University of Mumbai
Examination 2020 under cluster 4 (PCE)

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester VI

Course Code: EXC604 and Course Name: Power Electronics - I

Time: 1 hour Max. Marks: 50

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Note to the students:- All Questions are compulsory and carry equal marks .

1.	In class D commutation method SCR is commutated off by
Option A:	voltage commutation
Option B:	current commutation
Option C:	Load commutation
Option D:	Line commutation
Q2.	SCR breakover voltage depends up on:
Option A:	Holding current
Option B:	latching current
Option C:	Anode to cathode voltage (Va)
Option D:	Gate current
Q3.	Control circuit of RC full wave triggering circuit consists of
Option A:	three resistors and one diode and a capacitor
Option B:	one resistors and one capacitor
Option C:	four resistors and one diode a capacitor
Option D:	three resistors and two diode a capacitor
Q4.	Automation is possible in which of the following triggering method
Option A:	R Triggering
Option B:	RC Triggering
Option C:	UJT Triggering
Option D:	Cosine inverse Triggering
Q5.	In SCR circuits di/dt protection is provided to the SCR by
Option A:	connecting an inductor in parallel across the load
Option B:	connecting an inductor in series with the SCR

Option C:	connecting an inductor in parallel across the gate terminal
Option D:	connecting an inductor in series with the gate
Q6.	Which of the following devices does not belong to the transistor family?
Option A:	IGBT
Option B:	MOSFET
Option C:	GTO
Option D:	BJT
Q7.	Which of the following device is bidirectional?
Option A:	SCR
Option B:	DIODE
Option C:	MOSFET
Option D:	TRIAC
Q8.	The arrow on the symbol of MOSFET indicates
Option A:	the direction of conventional current flow
Option B:	the direction of electrons
Option C:	that it is a N-channel MOSFET
Option D:	that it is a P-channel MOSFET
Q9.	Which of the following is correct, for insulated gate bipolar transistor?
Option A:	It has low input impedance.
Option B:	It has high input impedance.
Option C:	It has high on-state resistance.
Option D:	It has second breakdown problems.
Q10.	Peak inverse voltage in semiconverter is equal to___.
Option A:	Vm
Option B:	2Vm
Option C:	4Vm
Option D:	Vm/2
Q11.	The power factor of the rectifier is
Option A:	positively affected by firing angle
Option B:	negatively affected by firing angle an positively affected by distortion of the input current
Option C:	positively affected by both firing angle and distortion of the input current

Option D:	negatively affected by firing angle and distortion of the input current
Q12.	A single-phase half-wave thyristor circuit with R load is triggered at an angle of α = 0° with source voltage Vs = Vm sinωt. As such, the maximum value of the average output voltage would be given by
Option A:	Vm
Option B:	2Vm/π
Option C:	Vm/π
Option D:	Vm/α
Q13.	A 230 V, 50 Hz, one-pulse SCR controlled converter has extinction angle β = 240°. Find the circuit turn-off time.
Option A:	10 ms
Option B:	6.6 ms
Option C:	8.3 ms
Option D:	5.4 ms
Q14.	A three-phase three pulse type controlled converter is supplying an R load with α = 30°. As such, each SCR device would conduct for
Option A:	60° each cycle
Option B:	120° each cycle
Option C:	180° each cycle
Option D:	360° each cycle
Q15.	Current source inverter is a_____.
Option A:	boost inverter
Option B:	buck inverter
Option C:	buck-boost inverter
Option D:	dc to ac converter
Q16.	A single-phase half bridge inverter is connected to a 200 V dc source which is feeding a R load of 10 Ω. Determine the average current through each SCR inverter switch.
Option A:	10 A
Option B:	6 A
Option C:	7.5A
Option D:	5A
Q17.	In a single PWM inverter the shape of the output voltage waveform is
Option A:	sawtooth wave

Option B:	triangular wave
Option C:	quasi-square wave
Option D:	sine wave
Q18.	Which of the following technique is used in inverters for harmonic reduction?
Option A:	Transformer connection
Option B:	Cycloconverter control
Option C:	Amplitude modulation
Option D:	Series connection of two inverters
Q19.	The phase voltage waveform of three phase inverter in 180^0 conduction mode has_____.
Option A:	4 steps
Option B:	3 steps
Option C:	6 steps
Option D:	2 steps
Q20.	If V_d is input voltage applied to step down chopper the output voltage if given by (D is duty cycle)
Option A:	(1-D) * V_d
Option B:	V_d/ (1-D)
Option C:	D * V_d
Option D:	V_d/ D
Q21.	Find the output voltage for a step-up chopper when it is operated at a duty cycle of 70 % and Vs = 400 V.
Option A:	a) 240 V
Option B:	b) 1333 V
Option C:	c) 560 V
Option D:	d) 930 V
Q22.	DC to DC regulators operates in continuous conduction mode when
Option A:	duty cycle is 0.1
Option B:	duty cycle is 0.2
Option C:	duty cycle is 0.4
Option D:	duty cycle is 0.7
Q23.	In the phase control method of AC voltage controller
Option A:	the load is on for some cycles and off for some cycles

Option B:	control is achieved by adjusting the firing angle of the devices
Option C:	control is achieved by adjusting the number of on off cycles
Option D:	control cannot be achieved
Q24.	In integral cycle control method the on – off time of switches should be adjusted in
Option A:	Miliseconds
Option B:	Microseconds
Option C:	Minutes
Option D:	Seconds
Q25.	Which one of the following is correct, in a three phase half-wave cycloconverter?
Option A:	only inversion action takes place
Option B:	only converting action takes place
Option C:	both inverting and converting action takes place
Option D:	Neither inverting nor converting action takes place.