

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-I & II EXAMINATION – WINTER 2024****Subject Code:BE01000111****Date:10-01-2025****Subject Name:Basic Electronics Engineering****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
<b>Q.1</b>	(a) Explain working of Zener break down.	<b>03</b>
	(b) Explain forward bias PN junction diode with diagram.	<b>04</b>
	(c) Write a short note: V-I characteristic of P-N junction diode.	<b>07</b>
<b>Q.2</b>	(a) Why Zener diode can be used as voltage regulator?	<b>03</b>
	(b) Explain advantage and disadvantage of bridge rectifier over full wave rectifier.	<b>04</b>
	(c) Explain half wave rectifier with neat diagram and also draw the output waveform.	<b>07</b>
	<b>OR</b>	
	(c) Explain the shunt and series clipping circuits with diagram.	<b>07</b>
<b>Q.3</b>	(a) Draw the symbol of PNP transistor and NPN transistor and explain why it is called "Bipolar Transistor"?	<b>03</b>
	(b) Explain solar cell with diagram.	<b>04</b>
	(c) Draw the circuit of CB configuration of transistor and explain Input and output characteristics of CB configuration of transistor.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Derive relationship between $\alpha$ dc and $\beta$ dc of a transistor.	<b>03</b>
	(b) Explain fixed bias and self bias in a transistor.	<b>04</b>
	(c) Derive h parameters for transistor CE amplifier. Also Draw and explain h parameter equivalent model for CE amplifier.	<b>07</b>
<b>Q.4</b>	(a) Draw voltage multiplier circuit.	<b>03</b>
	(b) Explain FET as an Amplifier	<b>04</b>
	(c) Compare CE, CB and CC configuration with respect to different transistor.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain in brief applications of JFET.	<b>03</b>
	(b) Explain Transconductance and switching in FET.	<b>04</b>
	(c) Compare the different characteristics of the following semiconductor devices: bipolar junction transistor, field-effect transistor.	<b>07</b>
<b>Q.5</b>	(a) Explain the AC load line of transistor.	<b>03</b>
	(b) Explain E-type MOSFET with neat diagram.	<b>04</b>
	(c) Write a short note on Tunnel diode.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) What is DC load line? Explain with necessary diagram.	<b>03</b>
	(b) Explain D-type MOSFET with neat diagram.	<b>04</b>
	(c) Write a short note on seven segment display with diagram.	<b>07</b>

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