KADI SARVA VISHVAVIDYALAYA

B.E. SEMESTER V EXAMINATION November 2016

SUBJECT CODE: EE-504 **SUBJECT NAME: Power Electronics**

DATE: 17/11/2016 **TIME: 10:30 to 1:30 p.m.** **TOTAL MARKS: 70**

Instructions:

1. Answer each section in separate answer sheets
2. Use of scientific Calculator is permitted
3. All questions are compulsory
4. Indicate clearly the options you attempted along with the respective question number.
5. Use the last page of your supplementary for rough work

Section – I

Q-1	**Answer the following questions**	
A	Explain basic structure and characteristic of SCR.	**5**
B	Explain type C chopper with appropriate wave form	**5**
C	Explain single phase full wave Mid- point rectifier with R-L Load.	**5**
	OR	
Q-1C	Explain current source inverter in detail.	**5**
Q-2	**Answer the following questions**	
A	Explain single phase half wave rectifier with RL load and freewheeling diode.	**5**
B	Explain difference between MOSFET and IGBT.	**5**
	OR	
Q-2A	Explain step up cycloconverter with circuit diagrams and waveforms.	**5**
B	Explain performance parameter of inverter.	**5**
Q-3	**Answer the following questions**	
A	Enlist different control strategies of Chopper and explain any one.	**5**
B	Explain single phase parallel inverter.	**5**
	OR	
Q-3A	Explain step up chopper with appropriate wave form.	**5**
B	Explain two transistor model of SCR.	**5**

Section – II

Q-4	**Answer the following questions**	
A	Draw and explain Transfer, Output and Switching characteristics of power MOSFET in detail.	**5**
B	Explain single phase semi converter with resistive load.	**5**
C	Explain integral cycle control for AC voltage controller.	**5**
	OR	
Q-4C	Explain constructional details of thyristor. Also explain its V-I characteristic.	**5**
Q-5	**Answer the following questions**	
A	Describe commutation of SCR. Explain any one commutation technique in detail.	**5**
B	Explain Three phase Voltage Source Inverter which has three switches on at a time with appropriate circuit and wave form.	**5**
	OR	
Q-5A	Explain di/dt and dv/dt protection for SCR.	**5**
B	A single phase half wave AC voltage controller feeds a load of R=50 ohm with an input voltage 230V 50Hz AC supply firing angle is 45° Determine, RMS value of output voltage and power delivered to the load	**5**
Q-6	**Answer the following questions**	
A	Explain three phase rectifier with RL load with appropriate circuit and wave form.	**5**
B	Explain dual converter with appropriate circuit and wave form.	**5**
	OR	
Q-6A	What is cycloconverter? Enumerate some of its industrial applications.	**5**
B	A step up chopper has input voltage of 220V and output voltage of 660V. If the non-conducting time of thyristor is 100us, compute the time period of output voltage.	**5**

**********ALL THE BEST**********

KADI SARVA VISHVAVIDYALAYA

B.E. SEMESTER V EXAMINATION (Nov/2014)

SUBJECT CODE: EE-504 **SUBJECT NAME: Power Electronics**

DATE: 20/11/2014 **TIME:** 10:30 to 1:30 **TOTAL MARKS:** 70

Instructions:

1. Answer each section in separate answer sheets
2. Use of scientific Calculator is permitted
3. All questions are compulsory
4. Indicate clearly the options you attempted along with the respective question number.
5. Use the last page of your supplementary for rough work

Section – I

Q-1	**Answer the following questions**	
A	Explain basic structure and equivalent characteristic of IGBT.	5
B	Explain type B chopper with appropriate wave form	5
C	Explain single phase full wave Mid- point converter in rectifier mode with R-L Load.	5
	OR	
C	Explain current source inverter in detail.	5
Q-2	**Answer the following questions**	
A	Explain single phase half wave circuit with RL load and freewheeling diode.	5
B	Explain thyristor gate characteristics in detail.	5
	OR	
A	Explain three phase half wave cycloconverter.	5
B	Explain single phase half bridge inverter with waveforms.	5
Q-3	**Answer the following questions**	
A	Enlist and explain different control strategies of Chopper.	5
B	Explain single phase parallel inverter.	5
	OR	
A	Explain Type E chopper with appropriate wave form.	5
B	Explain basic structure, equivalent circuit and I-V characteristic of uni-junction transistor.	5

Section – II

Q-4

A	Draw and explain Transfer, Output and Switching characteristics of power MOSFET in detail.	5
B	Explain single phase half wave AC voltage controller with resistive load.	5
C	Explain integral cycle (On - Off) controller.	5
	OR	
C	Explain constructional details of Thyristor. Also explain its static I-V characteristic.	5

Q-5 **Answer the following questions**

A	Explain basic series inverters with waveforms.	5
B	Explain Three phase Voltage Source Inverter with 180 degree mode of conduction.	5
	OR	
A	Explain single phase full wave AC controller with RL load.	5
B	A single phase half wave AC voltage controller feeds a load of R=20 ohm with an input voltage 230V 50Hz AC supply firing angle is 45° Determine, RMS value of output voltage and power delivered to the load	5

Q-6 **Answer the following questions**

A	Explain three phase full converter in rectifier mode with RLE load.	5
B	Explain voltage control in single phase inverter.	5
	OR	
A	What is cycloconverter? Enumerate some of its industrial applications.	5
B	Explain working principle and enlist different type of choppers.	5

**********ALL THE BEST**********

KADI SARVA VISHVAVIDYALAYA

B.E. SEMESTER V EXAMINATION (November2015)

SUBJECT CODE: EE-504 **SUBJECT NAME: Power Electronics**

DATE: 26/11/2015 **TIME:** 10:30 to 1:30 **TOTAL MARKS:** 70

Instructions:

1. Answer each section in separate answer sheets
2. Use of scientific Calculator is permitted
3. All questions are compulsory
4. Indicate clearly the options you attempted along with the respective question number.
5. Use the last page of your supplementary for rough work

Section – I

Q-1	**Answer the following questions**	
A	Explain basic structure and equivalent characteristic of MOSFET.	**5**
B	Explain type A chopper with appropriate wave form	**5**
C	Explain single phase full bridge rectifier with R-L Load.	**5**
	OR	
C	Explain voltage source inverter in detail.	**5**
Q-2	**Answer the following questions**	
A	Explain single phase half control bridge rectifier with RL load and explain the purpose of freewheeling diode.	**5**
B	Explain dual converter with appropriate waveform.	**5**
	OR	
A	Explain three phase to single phase cycloconverter.	**5**
B	Explain single phase half bridge inverter with waveforms.	**5**
Q-3	**Answer the following questions**	
A	Enlist and explain different control strategies of Chopper.	**5**
B	Explain single phase parallel inverter.	**5**
	OR	
A	Explain Type E chopper with appropriate wave form.	**5**
B	Explain basic structure, equivalent circuit and I-V characteristic of uni-junction transistor.	**5**

Section – II

Q-4	**Answer the following questions**	
A	Draw and explain Transfer and Output characteristics of power IGBT in detail.	**5**
B	Explain single phase Bi-directional AC voltage controller with resistive load.	**5**
C	Explain integral cycle control for 1-phase AC voltage controller.	**5**
	OR	
C	Explain constructional details of Thyristor. Also explain its static V-I characteristic.	**5**
Q-5	**Answer the following questions**	
A	Explain Matrix converter with appropriate switching.	**5**
B	Explain Three phase Voltage Source Inverter with 120 degree mode of conduction.	**5**
	OR	
A	Explain single phase Half wave AC controller with RL load.	**5**
B	A single phase half wave AC voltage controller feeds a load of R=30 ohm with an input voltage 230V 50Hz AC supply firing angle is 60^{o} Determine, RMS value of output voltage and power delivered to the load	**5**
Q-6	**Answer the following questions**	
A	Explain three phase full converter in rectifier mode with RLE load.	**5**
B	Explain RC firing schemes for thyristor triggering.	**5**
	OR	
A	What is cycloconverter? Enumerate some of its industrial applications.	**5**
B	Explain dv/dt and di/dt protection for SCR	**5**

**********ALL THE BEST**********