

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-III EXAMINATION – WINTER 2025****Subject Code:3134104****Date:22-12-2025****Subject Name: Electronic Devices and Circuits****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) Compare Zener Diode and PN junction Diode.	03
(b) Differentiate FET and BJT.	04
(c) Draw and explain bridge rectifier circuit with capacitor filter.	07
Q.2 (a) What are the approximations used in diode. Explain all approximations.	03
(b) Explain p and n semiconductor formation in detail.	04
(c) Explain Voltage Divider biasing in detail.	07
OR	
(c) Draw and explain series and shunt positive clipper with output waveforms.	07
Q.3 (a) Draw symbol of tunnel diode, Draw VI characteristic of tunnel diode and explain it.	03
(b) Explain Transistor as a switch.	04
(c) Explain how the swamped amplifier works and list three of its advantages.	07
OR	
Q.3 (a) Explain transistor construction with size and doping level of each region	03
(b) Draw and explain the input and output characteristics of common emitter configuration.	04
(c) With the help of neat figure, explain the operation of a N-P-N transistor.	07
Q.4 (a) What is the difference between a voltage amplifier and a power amplifier?	03
(b) Describe the purpose of cascading CE and CC amplifiers.	04
(c) Explain Darlington pair in detail. Also derive its current gain.	07
OR	
Q.4 (a) Compare E MOSFET with D MOSFET.	03
(b) Draw Ebers-Moll model and π -model of a transistor.	04
(c) Draw a schematic of class B push-pull amplifier and explain its operation.	07
Q.5 (a) What is the use of Heat Sinks in power amplifier?	03
(b) Differentiate Ohmic region and Saturation region of JFET.	04
(c) Draw the basic construction of a p-channel JFET and explain its operation in detail.	07
OR	
Q.5 (a) Write the advantages and disadvantages of negative feedback.	03
(b) Explain the difference of class A and class B operation of an amplifier.	04
(c) Describe the characteristics of amplifiers, including classes of operation, types of coupling, and frequency ranges.	07
