

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3152410****Date:21-11-2025****Subject Name:Power Electronics in Consumer Products****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.

- Q.1** (a) Define Power Electronics. Draw & explain block diagram of Power Electronic System. **03**
- (b) What is IOT in lighting? Explain in brief, the function and importance of LED driver in LED lightings. **04**
- (c) List out various Residential, Commercial, Industrial consumer electronic products wherein Power electronics is used. Mention the PE Component/Converter used therein. List at least four in Each Segment. **07**
- Q.2** (a) Explain in brief CFL lamp. **03**
- (b) Write a note on:- PE in Home Automation. **04**
- (c) Draw block diagram of IOT based controllable/dimmable lights, mention the type of PE converters used in it and explain the working of the same. **07**
- OR**
- (c) Draw block diagram of Florescent Tube Light Choke, mention the type of PE converter used in it and explain the working of the same. **07**
- Q.3** (a) Discuss PE application in Room Heater. Compare it with Conventional Heaters? **03**
- (b) State the Need and Importance of Regulated Power Supplies. **04**
- (c) Draw block diagram of Electric Vehicles and explain its working briefing the use of PE converters. State its advantages. **07**
- OR**
- Q.3** (a) Discuss Power Electronic Converter used in Washing Machine. **03**
- (b) Give a technical note on Vacuum Cleaner with specification. **04**
- (c) Describe the use and advantages of BLDC motors in Air Conditioners. **07**
- Q.4** (a) Discuss in brief about Charger for Electric Vehicle. **03**
- (b) Explain the Working Principle of Induction Heater. **04**
- (c) Draw and explain basic block diagram of ELCB. **07**
- OR**
- Q.4** (a) Write a brief note on:- UPS. **03**
- (b) Explain Induction Cook tops & Plats. **04**
- (c) Illustrate Power Electronics Converter used in small roof top Solar Power Plant. **07**
- Q.5** (a) Write role of Power Electronics in Advertising Display Unit. **03**
- (b) Discuss the role of Power Electronics in Drones & Quad-copters. **04**
- (c) Write a technical note on Solar based Agricultural Pumps. **07**
- OR**
- Q.5** (a) Discuss PE application in Printers. **03**
- (b) Define MCB. Write the specification of mobile charger and compare it with Tablets Charger. **04**
- (c) Explain Power electronics circuits used in Elevator. Enumerate the advantages of PE based Elevators over conventional Elevators. **07**
