

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 3 – EXAMINATION – SUMMER 2026

Subject Code: 3134104

Date: 02/07/2026

Subject Name: Electronic Devices and Circuits

Time: 02:30 PM TO 05:00 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.**

- Q.1** (a) What is doping in semiconductor material? **03**
(b) Draw & Explain Energy Band diagram for Conductor, Insulator and Semiconductor **04**
(c) Explain Intrinsic Semiconductor with its construction diagram and flow of current through it using holes and electrons. **07**
- Q.2** (a) Draw and Explain third approximation of Diode. **03**
(b) Compare Center Tapped Full wave rectifier and Bridge Full Wave Rectifier. **04**
(c) Explain DC load line for PN junction diode With circuit diagram , wave forms and necessary calculations. **07**
- OR
- Q.2** (c) Explain zener diode as voltage regulator. **07**
- Q.3** (a) Label the three regions of operation on a bipolar junction transistor collector curve. **03**
(b) Explain Transistor as a Switch. **04**
(c) Justify the need of transistor biasing. Explain voltage divider bias of common emitter amplifier in brief. **07**
- OR
- Q.3** (a) Describe JFET applications as constant current source. **03**
(b) Compare CB, CE and CC configuration of Transistor. **04**
(c) Explain how the swamped amplifier works and list three of its advantages. **07**
- Q.4** (a) Explain Principal of operation of Photo diode **03**
(b) Explain Collector feedback bias method for transistor biasing. **04**
(c) Draw the circuit of class B push – pull amplifier and explain its working. List the advantages and disadvantages. **07**
- OR
- Q.4** (a) Compare E MOSFET with D MOSFET.. **03**
(b) Draw and explain regulated power supply system. **04**
(c) Explain class A amplifier with circuit diagram and wave forms **07**
- Q.5** (a) What is the difference between voltage amplifier and power amplifier? **03**
(b) Explain method of identifying feedback topology **04**
(c) Explain Drain curves for JFET with its all regions **07**
- OR
- Q.5** (a) Explain basic principle of a solar cell. **03**
(b) Draw Ebers-Moll model and π -model of a transistor. **04**

(c) Explain the effect of negative feedback in amplifier characteristics.

07
