

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-Vth Examination December 2010****Subject code: 152405****Subject Name: Power Electronics Applications****Date: 21 /12 /2010****Time: 03.00 pm - 05.30 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 Power Electronics converter. Give the advantages and disadvantages of power electronics converters. **07**
(b) What is SMPS? Explain its operating principle and state its industrial applications. **07**
- Q.2** (a) Give the basic layout of HVDC transmission system. State advantages of HVDC transmission system. **07**
(b) Explain principle of Induction Heating. State advantages and applications of Induction Heating. **07**
- OR**
- (b) Describe working principle of Dielectric Heating. Give applications of Dielectric Heating and explain anyone. **07**
- Q.3** (a) Explain construction and working of IGBT with neat diagram. **07**
(b) Describe various Turn ON methods for thyristor. **07**
- OR**
- Q.3** (a) What is the difference between Uncontrolled and Controlled rectifiers? **07**
(b) What is cycloconverter? Explain the working of single phase step up cycloconverter with neat circuit diagram. **07**
- Q.4** (a) What is UPS? Explain its types with neat circuit diagram. **07**
(b) Describe application of power electronics for wind energy utilization in power generation. **07**
- OR**
- Q.4** (a) Why are thyristors popular in static circuit breakers? Explain types of static circuit breakers with neat diagram. **07**
(b) What is the application of power electronics in high frequency fluorescent lighting? **07**
- Q.5** (a) Explain the concept of electric motor drives. Give its advantages and disadvantages. **07**
(b) Describe single phase half wave converter feeding a separately excited DC motor with relevant waveforms. **07**
- OR**
- Q.5** (a) State the various methods of speed control of three phase Induction motor. Explain anyone with neat diagram. **07**
(b) What is the application of power electronics in excitation systems for Alternators? **07**