

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE – SEMESTER V • EXAMINATION – WINTER - 2012****Subject code: 152405****Date: 23-01-2013****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.

- Q.1** (a) Define Converter. Write a detailed note on types of Power Converters. 07  
(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 power diodes? 07  
(b) Draw & explain Class A Commutation circuit with necessary waveforms. 07

**OR**

- (b) What is application of DIAC? Draw & explain construction, symbol & V-I characteristics of a DIAC. 07

- Q.3** (a) Enlist & explain the control strategies operating the switches employed in d.c. choppers. 07  
(b) Explain in detail Ideal switch characteristics. 07

**OR**

- Q.3** (a) Draw & explain block diagram of motor drive. Enlist & explain Advantages & disadvantages of variable speed drives. 07  
(b) What is the basic requirement of Electronic timer? Compare Induction heating & dielectric heating in tabular forms. 07

- Q.4** (a) Define Inverters. Draw & explain the circuit diagram of basic series inverter with appropriate waveforms. 07  
(b) Why battery charging is needed? Draw & explain battery charging circuit with neat sketches. 07

**OR**

- Q.4** (a) Explain principle & working of High frequency Fluorescent lighting. Also explain  $V^2-I$  characteristics. 07  
(b) What are the advantages of HVDC system? Enlist & explain types of HVDC lines. 07

- Q.5** (a) Explain Induction cooking, space heating & Air conditioning applications of power electronics with suitable diagrams. 07  
(b) What is application of SMPS? Explain Fly back & Feed-forward SMPS with neat sketches. 07

**OR**

- Q.5** (a) Draw & explain circuit configurations of electric arc welding. 07  
(b) What is basic need of circuit breakers? Explain in detail D.C. circuit breakers & static circuit breakers. 07

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