

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- V(OLD) EXAMINATION – SUMMER 2019****Subject Code: 150903****Date:31/05/2019****Subject Name: Power Electronics - I****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) Describe the switching on characteristics of SCR with a neat diagram. **07**
(b) Discuss the problems and remedies for parallel connection of SCR. **07**

- Q.2** (a) Describe the working of UJT Relaxation Oscillator circuit. **07**
(b) Explain Class - B commutation method with necessary diagrams. **07**

OR

- (b) Discuss the effect of source inductance on the average output voltage of a single phase full converter. **07**

- Q.3** (a) Explain working of single phase full wave converter using SCRs connected to RL load with free wheeling diode. Draw necessary waveforms. **07**
(b) Discuss the single phase dual converter with regard to principle of operation and application. **07**

OR

- Q.3** (a) Discuss the construction and operation of IGBT. **07**
(b) Describe triggering of TRIAC using DIAC. **07**

- Q.4** (a) Draw the circuit configuration of step down chopper and explain its working. Derive its output voltage equation. **07**
(b) Draw the circuit diagram and explain the working of Morgan's chopper. **07**

OR

- Q.4** (a) Explain the classification of chopper circuits based on principle of operation, construction etc. **07**
(b) Write a short note on CUK converter. **07**

- Q.5** (a) Explain constant HP constant Torque method of speed control of motor. **07**
(b) List different methods of braking dc motor. Describe regenerative braking scheme. **07**

OR

- Q.5** (a) Explain single phase dual converter drive for dc motor. **07**
(b) Discuss the principle of phase lock loop control of d.c drives. List the advantages of phase lock loop control of d.c drives. **07**
