

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)**

Branch - **INFORMATION TECHNOLOGY**

FUNDAMENTALS OF DIGITAL COMPUTERS

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	1's complement can be easily obtained by using _____ a) Comparator b) Inverter c) Adder d) Subtractor	K1	CO1
	2	The addition of +19 and +43 results as _____ in 2's complement system. a) 11001010 b) 101011010 c) 00101010 d) 111110	K2	CO1
2	3	According to boolean law: $A + 1 = ?$ a) 1 b) A c) 0 d) A'	K1	CO2
	4	$A(A + B) = ?$ a) AB b) 1 c) $(1 + AB)$ d) A	K2	CO2
3	5	If A and B are the inputs of a half adder, the sum is given by _____ a) A AND B b) A OR B c) A XOR B d) A EX-NOR B	K1	CO3
	6	A digital multiplexer is a combinational circuit that selects _____ a) One digital information from several sources and transmits the selected one b) Many digital information and convert them into one c) Many decimal inputs and transmits the selected information d) Many decimal outputs and accepts the selected information	K2	CO3
4	7	Latch is a device with _____ a) One stable state b) Two stable state c) Three stable state d) Infinite stable states	K1	CO4
4	8	Ripple counters are also called _____ a) SSI counters b) Asynchronous counters c) Synchronous counters d) VLSI counters	K2	CO4
5	9	A register is able to hold _____ a) Data b) Word c) Nibble d) Both data and word	K1	CO5
	10	The ROM is a _____ a) Sequential circuit b) Combinational circuit c) Magnetic circuit d) Static circuit	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 BCD system with an example.	K2	CO1
		(OR)		
	11.b.	Explain computer register with an example.		
2	12.a.	Demonstrate Demorgan's theorem with example.	K3	CO2
		(OR)		
	12.b.	Simplify the equation $F = xyz + xyz' + xy'z + x'yz + x'y'z$ using k-map.		
3	13.a.	Interpret the principles of half adder with neat diagram.	K4	CO3
		(OR)		
	13.b.	Examine the functions of multiplexer with diagram.		
4	14.a.	Develop a truth table to demonstrate jk flip-flop with diagram.	K3	CO4
		(OR)		
	14.b.	Identify the characteristics of counters.		
5	15.a.	Distinguish cache memory and virtual memory.	K4	CO5
		(OR)		
	15.b.	Inference asynchronous data transfer with diagram.		

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	Analyse the characteristics of Binary, Octal and Hexadecimal number system.	K4	CO1
2	17	Inference the working principles of Product of Sum	K4	CO2
3	18	Evaluate encoders and decoders with diagram.	K4	CO3
4	19	Analyse shift register with neat diagram.	K4	CO4
5	20	Examine the principles of DMA with neat diagram.	K4	CO5

Z-Z-Z

END