

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023
(First Semester)

Branch - APPLIED ELECTRONICS

AUTOMOTIVE POWER ELECTRONICS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A Triac has three terminals. a) Drain, source, gate b) Two main terminal and a gate terminal c) Cathode, anode, gate d) None of the above	K1	CO1
	2	A triac is equivalent to two SCRs. a) In parallel b) In series c) In inverse-parallel d) None of the above	K2	CO2
2	3	In AC voltage controllers the a) variable ac with fixed frequency is obtained b) variable ac with variable frequency is obtained c) variable dc with fixed frequency is obtained d) variable dc with variable frequency is obtained	K1	CO1
	4	A switch has a) One state b) Two states c) Three states d) None of the above	K2	CO2
3	5	In the _____ type of chopper, two stage conversions takes place. a) AC-DC b) AC link c) DC link d) None of the mentioned	K1	CO1
	6	Which device can be used in a chopper circuit? a) BJT b) MOSFET c) GTO d) All of the mentioned	K2	CO2
4	7	A rotary converter operates at a a) Low power factor b) High power factor c) Zero power factor d) None of the above	K1	CO1
	8	In a single phase rotary converter, the number of slip rings will be a) Two b) Three c) Four d) Five	K2	CO2

Cont...

5	9	What is an electric drive? a) A machine that converts electrical energy into kinetic energy b) A machine that converts mechanical energy into electrical energy c) A machine that converts electrical energy into mechanical energy d) A machine that converts kinetic energy into electrical energy	K1	CO1
	10	BLDC motor is analogous to _____ a) Permanent magnet synchronous motor b) DC motor c) Rotating Transformer d) Single-phase Induction motor	K2	CO2

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Illustrate the function of SCR with neat sketch.	K4	CO3
		(OR)		
	11.b.	Organize and write short notes on GTO.		
2	12.a.	Sketch the single phase AC switch and explain it.	K4	CO4
		(OR)		
	12.b.	Explain about the single phase bidirectional controller with resistive load.		
3	13.a.	Elucidate basic scheme of choppers.	K5	CO3
		(OR)		
	13.b.	Explain about the function of Buck Regulator.		
4	14.a.	Explain designing of various protocol stack and techniques used in half wave controlled rectifier with R load.	K6	CO4
		(OR)		
	14.b.	Build a note on designing of single phase bridge inverter.		
5	15.a.	Describe the working of induction motor control with neat diagram.	K5	CO4
		(OR)		
	15.b.	Contrast a note on designing of current sensor.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Classify the different situations of TRIAC.	K4	CO4
2	17	Explain about the function of Cycloconverter.	K4	CO5
3	18	Compare and contrast two and four quadrant choppers.	K5	CO3
4	19	Discuss the function of PWM techniques with neat sketch.	K6	CO5
5	20	Summarize the layered architecture of BLDC with relevant diagram.	K5	CO4

Z-Z-Z

END