



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Mid-Term Examination, Spring – 2025

(125)

Course Code: 0714-211

Course Title: Electronics I

Section: A, B, C

Level-Term: L2-T1

Full Marks: 25

Exam Date: March 15, 2025

Teacher's Initial: SD

Time: 1.5 Hours

[There are five (05) questions, answer all of them.]

[The figures in the right-hand margin indicate the allocated marks.]

[COs represent learning outcomes of the course.]

- Q1. (a)** Justify the statement - "Semiconductor materials have a negative temperature coefficient of resistance". CO-1 [2]
C(2)
- (b)** Suppose you need to construct a counter for counting products in a factory setup. Find the type of Diode you will need for this case. Also, explain its working principle. CO-1 [3]
C(2)
- Q2.** Describe the operation of a Diode Bridge Full Wave Rectifier with necessary diagrams. CO-2 [5]
If the input to a diode bridge full wave rectifier is $20 \sin 60t$ V, determine the output dc voltage and PIV rating of the diodes used in the rectifier. C(2)
- Q3.** Determine I_{D1} , I_{D2} and the voltage at node E for the following circuit in Fig. Q3. Here, both the diodes are made of Silicon. CO-2 [5]
C(3)

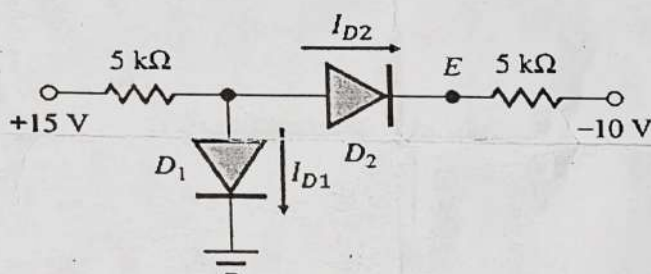


Fig. Q3

- Q4.** Determine and sketch the output signal of the following clipper circuit in Fig. Q4 for the given input signal. CO-2 [5]
C(3)

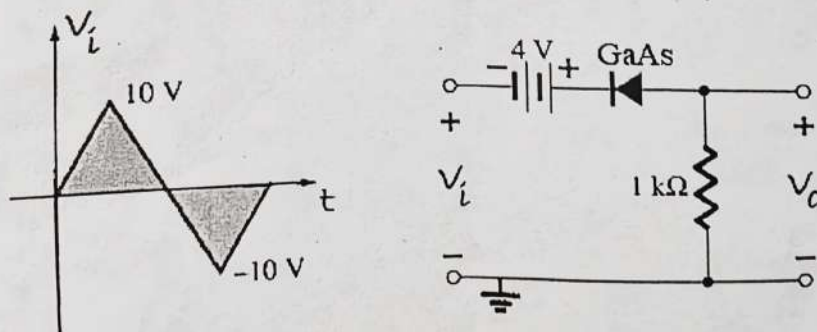


Fig. Q4

- Q5.** For the following circuit in Fig. Q5:
- (i) **Determine** the range of V_i that will maintain V_L at 8 V and not exceed the maximum power rating of the Zener diode.
- (ii) **Find** the value of V_L if V_i is within the range found in (i), but the polarity of the Zener diode is reversed in Fig. Q5.

CO-2 [5]
C(3)

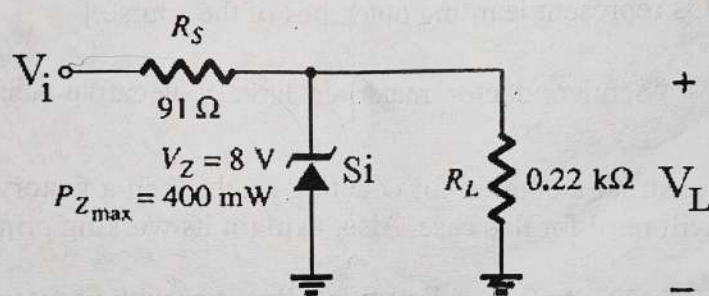


Fig. Q5