

University of Mumbai
Examination Second Half 2021
Sample paper

Examinations Commencing from 22nd November 2021 to 5th January 2022

Program: **Electronics Engineering**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Name: Power Electronics

Time: 2 hour 30 minutes

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The SCR can be turned on by
Option A:	decreasing dv/dt above rated
Option B:	reducing breakover voltage
Option C:	By applying sharp rising pulse at anode
Option D:	decreasing dv/dt above rated value
2.	Which among the following power devices has highest current and voltage handling capability?
Option A:	SCR
Option B:	Power BJT
Option C:	Power MOSFET
Option D:	IGBT
3.	The minimum requirement to turn on IGBT is
Option A:	$V_{ds} > 0, I_g > I_{gth}$
Option B:	$V_{ds} = 0, I_g < 0$
Option C:	$V_{ds} < 0, I_g > 0$
Option D:	$I_g > 0$
4.	In controlled rectifiers, the nature of load current i.e. continuous or discontinuous depend upon
Option A:	Type of load and firing angle
Option B:	Only on type of load
Option C:	Only on firing angle
Option D:	Does not depend on load
5.	The advantage of auxiliary commutation circuit over other classes of commutation circuits is
Option A:	On time of SCR is controllable
Option B:	Off time of SCR is controllable
Option C:	Commutation circuit does not carry the load current
Option D:	On time and off time of SCR controllable and commutation circuit doesn't carry load current
6.	Inductor is used in series with SCR for
Option A:	over current protection
Option B:	Overvoltage protection
Option C:	di/dt protection
Option D:	dv/dt protection

7.	As compared to a full converter, a semi-converter offers
Option A:	No change in input power factor
Option B:	Improved output power factor
Option C:	Improved input power factor
Option D:	Decreased power factor
8.	In a single phase full bridge inverter _____ SCRs are gated at a time.
Option A:	3
Option B:	1
Option C:	2
Option D:	4
9.	In the Multiple Pulse Modulated inverter method, the comparator is given _____ and _____ types of waveform at its input.
Option A:	square, sine
Option B:	triangular, sine
Option C:	square, triangular
Option D:	square, quasi square wave
10.	The output frequency of a cycloconverter is less than the input frequency because
Option A:	there is no intermediate dc link
Option B:	the number of switching devices is large compared to that in a cascaded converter pair
Option C:	the cycloconverter is normally used for high voltage and high current applications
Option D:	it employs natural commutation of SCRs and more number of supply cycles are needed to form one cycle of the output voltage

Q2	Solve any Two Questions out of Three	10 marks each
A	Explain the turn on methods of SCR.	
B	Describe the construction of IGBT with a neat schematic.	
C	Draw and explain complete protection circuit for SCR.	

Q3	Solve any Two Questions out of Three	10 marks each
A	Explain class C complementary commutation circuit of SCR with waveforms.	
B	Explain single phase fully controlled rectifier circuit with waveforms.	
C	Explain buck-boost converter with waveforms.	

Q4	Write short notes on any Two out of Three	10 marks each
A	Sinusoidal PWM inverter	
B	Single phase cycloconverters	
C	Triac-diac phase control	