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Roll No. ....

**E-15**

**B. Tech. EXAMINATION, Dec. 2018**

(Fifth Semester)

(B. Scheme) (Main & Re-appear)

(EE, EEE)

EE307B

POWER ELECTRONICS CIRCUITS.

*Time : 3 Hours]*

*[Maximum Marks : 75*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt any *Five* questions.

1. (a) Explain chopper commutation. **3×5**
- (b) Describe the series and parallel operation of SCRs.

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- (c) Explain the use of pulse transformer in triggering circuit.
  - (d) Draw the gating signals and voltage waveform for 120° conduction mode of inverter.
  - (e) Explain the effect of freewheeling diode.
2. (a) Describe the different modes of operation of a thyristor with the help of its static V-I characteristic. **7.5**
- (b) the reverse base junction capacitance of an SCR is 25 pico-farads. The device can be turned on if the charge current flowing through the junction capacitor is 5mA. Calculate the  $dV/dt$  capacity of the device. **7.5**
3. Explain the operation of three-phase fully controlled bridge converter with resistive load. **15**
4. With the help of circuit diagram explain the working of step-up/step-down chopper. **15**
5. With the help of circuit diagram explain the power factor correction at ac mains in a converter. **15**
6. With the help of circuit diagram explain the working of SEPIC converter. **15**
7. Explain the multi-pulse voltage source converter and its advantages. **15**
8. Discuss the operation of buck-boost converters. **15**