Q.P. Code: **16EE4302** **R16**

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

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**M.Tech I Year I Semester (R16) Regular Examinations January 2017**
**ANALYSIS OF POWER ELECTRONIC CONVERTERS**
(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**

**Q.1** a. Explain the working operation of 1-phase AC voltage controller with RL load with waveforms. 6M
b. List out the applications of AC voltage controllers 6M

**OR**

**Q.2** Explain the operation of 3-phase bi-directional AC voltage controller with delta connected resistive load with the help of circuit diagram and waveforms. 12M

**UNIT-II**

**Q.3** Explain the operation of 3-phase to 3-phase cyclo converter with basic circuit and schematic arrangement. 12M

**OR**

**Q.4** Explain the following power factor improvement techniques.
a) Extinction angle control
b) Symmetrical angle control
c) PWM single phase sinusoidal control. 12M

**UNIT-III**

**Q.5** a. Explain the operation of step down DC-DC converter and derive the expression for output voltage. 6M
b. Explain the operation of step up DC-DC converter and derive the expression for output voltage. 6M

**OR**

**Q.6** Write short notes on.
a) CUK Regulator 6M
b) Multi output boost converter 6M

**UNIT-IV**

**Q.7** a. Explain the working operation of 1-φ bridge Inverter with circuit diagrar and wave forms 6M
b. The bridge inverter has an RLC load with R=10Ω, L=30.5mH and C=0. Inverter frequency is f0= 60Hz and DC input voltage is 220V calculate load current ii) THD iii) power absorbed by the load 6M

**OR**

**Q.8** Write short notes on
a) Modified PWM Control
b) Phase displacement control 12M

**UNIT-V**

**Q.9** Write short notes on

a) Variable DC link inverter 6M

b) Boost inverter 6M

**OR**

**Q.10** a. Compare PWM technique and harmonic reduction current source inverter 6M

b. What are steps that are taken to designing the inverter circuit. 6M

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