

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV(OLD) – EXAMINATION – SUMMER 2019
Subject Code:142402
Date:25/05/2019
Subject Name: Fundamentals Of Power Electronics
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.

- Q.1** (a) Define commutation. Discuss utility of latching current and holding current in Power Electronics. **04**
- (b) Fill in Blanks. **03**
- (1) _____ works as a relaxation oscillator.
- (2) Diode that can works on a.c. is called _____
- (3) _____ operate at very low voltage.
- (c) List the characteristics of an ideal switch. **07**
- Q.2** (a) Explain V-I Characteristics of SCR and Derive equation of anode current using two transistor analogy of SCR. **07**
- (b) Define DIAC. Draw & Explain schematic diagram, symbol and V-I characteristic of DIAC. **07**
- OR**
- (b) Explain UJT characteristics. How UJT works as relaxation oscillator? **07**
- Q.3** (a) What are the benefits of IGBT over SCR. Draw the structure, symbol & output characteristics of IGBT? **07**
- (b) Write a detail note on:- TURN ON methods of SCR. **07**
- OR**
- Q.3** (a) Compare the following term: **07**
1. Power Diode and PIN Diode
2. Fast Recovery Diode and Schottky Diode
- (b) Explain in details Converter Grade and Inverter Grade Thyristors. **07**
- Q.4** (a) Draw and explain schematic construction, symbol and V-I characteristic of LASCR. **07**
- (b) Define Rectification. Explain working of 1- Ø Controlled Rectifier along with neat circuit diagram and waveform. **07**
- OR**
- Q.4** (a) Explain dv/dt and di/dt protection of SCR. **07**
- (b) Define and classify AC voltage controllers. Explain in Detail single phase AC Regulators. **07**
- Q.5** (a) Draw and explain STEP-UP Chopper with necessary equation. **07**
- (b) Draw and explain single phase MC-MURRAY Inverter circuit with suitable waveforms. **07**
- OR**
- Q.5** (a) Discuss principle and working of SMPS with the help of block diagram. **07**
- (b) What do you mean by Cycloconvertors? Explain 1-Phase Cycloconverters in detail. **07**
