



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

Sekolah Pendidikan  
Profesional dan  
Pendidikan Berterusan  
(SPACE)

**JABATAN KEJURUTERAAN ELEKTRIK  
PUSAT PENGAJIAN DIPLOMA (PPD), SPACE  
UNIVERSITI TEKNOLOGI MALAYSIA  
KUALA LUMPUR**

**ELECTRICAL ENGINEERING LABORATORY 2  
(DDWE 2701)**

**ELECTRONICS 1**

**REPORT SHEET 2  
ZENER REGULATOR**

<b>Group members</b>	1.
	2.
	3.
	4.
	5.
<b>Lecturer</b>	:
<b>Date</b>	:

No.	PO	CO	Student Marks	Marks
1	PO1	CO1		45%
2	PO2	CO3		45%
3	PO8	CO6		10%
<b>Total Marks</b>				<b>/ 100%</b>

**EXPERIMENT 2 : ZENER REGULATOR**

**Part A: Fix Power Supply ( $V_s$ ) and Varies Load Resistances ( $R_L$ ).**

Resistance $R_L$	Diode zener * ON /OFF	$V_Z$ (V)	$V_L$ (V)	$V_R$ (V)	$I_L$ (mA)	$I_s$ (mA)	$I_Z$ (mA)
500 $\Omega$							
1 k $\Omega$							
3 k $\Omega$							
6 k $\Omega$							
8 k $\Omega$							
10 k $\Omega$							

Table A

PO1	CO1	.....	/5m
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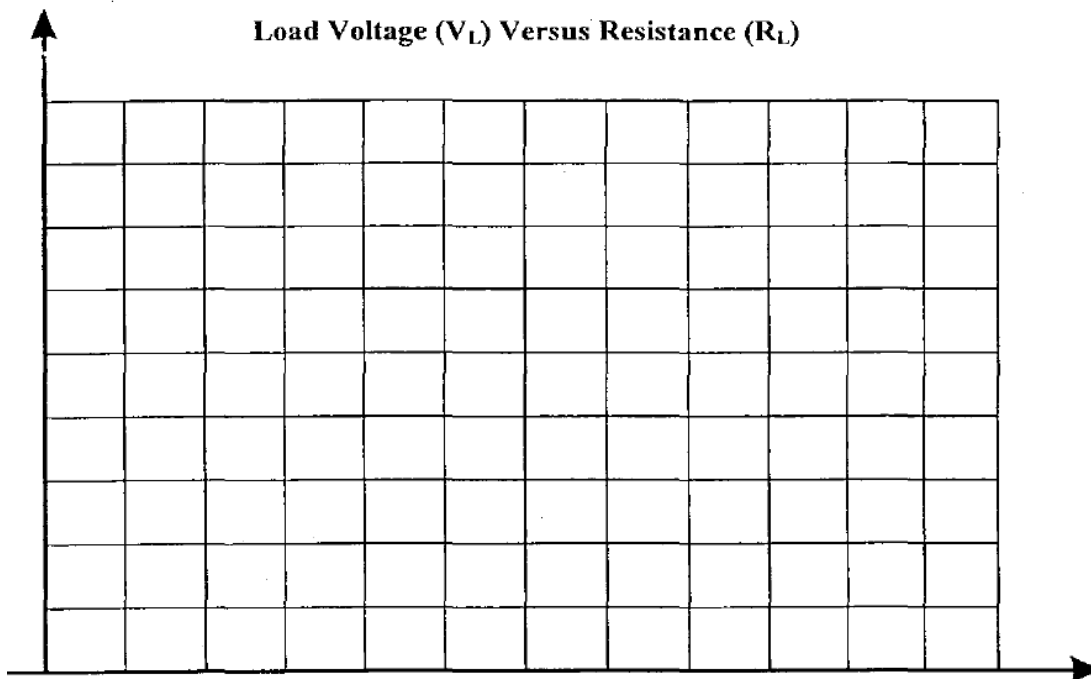


Figure A

PO1	CO1	.....	/5m
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1. Refer to Table A, at what range of  $R_L$  the regulation occur. Give your reasons.

.....  
 .....  
 .....

PO1	CO1	.....	/6m
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2. Refer to Figure A, which part of the graph the regulation occurs. Give your reasons in terms of the slope of the graph.

.....  
 .....  
 .....

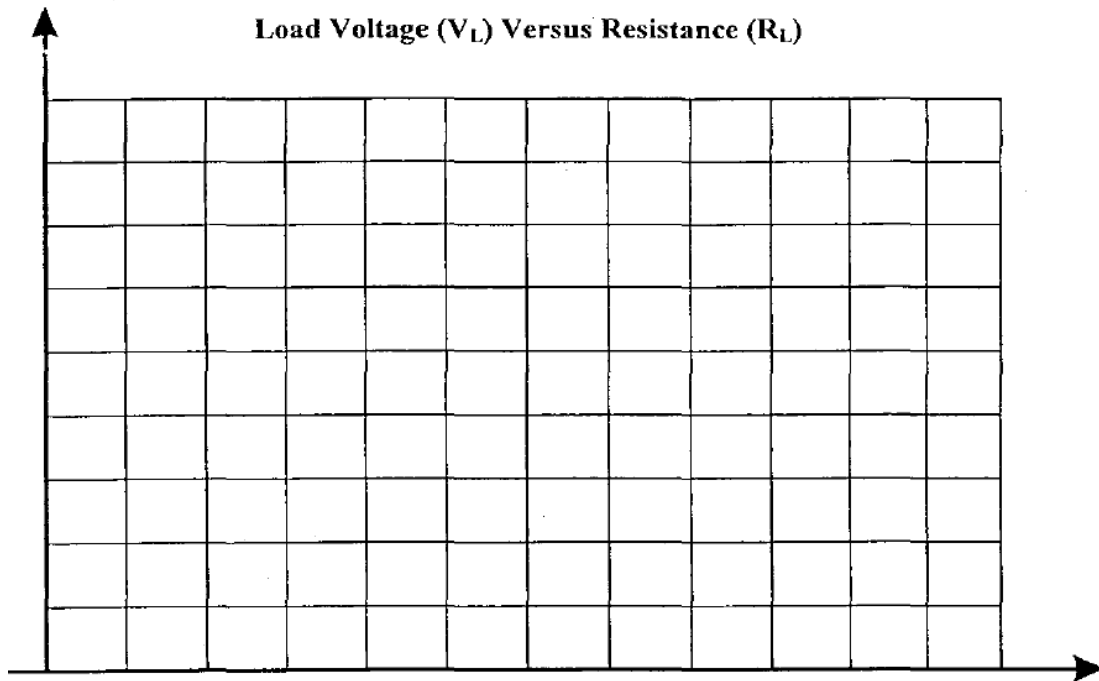
PO1	CO1	.....	/6m
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**Part B: Fix Load resistance ( $R_L$ ) and Varies Power Supply ( $V_s$ ).**

Power Supply ( $V_s$ )	Diode zener * ON /OFF	$V_Z$ (V)	$V_L$ (V)	$V_R$ (V)	$I_L$ (mA)	$I_s$ (mA)	$I_z$ (mA)
4V							
8V							
15 V							
20V							
22V							
25 V							

**Table B**

PO1	CO1	.....	/10m
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**Figure A**

PO1	CO1	.....	/5m
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1. Refer to Table B, at what range of  $V_s$ , the regulation occur. Give your reasons.

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PO1	CO1	.....	/6m
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2. Refer to Figure B, which part of the graph the regulation occurs. Give your reasons in terms of the slope of the graph.

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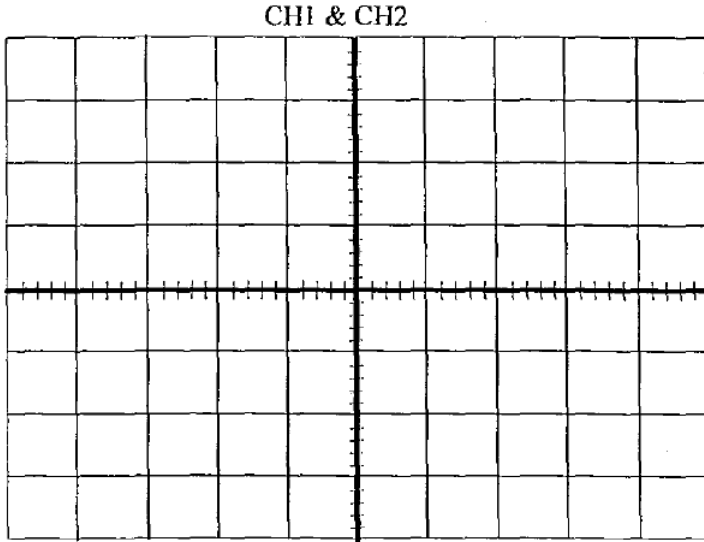
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PO1	CO1	.....	/6m
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**Part C**



**Figure C**

Time/div : \_\_\_\_\_

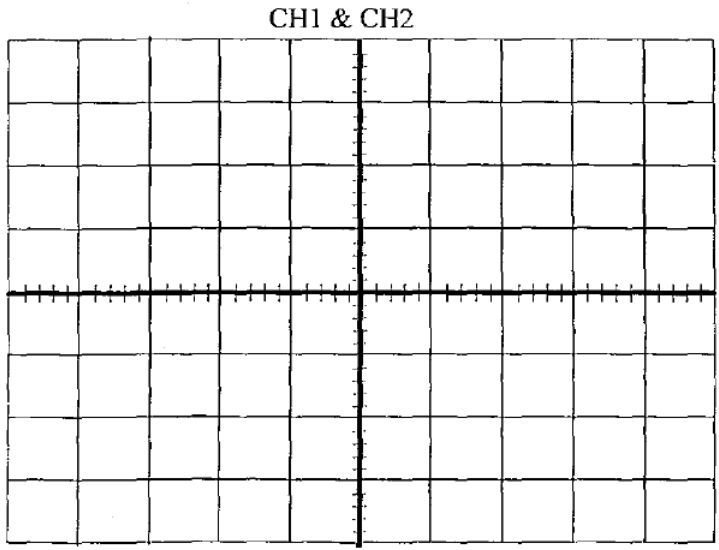
Volt/div : \_\_\_\_\_

PO1	CO1	.....	/10m
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1. Refer to Figure C, compare the form of output voltage,  $V_L$  with the input voltage,  $V_{\text{secondary}}$  and discuss the operation of zener diode during interval  $0 - T/2$  and  $T/2 - T$  (during input at +ve and -ve half cycle).

.....  
 .....  
 .....  
 .....

PO1	CO1	.....	/6m
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**Figure D**

Time/div : \_\_\_\_\_

Volt/div : \_\_\_\_\_

<b>PO1</b>	<b>CO1</b>	.....	<b>/10m</b>
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2. Refer to Figure 4 (lab sheet), calculate the minimum input voltage ( $V_{\text{Secondary}(\text{min})}$ ) the voltage just to turn both diodes to the 'ON' state.

.....

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.....

.....

<b>PO1</b>	<b>CO1</b>	.....	<b>/6m</b>
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3. Refer to Figure D, discuss the form of output voltage,  $V_L$  and relate your discussion with the operation of diode  $D_1$  and  $D_2$ .

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<b>PO1</b>	<b>CO1</b>	.....	<b>/6m</b>
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**Conclusions**

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<b>PO1</b>	<b>CO1</b>	.....	<b>/8m</b>
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**TOTAL MARKS (PO1, CO1) = ..... / 100 marks**

	<b>Marks</b>	<b>PO2</b>	<b>PO8</b>
<b>Group members</b>	1.		
	2.		
	3.		
	4.		
	5.		
<b>Lecturer</b>	:		
<b>Date</b>	:		

**Guideline of practical skill rubric: PO2**

<b>Practical skill ( 100 marks)</b>						
Scale :	1 (5marks)	2 (10marks)	3 (15marks)	4 (20marks)	5 (25marks)	
<u>Criteria</u> ✓ Demonstrate the practical skill	Very Poor	Poor	Moderate	Good	Excellent	Marks
<b>A. Circuit assembly/construction</b>	5	10	15	20	25	
<b>B. Using appropriate measurement equipment and technique</b>	5	10	15	20	25	
<b>C. Troubleshooting skill and technique</b>	5	10	15	20	25	
<b>D. Follow lab regulation</b>	5	10	15	20	25	
	<b>Total marks</b>					...../100

**Guideline of ethic rubric: PO8**

<b>ETHIC AND PROFESSIONAL MORAL ( ...../ 100 marks)</b>					
Scale :	1 (5marks)	2 (10marks)	3 (15marks)	4 (20marks)	5 (25marks)
<u>Criteria</u> ✓ Understand the economic, environmental and socio-cultural impacts of professional practice	Very Poor	Poor	Moderate	Good	Excellent
<b>A. Professional Practice (Punctuality/Follow the Rules)</b>	Tidak menepati/ Tidak Mematuhi	Kurang menepati/ Kurang mematuhi	Adakala menepati / Adakala mematuhi	Menepati / Mematuhi	Sentiasa menepati / Sentiasa mematuhi
<b>B. Ethical Behavior (Trustworthy / Respectfulness)</b>	Tidak mengamalkan	Kurang mengamalkan	Adakala mengamalkan	Mengamalkan	Sentiasa mengamalkan
<b>C. Social Cultural ( Racial Harmony)</b>	Tidak mengamalkan	Kurang mengamalkan	Adakala mengamalkan	Mengamalkan	Sentiasa mengamalkan
<b>D. Personality</b>	Tidak menepati	Kurang menepati	Adakala menepati	Menepati	Sentiasa menepati