

**B.TECH. DEGREE EXAMINATION, DECEMBER 2012****Fifth Semester****Branch : Electrical and Electronics Engineering****EE 010 504 – POWER ELECTRONICS (EE)****(Regular – New Scheme)****Time : Three Hours****Maximum : 100 Marks****Part A***Answer all questions briefly.**Each question carries 3 marks.*

1. Explain the method of turning on of SCR using UJT triggering circuit.
2. Explain the phenomenon of half waving on a single-phase symmetrical connected half controlled bridge rectifier.
3. List three control strategies used in choppers.
4. Write the differences between Current Source Inverter (CSI) and Voltage Source Inverter (VSI).
5. SMPS involves multistage conversion, yet it is very commonly used. Why?

**(5 × 3 = 15 marks)****Part B***Answer all questions.**Each question carries 5 marks.*

6. Explain the switching characteristics and merits of IGBT.
7. With a neat circuit diagram and waveforms, describe the operation of a half-controlled bridge converter.
8. With neat diagrams, explain the working of a two-quadrant type A chopper.
9. Explain sinusoidal PWM technique of varying the magnitude of output voltage in a single-phase inverter.
10. A buck regulator has an input voltage of  $V_s = 12$  volt. The required average output voltage is  $V_o = 5V_oH$  and the peak-to-peak ripple voltage is 20mV. The switching frequency is 25 kHz. If peak-to-peak ripple current of inductor is 0.8A, find (i) the filter inductance L and (ii) the filter capacitance C.

**(5 × 5 = 25 marks)****Turn over**