

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2150903**Date: 17/12/2015****Subject Name: Power Electronics-1****Time: 10:30am to 1:00pm****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) Explain DIAC with its construction and V-I characteristic. **07**
(b) Explain CUK converter. **07**
- Q.2** (a) Draw circuit diagram for obtaining static V-I characteristic of an IGBT. Also draw and explain static V-I characteristic. **07**
(b) Explain UJT relaxation oscillator. **07**
- OR**
- (b) Explain working of series connected SCRs. **07**
- Q.3** (a) Explain pulse transformer and opto-coupler. **07**
(b) Explain design of snubber circuit **07**
- OR**
- Q.3** (a) Explain thermal modelling of SCR. **07**
(b) Explain working of single phase half converter with R load. **07**
- Q.4** (a) Draw circuit diagram, waveform and derive expression for V_{RMS} for 3-phase half wave converter with R-L load. **07**
(b) Explain Morgan's chopper. **07**
- OR**
- Q.4** (a) Draw circuit diagram and waveforms for continuous and dis-continuous mode of working for single phase semi-converter with freewheeling diode. **07**
(b) What is chopper? Explain step-up chopper. **07**
- Q.5** (a) Explain single phase full converter drive feeding separately excited dc motor for continuous conduction mode. **07**
(b) Explain single phase dual converter drive. **07**
- OR**
- Q.5** (a) Explain principle of regenerative brake control. **07**
(b) Explain phase locked loop (PLL) control of dc motor. **07**
