Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Regular & Supplementary Examinations Nov/Dec 2019
POWER ELECTRONICS
(Electrical & Electronics Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 Draw and explain V-I characteristics of SCR and its working. **12M**

OR

2 **a** A bipolar transistor has current gain $\beta = 40$. The load resistance Rc=10 ohm, dc supply voltage V_{CC} =130v and input voltage to base circuit V_B =10v. For V_{CES} = 1v and V_{BES} = 1.5v calculate **12M**
   a) The value of R_B for operation in the saturated state
   b) The value of R_B for an over drive factor 5.
   c) Forced current gain and
   d) Power loss in the transistor.

UNIT-II

3 **a** Give the difference between midpoint and bridge type converters **6M**

   b Give the difference between discontinuous mode and continuous mode of operation. **6M**

OR

4 **a** A single phase half wave converter is operated from a 230V, 50Hz supply. If the load is Resistive of value 10 ohms and delay angle is 60°. Determine **12M**
   i)   the rectification efficiency
   ii)   form factor
   iii)   ripple factor
   iv)   Transformer utilization factor
   v)   Peak inverse voltage of thyristor.

UNIT-III

5 Explain the operation of three phase dual converter with circulating current type. **12M**

OR

6 At firing angle of 120^0, explain the operation of three phase fully controlled converter with RLE load with necessary waveform. **12M**

UNIT-IV

7 Explain about the $1 – \emptyset$ AC voltage controller with RL loads with neat diagram **12M**

OR

8 Draw and explain bridge type cyclo-converter for discontinuous conduction mode. **12M**

UNIT-V

9 **a** Describe the principle of chopper operation. **6M**
   b List out various control strategies for chopper. **6M**

OR

10 **a** What is series inverter? Explain it with neat circuit diagram. **8M**

   b What are the applications of inverters? **4M**

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