Seat No.:	Enrolment No.

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER V • EXAMINATION – WINTER - 2012

Date: 23-01-2013 Subject code: 152405 **Subject Name: Power Electronics Applications** 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. 07 Q.1 (a) Define Converter. Write a detailed note on types of Power Converters. (b) What is basic requirement of UPS? Classify & explain types of UPS. 07 **Q.2** (a) Enlist & explain types of power diodes. What are the applications of 07 power diodes? (b) Draw & explain Class A Commutation circuit with necessary **07** waveforms. OR (b) What is application of DIAC? Draw & explain construction, symbol & 07 V-I characteristics of a DIAC. 0.3 (a) Enlist & explain the control strategies operating the switches employed 07 in d.c. choppers. 07 **(b)** Explain in detail Ideal switch characteristics. (a) Draw & explain block diagram of motor drive. Enlist & explain 07 0.3 Advantages & disadvantages of variable speed drives. (b) What is the basic requirement of Electronic timer? Compare Induction 07 heating & dielectric heating in tabular forms. **Q.4** (a) Define Inverters. Draw & explain the circuit diagram of basic series 07 inverter with appropriate waveforms. (b) Why battery charging is needed? Draw & explain battery charging 07 circuit with neat sketches. OR (a) Explain principle & working of High frequency Fluorescent lighting. **Q.4** 07 Also explain  $V^2$ –I characteristics. (b) What are the advantages of HVDC system? Enlist & explain types of 07 HVDC lines. 0.5 (a) Explain Induction cooking, space heating & Air conditioning 07 applications of power electronics with suitable diagrams. (b) What is application of SMPS? Explain Fly back & Feed-forward 07 SMPS with neat sketches. OR (a) Draw & explain circuit configurations of electric arc welding. 07 Q.5 (b) What is basic need of circuit breakers? Explain in detail D.C. circuit 07 breakers & static circuit breakers.

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