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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech III Year I Semester Supplementary Examinations July-2022****POWER ELECTRONICS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 a Analyze the MOSFET using its output and transfer characteristics. **L5 7M**
b Explain V-I Characteristics of Power Diode. **L2 5M**

OR

- 2 a Draw and explain V-I characteristics of SCR and its working. **L4 7M**
b Necessity of Commutation, What are the types of Commutation. **L2 5M**

UNIT-II

- 3 Explain the operation of three phase fully controlled rectifier with R load and also derive the average and RMS load voltage. **L2 12M**

OR

- 4 a List the different application of phase controlled converters. **L2 6M**
b What is the difference between half controlled and fully controlled bridge rectifier. **L5 6M**

UNIT-III

- 5 Explain the buck converter operation with help of diagram and also draw the output waveforms. **L2 12M**

OR

- 6 a For step down chopper dc source voltage is 230v, load resistance is 10 ohm. The voltage drop across chopper when it is in ON is 2V. For a duty cycle of 0.4. Calculate i) Average and RMS values of output voltage
ii) Chopper efficiency. **L3 6M**
b Analyze elementary operation of chopper with wave forms. **L5 6M**

UNIT-IV

- 7 a What is meant by load commutated cycloconverter? **L2 6M**
b Draw and explain midpoint type step-down cycloconverter with R Load. **L4 6M**

OR

- 8 Draw and explain bridge type step-down cycloconverter with R-L Load for discontinuous conduction. **L4 12M**

UNIT-V

- 9 Briefly explain the operation of TRIAC in different modes. **L2 12M**

OR

- 10 A single phase half wave ac voltage controller feeds a load of R=20 ohm with an input voltage of 230V, 50 HZ. Firing angle of thyristor is 45°. Determine
i) Rms value of output voltage **L3 12M**
ii) power delivered to load and input Power factor
iii) average input current

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