



বাংলাদেশ আর্মি ইন্টারন্যাশনাল ইউনিভার্সিটি অব সায়েন্স এন্ড টেকনোলজি, কুমিল্লা
 BANGLADESH ARMY INTERNATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY (BAIUST), CUMILLA

Mid Term Examination, Spring-2025
 Department of Computer Science and Engineering
 Level-1 Term-II
 Course Code: EEE-121
 Course Title: Electronic Devices and Circuits
 Credit Hour: 03
 Exam Duration: 1 Hour 30 Minutes
 Full Marks: 90

Notes:

- Figure on the right of each question indicates the marks for the respective question.
- Answer all the **THREE** questions.
- Course Learning Outcomes are
 - CO1:** Explain the basic operation of diodes, BJT, MOSFET, JFET, Op-Amp, oscillators, TRIAC, DIAC and their characteristics to solve engineering problems.
 - CO2:** Compare the characteristics of different types of diodes, transistors, OP-Amp and oscillators.
 - CO3:** Solve various mathematical problems to meet specific design criteria.
 - CO4:** Apply the knowledge of semiconductor diodes, BJT, MOSFET, JFET, Op-Amp etc to solve real life engineering problems such as rectification, switching and amplification.

- Explain the operation of Zener diode with I-V characteristics curve. CO1→C2 [15]
 - Determine the range of values of V_i that will maintain the Zener diode of Fig. A in the “on” state. Also plot of V_L versus V_i curve. CO3→C3 [15]

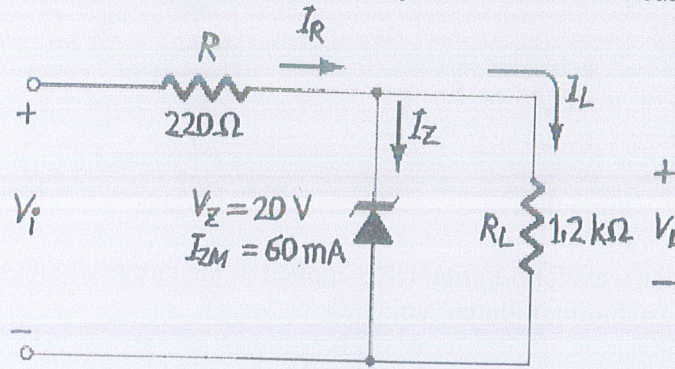


Fig. A

- Explain the operation of full wave rectifier circuit with proper figure and circuit diagram. CO1→C2 [15]
 - Answer any **one** question only from this: CO3→C3 [15]
 - Determine I , V_1 , V_2 , and V_O for the series dc configuration of Fig. B

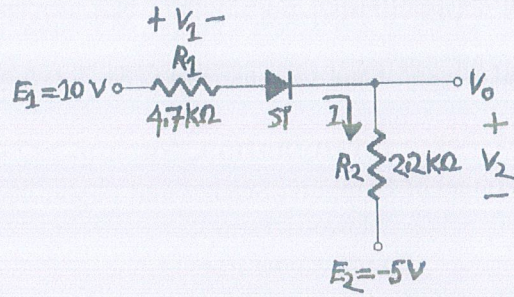


Fig. B

Or,

ii. Determine V_0 , I_1 , I_{D1} , and I_{D2} for the parallel diode configuration of Fig. C.

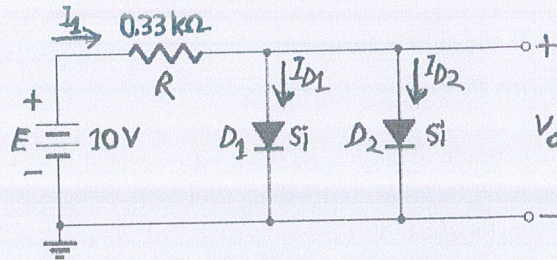


Fig. C

3. a. What are the differences between intrinsic and extrinsic semiconductor? Also compare between the semiconductor diode and Zener diode. CO2→C2 [15]
- b. Answer any **one** question only from this: CO3→C3 [15]
- i. The voltage waveform in Fig. D1 is applied in the circuit in Fig. D2. Sketch the waveform of output voltage v_0 . Consider silicon diode.

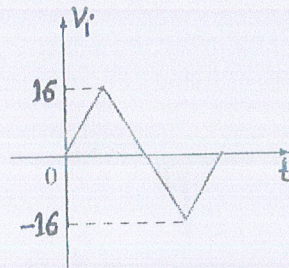


Fig. D1

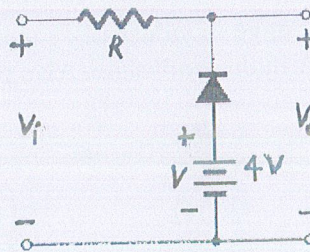


Fig. D2

Or,

ii. The voltage waveform in Fig. E1 is applied in the circuit in Fig. E2. Sketch the waveform of output voltage v_0 .

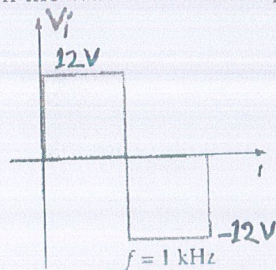


Fig. E1

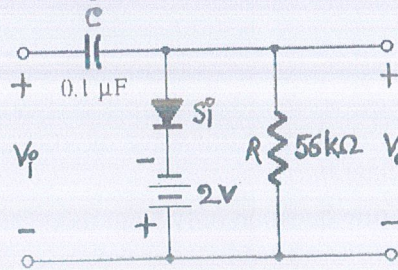


Fig. E2