Q.P. Code: 16EE219 **R16**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations November-2020

POWER ELECTRONICS

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Describe input and transfer characteristics of an IGBT.	**8M**
	b	Define Latching current and Holding current.	**4M**

OR

2	**a**	Explain the switching characteristics of BJT.	**6M**
	b	Write short note on Turn on methods of SCR.	**6M**

UNIT-II

3		Explain the operation of single phase fully controlled rectifier with RL load and also derive the average and RMS load voltage.	**12M**

OR

4	**a**	A single phase full converter feeds power to RLE load with R=6ohm, L=6mH and E=60V. The ac source voltage is 230V, 50Hz. For continuous conduction, find the average value of load current for a firing delay of 50°. In case one of the four SCRs gets open circuit due to a fault, find the new value of average load current taking the output current as continuous.	**6M**
	b	List the different application of phase controlled converters.	**6M**

UNIT-III

5		Explain the effect of source inductance in the operation of three phases fully controlled converter.	**12M**

OR

6	**a**	Give the difference between discontinuous mode and continuous mode of operation.	**6M**
	b	Give the difference between midpoint and bridge type converters.	**6M**

UNIT-IV

7		Explain the principle of operation of single phase to single phase step-up cycloconverter.	**12M**

OR

8		A single phase half wave ac voltage controller feeds a load of R=20 ohm with an input voltage of 230v, 50Hz. Firing angle of thyristor is 450. Determine i) rms value of output voltage ii) power delivered to load and input pf iii) Average input current.	**12M**

UNIT-V

9		Draw and explain about step-down chopper and drive expression for output voltage.	**12M**

OR

10		Describe different types of pulse width modulation techniques (PWM) inverter.	**12M**

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