EXPERIMENT: 4.1

EXAMINATION OF ZENER DIODE

EXPERIMENTAL PROCEDURE:

Plug the Y-0016-008 module. Make the circuit connection as in figure 13.4

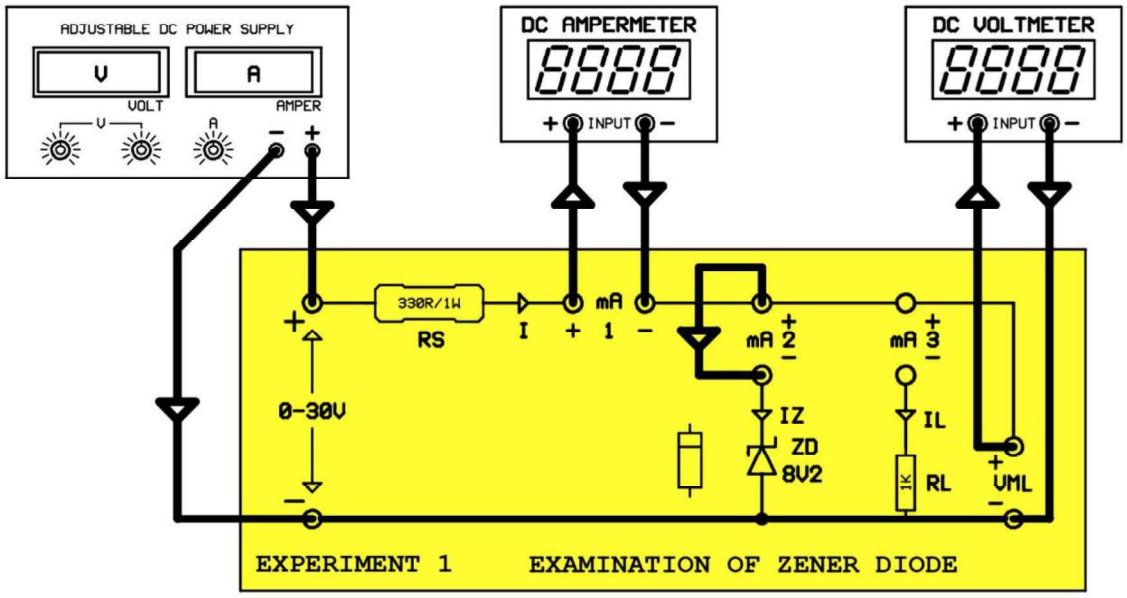

Figure 13.4

1- Adjust the voltage potentiometer of power supply to zero. (**Mid-terminals will be on the left) apply power to circuit.**

2- How is the zener diode biased? Why?

3- Adjust the voltage of power supply to the values in 13.5, respectively. Type the zener current (**Iz**) for every step.

NUMBER	APS (V)	EZ (V)	IZ(mA)
1	0,0		
2	2,0		
3	5,0		
4	8,0		
5	8,1		
6	8,2		
7	8,3		
8	8,4		
9	8,5		
10	9,0		
11	10,0		
12	12,0		

Figure 13.5

4- In which step did the zener current rapidly increase? What does it mean?

5- Draw the characteristics of zener diode in inverse bias using the values in figure 13.5

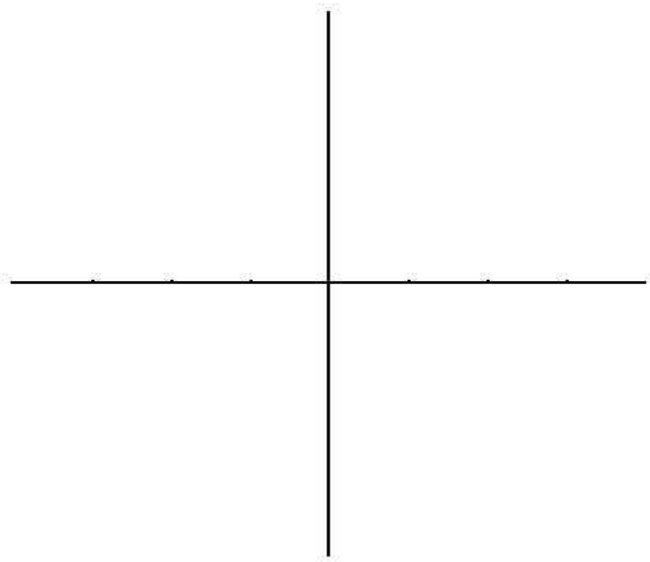

Figure 13.6

6- How would be the forward characteristics if zener diode was in forward bias? Show the forward characteristics in figure 13.6

EXPERIMENT: 4.2

EXAMINATION OF ZENER DIODE REGULATION CIRCUIT

EXPERIMENTAL PROCEDURE:

Plug the Y-0016-008 module. Make the circuit connections as in figure 13.10

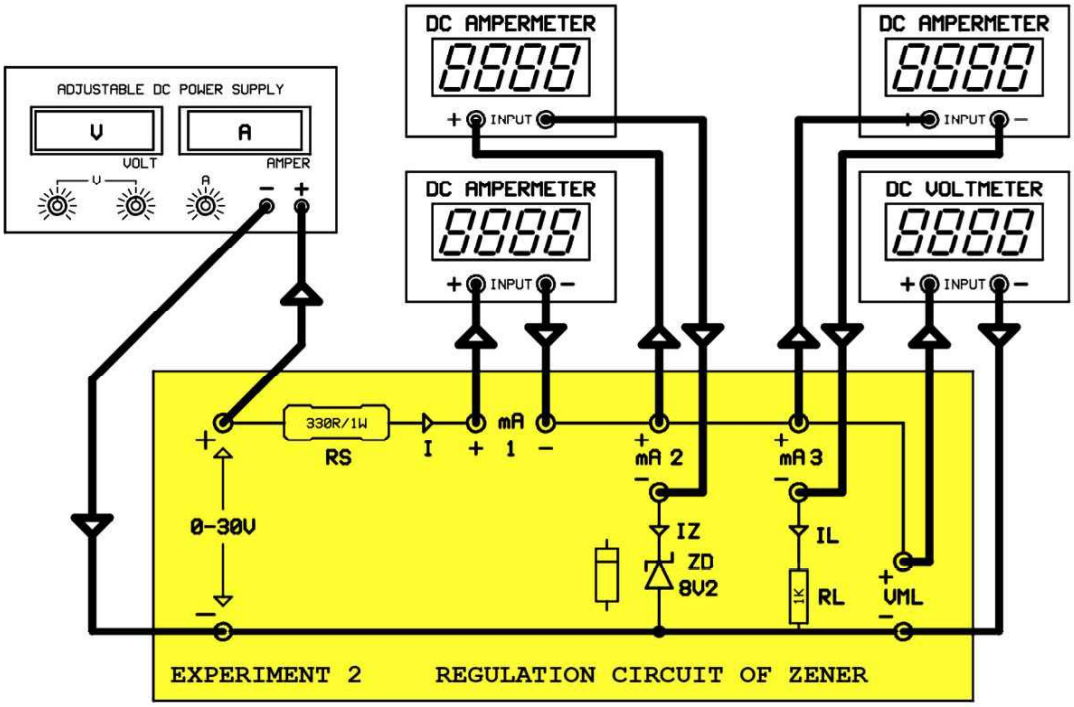

Figure 13.10

1- According to the component values given in circuit, calculate the limits of input voltage?

*Lower limit of input voltage (**EiA**);*

***EiA*=** $(IL.RS) + EZ$

***IL*=** $\frac{EL}{RT} = \frac{EZ}{RL} =$

***EiA*=**

*Upper limit of input voltage (**EiM**);*

***EiM*=** $(IM.RS) + EZ$

(***Zener diode power is PZD=0,25Watt***.)

$$IZM = \frac{PZD}{EZ} =$$

IM=*IZM+IL*
IM=

EiM=

2- Adjust the voltage potentiometer of power supply to zero. (Mid-terminals will be on the left). Apply power to the circuit. Adjust the voltage of power supply to the values between 10,9Volt and 20,8Volt. Read the values displayed by output voltmeter(**VML**) and comment on the process.

3- If the voltage of power voltage is increased and still the voltage on load terminals doesn't change, then, where is the excess voltage?