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PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch - **PHYSICS**

ANALOG, DIGITAL ELECTRONICS AND MICROPROCESSORS

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	The expansion of FET is _____. (a) Fold Effect Transistor (b) Field Effect Transistor (c) Field Effect Transducer (d) Field Effort Transistor	K1	CO1
	2	A semiconductor has _____ temperature coefficient of resistance. (a) positive (b) zero (c) negative (d) none of the above	K2	CO1
2	3	A multiplexer is a circuit with many inputs but only ___output. (a) one (b) two (c) three (d) four	K1	CO2
	4	Demultiplex means _____. (a) many to one (b) one to many (c) one to one (d) one to two	K2	CO2
3	5	A _____ register moves the stored bits from one position to the right. (a) left or right (b) shift left (c) shift right (d) straight	K1	CO3
	6	A ring counter resembles a _____ register. (a) left or right (b) shift left (c) shift right (d) straight	K2	CO3
4	7	A mono stable multivibrator has _____. (a) two stable state (b) tri stable state (c) one stable state (d) None	K1	CO4
	8	The operational Amplifier has_____ gain differential amplifier. (a) high (b) medium (c) low (d) None	K2	CO4
5	9	Microprocessor is the_____ of the microcomputer. (a) hand (b) heart (c) eye (d) head	K1	CO5
	10	Intel 8085 is the one of the most popular _____ microprocessor. (a) 1-bit (b) 2-bit (c) 16-bit (d) 8-bit	K2	CO5

Cont...

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.	Describe an experiment to determine the characteristics of a transistor in a common base mode.	K2	CO1
		(OR)		
	11.b.	Describe how a Zener diode can be used as a Voltage Regulator.		
2	12.a.	Draw the logic circuit of parallel binary adder and explain its operation.	K3	CO2
		(OR)		
	12.b.	What is multiplexer? Explain the working of a 4 : 1 multiplexer.		
3	13.a.	Explain the operation of the master slave flip flop with a neat diagram and give its timing diagram.	K4	CO3
		(OR)		
	13.b.	Draw the circuit diagram of a 4 – bit ripple counter and explain its working.		
4	14.a.	Explain the working of OPAMP as an inverting amplifier with a neat circuit diagram. Obtain an expression for the voltage gain.	K5	CO4
		(OR)		
	14.b.	What is the Barkhausen criterion?		
5	15.a.	Compare between Microprocessors and Microcontrollers.	K6	CO5
		(OR)		
	15.b.	Give any five instructions in logical group. Explain their function with examples.		

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	Design the types of clippers circuits and explain.	K6	CO1
2	17	Explain the method of three variable Karnaugh map simplification with necessary diagram.	K4	CO2
3	18	Discuss the design of counters. What are its applications?	K4	CO3
4	19	With a neat circuit diagram, discuss the working of a bistable multivibrator.	K5	CO4
5	20	Explain the architecture of 8085 microprocessor by drawing the block diagram.	K4	CO5

Z-Z-Z END