

Reg. No:

--	--	--	--	--	--	--	--	--	--

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)****M.Tech I Year II Semester (R16) Regular Examinations May/June 2017****MODERN POWER ELECTRONICS**

(Power Electronics)

(For Students admitted in 2016 only)

Time: **3 hours**Max. Marks:**60**(Answer all Five Units **5 X 12 =60** Marks)**UNIT-I**

- 1 a. Explain briefly about modern power semiconductor devices. 6M
 b. Draw the symbol and equivalent circuit of MTO and explain its turn off process. 6M

OR

- 2 a. Explain and draw its schematic equivalent circuit of Mos controlled thyristor (MCT). 6M
 b. Explain the switching characteristics of MoS turnoff thyristor (MTO) with the help of its structure and equivalent circuit. 6M

UNIT-II

- 3 a. Class E inverter operates at a resonance and has $V_s=12V$ and $R=10$ ohms. The switching frequency is $f_s=25kHz$. Determine the optimum values of (i) Inductor L (ii) Capacitor C 8M
 b. Explain the frequency resonance of series resonant inverter for a series load. 4M

OR

- 4 .A series resonant inverter with a parallel load delivers a load power of 1KW at a peak sinusoidal voltage of $V_p=340V$ and at a resonance. The load resistance is 20 ohms. The resonant frequency is 20 KHZ Determine (i) DC input voltage (ii) The frequency ratio u if it is required to reduce the load power to 250 W by frequency control (iii) The Inductor L (iv) The capacitor C? 12M

UNIT-III

- 5 a. Explain the principle of operation of diode clamped multilevel inverter. 6 M
 b. Describe the advantages of diode clamped inverter. 6 M

OR

- 6 a. Difference between ZCS and ZVS resonant converters and advantages of ZCS Resonant converter. 6M
 b. Describe the operation of improved diode clamped multilevel inverter. 6M

UNIT-IV

- 7 a. Explain the operation of bi-directional AC power supplies. 6M
 b. Explain the multistage conversion in AC power supplies. 6M

OR

- 8 a. Write short notes on resonant DC power supply. 6M
 b. Write short notes on bidirectional power supplies. 6M

UNIT-V

- 9** a. Classify the UPS and state any two applications of UPS. 6M
b. Explain about Off-line Interactive UPS in detail. 6M

OR

- 10** a. Write short notes on: (a) DC link capacitor voltage balancing in multilevel inverter (b) Resonant power supplier 8M
b. Explain the working of online UPS with block diagram 4M

***** END *****