Seat No.:	Enrolment No.

Subject Code: X40902

GUJARAT TECHNOLOGICAL UNIVERSITY PDDC - SEMESTER- IV • EXAMINATION - SUMMER 2015

Date:30/05/2015

Subject Name: Power Electronics-I Time: 10.30am-01.00pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. 0.1 (a) Give classification of thyristor commutation techniques. Discuss any forced 07 commutation technique. (b) Discuss UJT based triggering circuit. Why isolation is required between gate and 07 base drives? (a) Discuss single phase dual converter with RL load. 07 **Q.2 (b)** Explain two transistor analogy of thyristor in detailed. 07 OR **(b)** Explain series and parallel operation of thyristors. 07 Q.3 (a) Discuss thermal modeling of thyristor. Why di/dt protection is required? **07 (b)** Explain effect of source and load inductance on operation of converter. 07 OR (a) Explain design of snubber circuit with appropriate example. 07 Q.3**(b)** Explain operation of buck-boost converter. 07 (a) Explain Jone's chopper with required schematic diagram. 07 **Q.4 (b)** Explain semi converter based DC drives. 07 OR (a) Explain Morgan's chopper with required schematic diagram. **07 Q.4 (b)** Explain dual converter based DC drives. 07 (a) How the regenerative breaking can be obtained using dc-dc converter? **07 Q.5 (b)** Explain micro computer based dc drive. 07 OR 0.5 (a) Explain operation of dc series motor in motoring mode using dc converters. 07 **(b)** How power factor improvement can be obtained using phase controlled converter. 07
