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Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Mid Examination, Summer 2025

Course Code: CSE215 Course Title: Electronic Devices and Circuits

Level: 2 Term: 2 Batch: 66

Time: 1.50 Hrs **Full Marks: 25**

Answer all the following questions

[All portions of each question must be answered sequentially]

Q1.	a.	**Define** hole current.	1	CO1
	b.	**Recall** collector-base current with emitter open (I_{CBO}).	1	
	c.	**Name** the components required to convert pulsating DC into pure DC.	1	
	d.	**Recall** the input and output characteristics of common base connection.	1	
	e.	**Define** a clipper circuit and a clamper circuit with respect to their function.	1	
Q2.	a.	**Show** by deriving the relevant expressions that the ripple factor in half-wave rectification exceeds that of full-wave rectification by approximately 2.5 times.	4	CO2
	b.	**Explain** the formation of potential barrier in a pn junction with necessary figure.	4	
Q3.	a.	A transistor is operating in a common-emitter configuration. The collector supply voltage is 12 V, and the voltage drop across the collector resistor R_C (which has a resistance of 1 kΩ) is 2 V. Given that the transistor's common-base current gain is α=0.98. **Solve** for: i) The collector-emitter voltage V_{CE} ii) The base current I_B	4	CO3
	b.	A Full-Wave rectifier uses two diodes, the internal resistance of each diode may be assumed constant at 20 Ω. If the peak inverse voltage is 150 V & load resistance is 980 Ω then **solve** it to get the followings: i) Mean load current ii) R.M.S. value of load current	4	
	c.	Solve for the maximum and minimum values of Zener diode current for the given circuit below. Here, three Zener diodes of 20V are connected in series in Fig.1.	4	

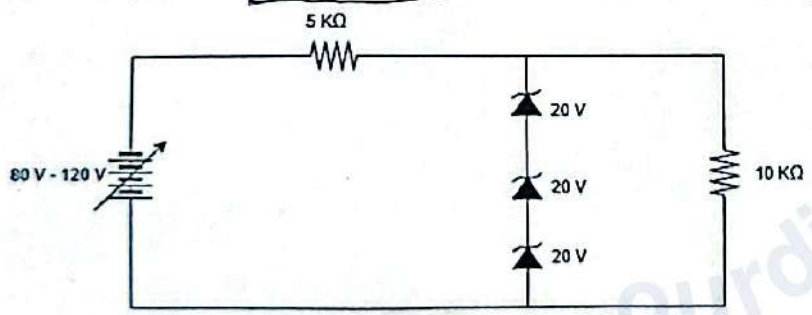


Fig. 1