



ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTION BANK

Course Title : POWER ELECTRONICS

Course Code : 23EE501

Regulation : NR23

UNIT-II

AC-DC Converters (Phase Controlled Rectifiers)

S.No	Questions	BT	CO	PO
Part - A (Short Answer Questions)				
1	Mention some of the applications of controlled rectifier.	L1	CO2	PO1
2	Give any two differences single phase full and semi converter?	L1	CO2	PO1
3	What is dual converter?	L1	CO2	PO1
4	What is the function of freewheeling diodes in controlled rectifier?	L1	CO2	PO1
5	What is commutation angle or overlap angle?	L1	CO2	PO1
6	What is meant by input power factor in controlled rectifier?	L1	CO2	PO1
7	What is meant by rectification mode in single phase fully controlled converter?	L1	CO2	PO1
8	What is the difference between half controlled & fully controlled bridge rectifier?	L1	CO2	PO1
9	Why is power factor of semi converter better than full converter?	L1	CO2	PO1
10	What is the effect of source impedance on the performance converter?	L1	CO2	PO1

Part - B (Long Answer Questions)

11	a)	A 230v,50hz supply is connected to load resistance of 12ohm through half controlled rectifier, if the firing angle is 60 degree determine, (i) Average output voltage (ii) Rms output volage (iii) Ratio of rectification (iv) TUF	L1	CO2	PO1
	b)	Describe the effect of source inductance on the performance of a single phase full converter indicating clearly the conduction of various thyristors during one cycle. Derive the expression for its output voltage.	L2	CO2	PO1, PO2
12	a)	A single phase full bridge converter is connected to 'R' load. The source voltage is of 230 V, 50 Hz. The average load current is of 10 A. For R = 20 W find the firing angle.	L2	CO2	PO1
	b)	Explain the principle of operation of single phase dual converter with neat power circuit diagram.	L2	CO2	PO1, PO2
13	a)	Describe the operation of a single phase two pulse bridge converter using 4 SCR'S using RLE load with relevant waveforms.	L2	CO2	PO1, PO2
	b)	Explain the operation of a single phase full bridge converter with RL load for continuous and discontinuous load currents.	L1	CO2	PO1
14	a)	Describe the operation of a single phase two pulse bridge converter using 4 SCR'S using RL load with relevant waveforms.	L1	CO2	PO1
	b)	A 220v, 1kw R load is supplied by 220v,50Hz source through 1 ϕ fully controlled converter. Determine the following for 800w output. A) average output voltage b) rms value of i/p current c) fundamental component of input current d) displacement factor.	L1	CO2	PO1
15	a)	Explain the working of a three phase full converter with 'R' load for the firing angles of 60° and 90°.	L2	CO2	PO1, PO2
	b)	Explain the operation of 3 phase half controlled converter with neat waveforms. also derive an expression for the average output	L1	CO2	PO1

		voltage			
16	a)	<p>A single phase semi converter is operated from 120 V 50 Hz ac supply. The load current with an average value I_{dc} is continuous and ripple free firing angle $\alpha = \pi/6$. Determine</p> <p>i. Displacement factor</p> <p>ii. Harmonic factor of input current</p> <p>iii. Input power factor.</p>	L2	CO2	PO1, PO2
	b)	Explain the operation of single phase half controlled rectifier with inductive load	L1	CO2	PO1