1a) $\left| \frac{0.814215 - 9/11}{(9/11)} \right| \times 100\% = 0.485$

1b) $\left| \frac{0.818711 - 9/11}{9/11} \right| \times 100\% =$

LAB REPORT (Weight: 50%)

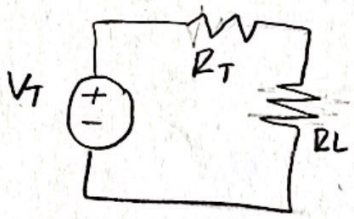
PART (A) : **ERROR ANALYSIS:** Calculate the error observed in the experimentally determined R_{in}(Expt) and in the ohmmeter-measured value R_{in}(OM) with respect to the theoretical value R_{in}(calc). Comment on the results.

1) Error in R_{in}(expt) = 100 [R_{in}(expt) - R_{in}(calc)] / R_{in}(calc) = ...0.485..... ...%

2) Error in R_{in}(OM) = 100 [R_{in}(OM) - R_{in}(calc] / R_{in}(calc) = ...0.0646.....%

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.



V_T from 7: 11.5684 V

R_L = 1180 Ω

$V = RI$

$\frac{V}{R} = I$

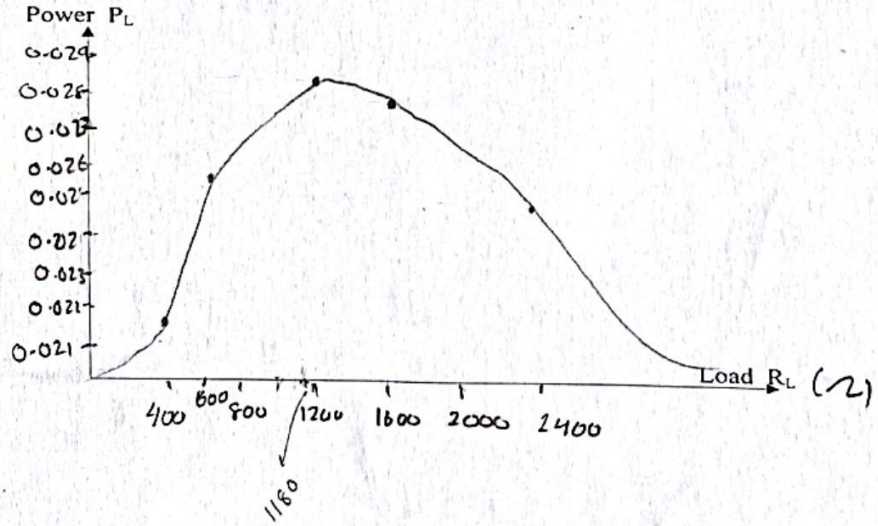
$P_{max} = VI \Rightarrow V \cdot \frac{V}{R}$

For P_{max} we know $R_L = R_T$

$\frac{V^2}{R} = \frac{11.5684^2}{4(1180)}$

(b) The maximum power available from the TEC is P_{max} = ..0.02835..W

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



MARIO ELSHAER 4NZ10124

(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 = 400 Ω, R_b = 600 Ω,

R_c = 1600 Ω, R_d = 2400 Ω,

Load Resistance R_L Ω		Load Voltage V_L volts	$P_L = (V_L)^2/R_L$ (W) or mW
R_a = 400		2.9408	0.02162
R_b = 600		3.9099	0.025479
R_L (for $V_T/2$) 1180		5.7843	0.028354
R_c = 1600		6.6563	0.027691
R_d = 2400		7.7519	0.025038

TA signature : MP