



End Semester Examination – Nov/Dec – 2016

Code : 14EE3012
Sub. Name : POWER ELECTRONIC CIRCUITS

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	(a) Describe the any two methods of turn-on mechanism of SCR. (ii) Explain the turn off characteristics of SCR.	CO1	10
	b.	Describe with relevant waveforms, expressions and diagram the operation of Fully controlled bridge converter R,RL load ,Derive the average and RMS Voltages	CO2	10
(OR)				
2.	a.	Explain with diagram the various modes of working of TRIAC.	CO1	10
	b.	A single phase fully controlled full bridge converter is supplied by 230V, 50Hz. It is connected with R-L Load. i) Determine the average and rms output voltage if the firing angle is 60° . ii) Calculate the firing angle for which the average output voltage of the converter is 200V.	CO2	10
3.	a.	What are the advantages of single phase bridge converter over single phase midpoint converter?	CO1	10
	b.	With necessary circuit and waveforms, explain the principle of operation of three phase controlled bridge rectifier feeding R-L load and derive the expression for the average output dc voltage.	CO2	10
(OR)				
4.	a.	Explain the operation of single phase dual converter with circulating current type.	CO2	15
	b.	Explain the effect of source inductance in the operation of single phase fully controlled converter,	CO2	5
5.	a.	Explain a DC to DC Converter which can operate in all the four quadrants	CO2	15
	b.	What are the two types of control strategies?	CO1	5
(OR)				
6.	a.	Describe the working principle of Multiphase chopper with necessary circuit and waveforms.	CO2	12
	b.	i) A type – A chopper has $V_{dc} = 100$ V, $R = 10$ Ohms. If the duty cycle is 0.4, calculate average voltage V_{avg} , rms voltage V_{rms} , average current I_{avg} and rms output p	CO2	8
7.	a.	Discuss the functioning of three phase voltage source inverter in 120 degree operating mode with relevant waveforms and obtain the expression for voltages.	CO2	20
(OR)				
8.	a.	Explain L type zero current switching resonant converters.	CO2	20
		Compulsory:		
9.	a.	Explain the operation of the step down cycloconverter both bridge and midpoint configuration with necessary waveforms.	CO3	20

