

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3152410

Date: 09/06/2026

Subject Name: Power Electronics in Consumer Products

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) Draw basic block diagram of power electronics system. **03**
 - (b) Write advantages and disadvantages of power electronics converters used in industrial applications. **04**
 - (c) Discuss merits and demerits of LED lighting over conventional lights. **07**
- Q.2**
- (a) What is IoT-based controllable/dimmable lights? **03**
 - (b) Explain the concept of solar based lights. **04**
 - (c) Draw block diagram showing the working of Wireless Charging. State the PE converters used in transmitting and receiving end. **07**
- OR**
- Q.2**
- (c) Draw the block diagram of the electronic choke for tube light and explain the working of each block. **07**
- Q.3**
- (a) Draw block diagram of air conditioner system. **03**
 - (b) List components of automatic curtain system. **04**
 - (c) Write a technical note on BLDC fan. **07**
- OR**
- Q.3**
- (a) Discuss the role of power electronics in washing machine. **03**
 - (b) State applications of Power Electronics in air-purifier. **04**
 - (c) Draw the block diagram of elevator control and explain the working of each block. **07**
- Q.4**
- (a) State the function of relay in industrial applications. **03**
 - (b) State difference between ELCB and MCB. **04**
 - (c) Discuss online Uninterruptable Power Supply with necessary diagrams. **07**
- OR**
- Q.4**
- (a) Explain the disadvantages of conventional room heater. **03**
 - (b) Explain the use of regulated power supply for laptop chargers. **04**
 - (c) Discuss offline Uninterruptable Power Supply with necessary diagrams. **07**
- Q.5**
- (a) Explain the function of induction cooking. **03**
 - (b) Explain the concept of induction water heater. **04**

(c) Write a technical note on solar inverter.

07

OR

- Q.5**
- (a) State the basic working principle of drones. **03**
- (b) State the power electronics converter used for battery charger applications. **04**
- (c) Write a technical note on solid state voltage stabilizer. **07**
