

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER-IV EXAMINATION – WINTER 2015

Subject Code: X40902

Date: 21/12/2015

Subject Name: POWER ELECTRONICS - I

Time: 02:30pm to 05:00pm

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) Draw and explain V-I characteristic of SCR. **07**
(b) Draw and explain construction of IGBT. **07**
- Q.2** (a) Draw and explain the circuit diagram of TRIAC using DIAC. **07**
(b) Explain series operation of SCR with necessary equations. **07**
- OR**
- (b) What is snubber circuit? Explain working of snubber circuit. **07**
- Q.3** (a) Explain UJT as relaxation oscillator with necessary equations. **06**
(b) Draw and explain single phase full wave rectifier with R-L load with necessary waveforms. **08**
- OR**
- Q.3** (a) Draw and explain three phase half wave rectifier with R-L load with necessary waveforms **08**
(b) Enlist different types of power factor improvement techniques. Explain any one technique. **06**
- Q.4** (a) Draw and explain Jone's chopper with necessary waveforms and circuit diagram. **07**
(b) Write a short note on multiphase chopper. **07**
- OR**
- Q.4** (a) Draw and explain Step Up chopper with necessary waveforms and circuit diagram. **07**
(b) Write a short note on Phase locked loop control of DC drives. **07**
- Q.5** (a) Write a short note on Dual converter based DC drives. **07**
(b) Explain principle of regenerative braking. **07**
- OR**
- Q.5** (a) Explain Principle of Motoring operation of separately excited. **07**
(b) Write a short note on four quadrant DC -DC converter drives. **07**
