

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-I & II(NEW) EXAMINATION – SUMMER 2023****Subject Code:3110016****Date:11-08-2023****Subject Name:Basic Electronics****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
Q.1	(a) Explain zener diode as a Voltage regulator.	03
	(b) Compare Half wave rectifier and Full wave bridge rectifier for following parameters.	04
	(i) Average DC Voltage	
	(ii) Ripple Factor	
	(iii) PIV	
	(iv) Rectifier Efficiency	
	(c) Illustrate the need of clipper circuit and explain Positive clipper and negative clipper with necessary diagram and waveforms.	07
Q.2	(a) Describe the need of biasing the transistor.	03
	(b) Draw the symbol of NPN & PNP transistor, write its different operating regions and also explain why it is called as “Bipolar Transistor”.	04
	(c) Discuss Common Collector(CC) configuration of transistor and explain its input and output characteristics.	07
OR		
	(c) Discuss Common Base(CB) configuration of transistor and explain its input and output characteristics.	07
Q.3	(a) Derive the relation between current gain α and β	03
	(b) Describe the factors affecting the Stability of Q point.	04
	(c) Explain the construction, working principle and application of phototransistor.	07
OR		
Q.3	(a) Discuss about leakage current in transistor.	03
	(b) Write a short note on Thermal runaway.	04
	(c) Describe the construction, the symbol, V-I characteristics and application of Tunnel diode.	07
Q.4	(a) Discuss about transconductance curve of JFET.	03
	(b) Explain transistor as a switch.	04
	(c) Explain in detail different models used for AC analysis of BJT circuits.	07
OR		
Q.4	(a) Write applications of JFET.	03
	(b) Explain the working of Emitter follower.	04

- (c) Draw h parameter equivalent model for CE amplifier and derive the equation for input impedance, output impedance, Voltage gain and current gain for CE amplifier. 07
- Q.5 (a) Draw symbol, truth table and Boolean equation for EX-OR and EX-NOR gate. 03
- (b) Compare different logic families. 04
- (c) Explain the construction and principle of operation of Enhancement type P-channel MOSFET. 07
- OR**
- Q.5 (a) Design AND, OR and NOT gate using NAND Gate. 03
- (b) Explain Transistor Transistor Logic (TTL). 04
- (c) Explain the construction, working and drain characteristics of N-Channel JFET. 07

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