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

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year I Semester (R16) Supplementary Examinations MAY/June 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

1	a.	Write short notes on effect of source and load inductance of AC voltage controllers	(6M)
	b.	Derive the expression for output voltage and output current of AC voltage controller with RL load	(6M)

OR

2	a.	Explain the operation of synchronous tap changer with circuit diagram and necessary waveforms and its applications	(6M)
	b.	Finding the performance parameters of a 3-Φ delta connected controller has R-load of R=10Ω and a Line to Line input voltage of 208V at 60HZ, if the delay angle α= 2π/3 Determine a) RMS output phase voltage b) Expressions for the instantaneous currents c) RMS output phase current d) Input power factor e) RMS thyristor current	(6M)

UNIT-II

3	a.	List out the applications of cyclo converters	(4M)
	b.	Explain the working operation of 1φ to 1φ midpoint cyclo converter with neat circuit diagram and necessary wave forms?	(8M)

OR

4	a.	What are the applications of single phase converters?	(4M)
	b.	A single phase converter has RL load of R=0.5Ω, L=6.5 mH, the input voltage of 120v at 60 hz. Determine the load current at α = 600	(8M)

UNIT-III

5	a.	List out the advantages of 3-Φ converters over 1-Φ converters	(6M)
	b.	Explain the operation of 3-Φ fully controlled converter with neat circuit diagram and wave forms.	(6M)

OR

6	a.	Write a short notes on Buck Boost Regulator b) cuk regulator	(6M)
	b.	briefly discuss about a) multi output Boost converter b) Application of DC – DC converter	(6M)

UNIT-IV

7	a.	Discuss the following performance parameters of 1-φ inverter a) Harmonic factor b) Total harmonic distortion	(4M)
	b.	Explain the working operation of 1-φ bridge Inverter with circuit diagram and wave forms	(6M)

OR

8	a.	Explain the following advanced modulation techniques a) Trapezoidal b) Stair case	(6M)
	b.	Discuss about a) Stepped harmonic Injection b) Delta modulation	(6M)

UNIT-V

9		A 3-φ inverter has a star connected load of R=5Ω and L=20mH. The inverter frequency of fo=60hz and a dc input voltage of Vs=220V determine a) RMS line voltage b) RMS phase voltage c) THD d) HF	(12M)

OR

10	a.	a) Explain the operation of Buck and Boost inverter with suitable diagrams	(6M)
	b.	b) What are the steps taken for designing inverter circuit	(6M)

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