



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]

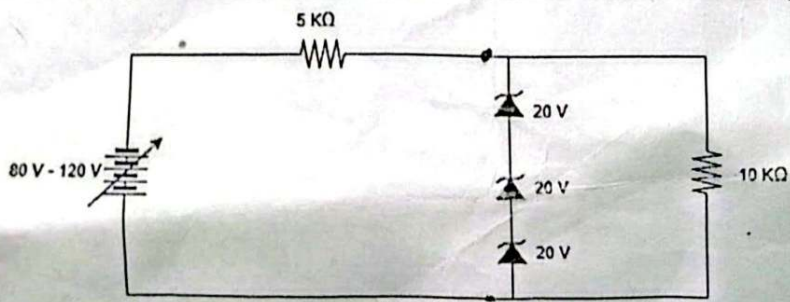
Q1.	a.	Define hole current.	1	CO1
	b.	Recall collector-base current with emitter open (I_{CBO}).	1	
	c.	Name the components required to convert pulsating DC into pure DC.	1	
	d.	Recall the input and output characteristics of common base connection.	1	
	e.	Define a clipper circuit and a clamper circuit 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 k Ω) is 2 V. Given that the transistor's common-base current gain is $\alpha=0.98$. 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