XMUT204 Electronic Design

Laboratory 3: Diode Applications - Questions

Due date: Not for submission

Part A1: Diode Clipper

1. Sketch your result of Part A1 (a) and (b) and explain this result. [10 marks]
2. Sketch your result of Part A1 (c) and (d) and explain this result. [10 marks]

Part A2: Diode Clamp

3. Sketch your result of Part A2 (b) and explain this result. [10 marks]

Part B2: Zener Diodes

4. Show your plot of I_Z vs V_Z as obtained in Part B1 (b) and (c). [10 marks]
5. Show your calculation of the stability ratio as obtained in Part B2 (a) and (b) and compare to the value expected from the diode model. [10 marks]

Additional Question

6. For the circuit given in the figure below, calculate:

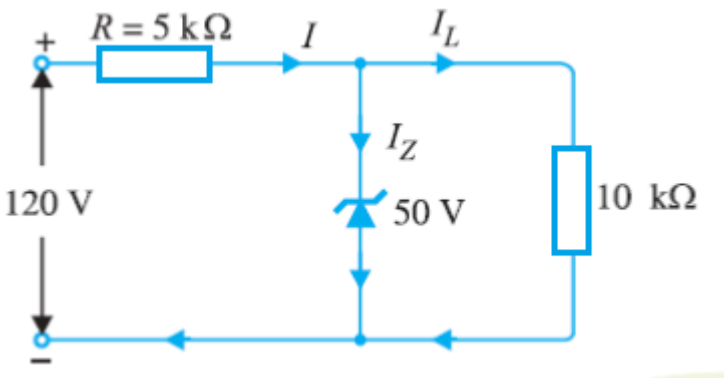

Figure 1: Zener diode based circuit

a. O/P voltage. [10 marks]

b. Voltage across the series resistor. [10 marks]

c. Power dissipation of the Zener diode. [15 marks]

d. Minimum load resistance (currently 10 kΩ in the circuit) for which the Zener will still function correctly as a voltage source if we assume a 10% margin of error. [15 marks]

Marking Schedule

Student Name : _____

Student ID : _____

No	Section	Mark	Your Mark	Remarks
	Questions			
1	Sketch your result of Part A1 (a) and (b) and explain this result.	10		
2	Sketch your result of Part A1 (c) and (d) and explain this result.	10		
3	Sketch your result of Part A2 (b) and explain this result.	10		
4	Show your plot of I_Z vs V_Z as obtained in Part B1 (b) and (c).	10		
5	Show your calculation of the stability ratio as obtained in Part B2 (a) and (b) and compare to the value expected from the diode model.	10		
	Additional Questions			
6	For the circuit given in the figure below, calculate:			
	• O/P voltage.	10		
	• Voltage across the series resistor.	10		
	• Power dissipation of the Zener diode.	15		
	• Minimum load resistance (currently 10 kΩ in the circuit) for which the Zener will still function correctly as a voltage source if we assume a 10% margin of error.	15		
	Total	100		

Comment: