23ITU314N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(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	The representation of octal number (532.2)8 in decimal is _____ a) (346.25)10 b) (532.864)10 c) (340.67)10 d) (531.668)10	K1	CO1
	2	2's complement of 11001011 is _____ a) 01010111 b) 11010100 c) 00110101 d) 11100010	K2	CO1
2	3	DeMorgan's theorem states that _____ a) (AB)' = A' + B' b) (A + B)' = A' * B c) A' + B' = A'B' d) (AB)' = A' + B	K1	CO2
	4	The expression Y=AB+BC+AC shows the _____ operation. a) EX-OR b) SOP c) POS d) NOR	K2	CO2
3	5	Total number of inputs in a half adder is _____ a) 2 b) 3 c) 4 d) 1	K1	CO3
	6	Which is the major functioning responsibility of the multiplexing combinational circuit? a) Decoding the binary information b) Generation of all minterms in an output function with OR-gate c) Generation of selected path between multiple sources and a single destination d) Encoding of binary information	K2	CO3
4	7	A latch is an example of a _____ a) Monostable multivibrator b) Astable multivibrator c) Bistable multivibrator d) 555 timer	K1	CO4
	8	The only difference between a combinational circuit and a flip-flop is that _____ a) The flip-flop requires previous state b) The flip-flop requires next state c) The flip-flop requires a clock pulse d) The flip-flop depends on the past as well as present states	K2	CO4
5	9	The instruction used in a program for executing them is stored in the _____ a) CPU b) Control Unit c) Memory d) Microprocessor	K1	CO5
	10	ROM is made up of _____ a) NAND and OR gates b) NOR and decoder c) Decoder and OR gates d) NAND and decoder	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.	Explain the characteristics of octal and hexadecimal numbers.	K2	CO1
		(OR)		
	11.b.	Describe compliments and its types with suitable example.		
2	12.a.	Analyse the working principles of canonical forms.	K4	CO2
		(OR)		
	12.b.	Inspect the characteristics of AND, OR and NOT gates.		
3	13.a.	Identify the working pattern of full adder with diagram.	K3	CO3
		(OR)		
	13.b.	Develop the procedure to identify the internals of decoder with diagram.		
4	14.a.	Construct the truth table for SR flip-flop and explain the table with circuit diagram.	K3	CO4
		(OR)		
	14.b.	Demonstrate the working principles of ripple counters.		
5	15.a.	Examine the hierarchy of memory.	K4	CO5
		(OR)		
	15.b.	Analyse auxiliary memory 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 any two binary codes with suitable example.	K4	CO1
2	17	Examine the principles of k-map and don't care condition with suitable example.	K4	CO2
3	18	Inspect the functions of subtractors with example.	K4	CO3
4	19	Analyse shift register with neat diagram.	K4	CO4
5	20	Evaluate the working principles of cache memory.	K4	CO5

Z-Z-Z END