Table 1

Parameter	Values
Step 1	
$R(measured)$	0.960 KΩ
$R_L(measured)$	9.998 KΩ
Step 3	
$V_L(expected)$	10 V
$V_R(expected)$	7 V
$I_R(expected)$	7.29 mA
$I_L(expected)$	1.001 mA
$I_Z(expected)$	7.72 mA
Step 4	
$V_L(measured)$	8.66 V
$V_R(measured)$	8.37 V
$I_R(calculated)$	8.71 mA
$I_L(calculated)$	8.66 mA
$I_Z(calculated)$	0 A
Step 5	
$R_{L_{min}}(determined)$	1418.57 Ω
Step 6	
$V_L(measured)$	9.705 V
$V_R(measured)$	7.43 V
$I_R(calculated)$	7.63 mA
$I_L(calculated)$	9.71 mA
$I_Z(calculated)$	2.08 mA

7. Compare the expected values calculated in step 3 with the ones measured in step 6. Are they different or same? Explain.

in step3 no current flow becase zena diod not work

And step6 zena diod is work

CALCULATIONS

"in "on" state $V_Z = V_L = 10V$ And $V_R = 17 - 10 = 7\ V$

$I_L = \frac{10}{9998} = 1.001\ mA$ $\left\{ I_R = \frac{7}{960} = 7.29\ mA \right\} I_Z = I_R - I_L = +7.72$

$I_R = \frac{8.37}{9960} = 2.71\ mA$ $\left\{ R_{Lmin} = \frac{R V_L}{V_i - V_L} = \frac{960}{\frac{17-10}{10}} = 1418.57 \right.$

$I_R = \frac{7.43}{0.960} = 7.63\ mA$ $\left\{ I_L = 9.71\ mA \right\} I_Z = 2.08\ mA$

Islamic University Faculty of Engineering Department of Electrical Engineering		الجامعة الإسلامية كلية الهندسة قسم الهندسة الكهربائية

EE 212 - ELECTRONICS I

Fall Semester 2017

LAB MIDTERM EXAM

Grade
90/100

Name, Family Name[redacted]

ID No[redacted]No.: 1050 Signature[redacted]

[CO_11, PI_2_36, SO_2]

Instructions:

- **Write your student ID number on the top of each page.**
- **Show all the details of your analysis and calculations.**

1. Construct the circuit of Figure 1 and record the measured value of R and R_L in Table 1.

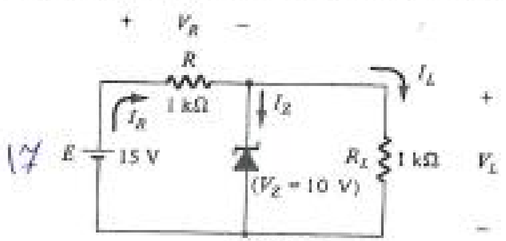
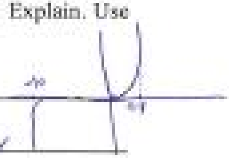


Figure 1

2. Is the Zener diode in the "on" state, that is, in the Zener breakdown region? Explain. Use the measured resistor values and the $V_Z = 10\ V$.

yes Because it's work in reverse base so it's no current flow befor 10v and after 10v it's work only 10v



3. Calculate the expected values of V_L, V_R, I_L, I_R, and I_Z for the diode in the "on" state. Record the values in Table 1.

4. Energize the circuit of Figure 1 and measure V_L and V_R . Using these values calculate the levels of I_R, I_L and I_Z . Record the values in Table 1.

5. Calculate the minimum value of R_L for the diode to be in the "on" state? Record the values in Table 1.

6. Insert $R_{L_{min}}$ into Figure 1 and energize the circuit of Figure 1. Measure V_L, V_R and calculate I_L, I_Z *and* I_R Record the values in Table 1.

Islamic University Faculty of Engineering Department of Electrical Engineering		الجامعة الإسلامية كلية الهندسة قسم الهندسة الكهربائية

EE 212 - ELECTRONICS I

Fall Semester 2017

LAB MIDTERM EXAM

GRADING TABLE

Section No.: 1050

Name, Family Name: [redacted]

[CO_11, PI_2_36, SO_2]

Contents	Grade	Comments
Circuit connection and functioning	20 /20	
Q1	05 /05	
Q2	Zero /10	
Q3	15 /15	
Q4	15 /15	
Q5	10 /10	
Q6	15 /15	
Q7	05 /05	
Calculation details	05 /05	
Total	**90 /100**	