps 1 to 5] :

Calculated Value of  $R_{in}$  (calc) = .....  $\Omega$ . (for the above circuit)

Exact input voltage  $V_{in}$  = ..... volts ,  $I_{in}$  = ..... A / mA

$R_{in}$  value (from current/voltage measurements)

$R_{in}$  (expt) =  $V_{in}/I_{in}$  = .....  $\Omega$ .

Ohmmeter-measured Value of  $R_{in}$ (OM) = .....  $\Omega$ .

**PART B** : TEC & MPT [Refer to Figure 2.7]

Step 7 : Open-Circuit voltage :  $V_{ab}(oc) = V_T =$  ..... Volts

Step 8 : Dial reading when  $V_L = 0.5 V_T$ ,  $N =$  .....  
& the corresponding value of  $R_L =$  ..... Ohms

{ or

Load Voltage  $V_L =$  ..... Volts , with  $R_L =$  ..... Ohms }

TA Signature: .....

( LAB RECORD Continued )

Maximum Power Transfer Theorem Verification : [Step 9]

Nominal Load Resistor ( $R_L$ ) Values used: [Note:  $R_a < R_b < R_T$  and  $R_d > R_c > R_T$ ]

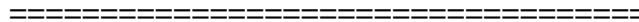
[  $R_L = R_T$  when  $V_L = V_T/2$  ]

$R_a = \dots \Omega$ ,     $R_b = \dots \Omega$ ,

$R_c = \dots \Omega$ ,     $R_d = \dots \Omega$ ,

Load Resistance $R_L \Omega$	Load Voltage $V_L$ volts	$P_L = (V_L)^2/R_L$ W or mW
$R_a =$		
$R_b =$		
<b><math>R_L</math> (for <math>V_T/2</math>)</b>		
$R_c =$		
$R_d =$		

TA signature : .....



**LAB REPORT** (Weight: 50%)

**PART (A) : ERROR ANALYSIS:** Calculate the error observed in the experimentally determined  $R_{in}(Expt)$  and in the ohmmeter-measured value  $R_{in}(OM)$  with respect to the theoretical value  $R_{in}(calc)$ . Comment on the results.

Error in  $R_{in}(expt) = 100 [R_{in}(expt) - R_{in}(calc)] / R_{in}(calc) = \dots\dots\dots\%$

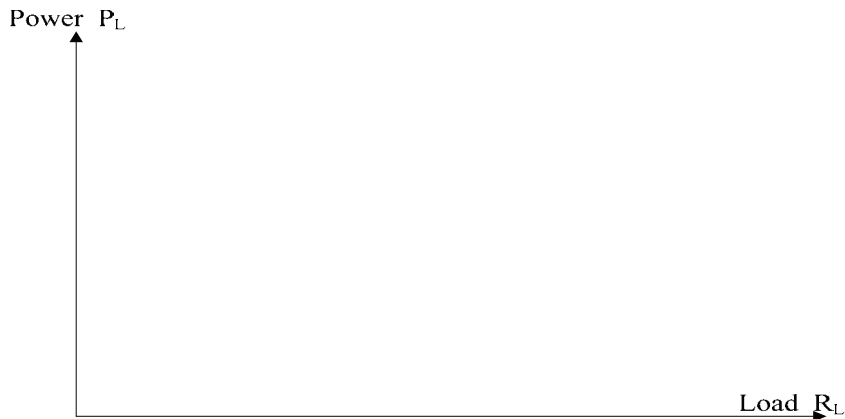
Error in  $R_{in}(OM) = 100 [R_{in}(OM) - R_{in}(calc)] / R_{in}(calc) = \dots\dots\dots\%$

**PART (B) :TEC & MPT :**

(a) Calculate the value of  $V_T$  and  $R_T$  from the data of Steps 7 & 8  
**Draw the TEC in the space provided below.**

(b) The maximum power available from the TEC is  $P_{max} = \dots\dots\dots W$

(c) Plot  $P_L$  against the five selected values of  $R_L$  in the co-ordinate space provided below :



**DISCUSSION & CONCLUSION:** [Discuss possible reasons for any differences observed between theory and the experimental results. Express, **in your own words**, what you learnt from this experiment. ]

**Please remember to follow all report-format and submission rules given earlier !**

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