25CMU102 / 25ITU102 / 25CTU102 / 25DAU102 / 22DAU102N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(First Semester)

Common to Branches - **COMPUTER SCIENCE / INFORMATION TECHNOLOGY / COMPUTER TECHNOLOGY / COMPUTER SCIENCE WITH DATA ANALYTICS**

DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE / 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	In the Indian numbering system, the number 1,00,000 is called: a) One million b) One lakh c) One crore d) One arab	K2	CO1
	2	Who compiled and published the system known as "Vedic Mathematics" in the 20th century? a) Aryabhata b) Bhaskaracharya c) Swami Bharati Krishna Tirthaji d) Ramanujan	K2	CO1
2	3	Compute the 1's complement of the binary number 1011101. a) 0101110 b) 1001101 c) 0100010 d) 1100101	K2	CO2
	4	Which of the following is a universal gate? a) AND gate b) OR gate c) XOR gate d) NAND gate	K1	CO2
3	5	Identify the number of cells in a K-map for a Boolean function with three variables a) 3 b) 4 c) 8 d) 16	K2	CO3
	6	An encoder is a: a) Sequential circuit b) Combinational circuit c) Logical circuit d) None of the mentioned	K2	CO3
4	7	Which register is used to keep track of the location of the top of the stack? a) Instruction Register (IR) b) Program Counter (PC) c) Stack Pointer (SP) d) Accumulator (AC)	K1	CO4
	8	Main memory is also known as: a) Secondary memory b) Tertiary memory c) Primary memory d) Virtual memory	K1	CO4
5	9	The CISC stands for _____. a) Computer Instruction Set Compliment b) Complete Instruction Set Compliment c) Computer Indexed Set Components d) Complex Instruction set computer	K1	CO5
	10	Which of the following is an advantage of parallel processing? a) Increased cost b) Slower execution c) Faster data processing d) Reduced resource utilization	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.	Expound on Indian contributions to mathematics.	K2	CO1
		(OR)		
	11.b.	Explain the applications of Vedic mathematics in detail.		
2	12.a.	Explore the Components of a Digital Computer.	K3	CO2
		(OR)		
	12.b.	List out the various logic gates in digital computer and explain with diagram and truth table.		
3	13.a.	Simplify the Boolean function $f(x,y,z) = \sum(0,2,4,5,6)$ using Map method.	K3	CO3
		(OR)		
	13.b.	Construct a 3-to-8 line decoder and explain in detail.		
4	14.a.	Illustrate the conversion process of the expression A*B+C*D of infix notation to the reverse polish notation using stack.	K4	CO4
		(OR)		
	14.b.	Discuss in detail about the associative memory.		
5	15.a.	Describe the parallel processing in detail with an example.	K4	CO5
		(OR)		
	15.b.	Demonstrate the pipeline unit for floating-point addition and subtraction with an example.		

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	Elaborate the Encoding Knowledge in ancient texts.	K4	CO1
2	17	Express the function $F(w,x,y,z) = y'z + wxy' + wxz' + w'x'z$ in a sum of minterms and a product of maxterms.	K4	CO2
3	18	Simplify the following Boolean function using Map method: i) $F(w,x,y,z)=\sum(0,1,2,4,5,6,8,9,12,13,14)$ ii) $F=A'B'C'+B'CD'+A'BCD'+AB'C'$	K4	CO3
4	19	Analyse the different Addressing modes using suitable examples.	K4	CO4
5	20	Explore the RISC pipeline in detail.	K4	CO5

Z-Z-Z END