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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Mid Term Examination, Fall 2025
Course Code: CSE215 Course Title: Electronic Devices and Circuits
Level:2 Term:1 Batch: 67

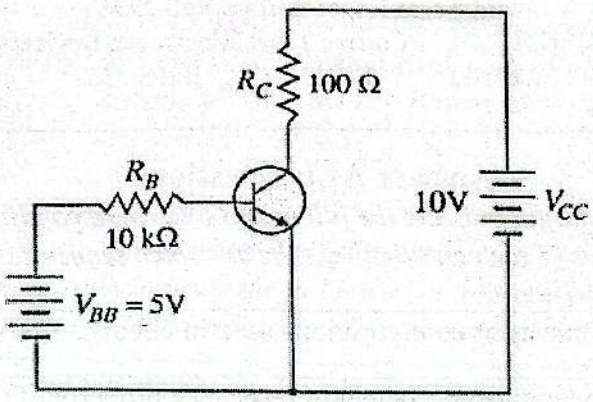
Time: 01:30 Hrs **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	*a)*	**Mention** the types of transistor configurations used in circuits.	**CO1 5x1=5**
	b)	**State** the negative temperature coefficient of resistance property of semiconductors.	
	c)	**Recall** the purpose of using a clipper circuit in waveform shaping.	
	d)	**List** the advantages of silicon compared to germanium for making semiconductor devices.	
	e)	**Define** Ripple Factor.	
2.	*a)*	**Explain** with circuit and waveforms how a Full-wave bridge rectifier converts AC into pure DC.	**CO2 4x2=8**
	b)	**Explain** the working principle of NPN and PNP transistor in detail.	
3.	*a)*	The two semiconductor diodes used in a rectifier circuit have forward resistance which can be considered constant at 0.1 Ω and infinite reverse resistance. They supply a mean current of 10 A to a resistive load from a sinusoidally varying alternating supply of 20 V (RMS). **Solve for:** i) The resistance of the load ii) The efficiency of the circuit	**CO3 4x3=12**
	b)	In the laboratory, you are provided with a 72 V DC power supply, 16 V Zener diodes, series resistors of 2 kΩ, and a load resistor of 4 kΩ. You are required to design a voltage stabilizer to provide a stable voltage of approximately 48 V for a sensitive device using only the available Zener diodes, resistors, and power supply. Also, **Solve** for (i) the output voltage (ii) the voltage drops across series resistance and (iii) the current through the Zener diode.	

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	c)	The transistor shown in figure 1 is of silicon and has $\beta = 150$ **Solve** for: i. Base Current, I_B. ii. Collector Current, I_C iii. Collector-Emitter Voltage, V_{CE}.  Fig. 1	

Good Luck!

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