25AIC11

I SEMESTER BCA (AI) EXAMINATION - NOVEMBER/DECEMBER 2025

SCHEME: Revised CBCS

015

BCA (Artificial Intelligence)

Computer Fundamentals and Digital Electronics

Time: 03 Hours **Max Marks: 80**

Instruction: Answer both **Part A & Part B.**

PART - A

1.	Answer **ALL** questions.	**8x2=16**	
	a. What is meant by Hardware and Software?	CO1 LL1	
	b. What is MSB and LSB?	CO1 LL1	
	c. What is the function of compiler?	CO2 LL1	
	d. Define Algorithm	CO2 LL1	
	e. Define Boolean Algebra	CO3 LL1	
	f. Design circuit diagram and truth table for NOT gate	CO3 LL1	
	g. What is a Karnaugh Map?	CO4 LL1	
	h. What is a combinational circuit?	CO4 LL1	

PART - B

Answer any **TWO** sub questions from each main. **4x16=64**

2.	a) Explain third and fifth generations of computer.	CO1 LL2	8
	b) Explain in detail the basic organization of a digital computer with a neat diagram.	CO1 LL2	8
	c) Convert the following:		
	i) $(345)_8$ to binary and decimal.	CO1 LL2	4
	ii) $(1001011)_2$ to decimal and hexadecimal.	CO1 LL2	4
	d) Discuss in detail computer codes BCD, Gray Code, ASCII and Unicode.	CO1 LL2	8

PTO

3.	a)	Explain the different types of softwares.	CO2 LL2	8
	b)	Explain the different types of computer languages.	CO2 LL2	8
	c)	Explain the different types of computers with respect to their size and speed.	CO2 LL2	8
	d)	Write an algorithm and flowchart for the program to calculate the simple interest.	CO2 LL2	8
4.	a)	Explain any four Boolean laws.	CO3 LL2	8
	b)	What is an IC? Write the circuit diagram and truth table for NAND and NOR gate.	CO3 LL2	8
	c)	i) Simplify the equation $\bar{x}\bar{y} + x\,\bar{y} + xy$ using Boolean Algebra and draw the circuit diagram.	CO3 LL2	4
		ii) Explain basic logic gate and write its truth table.	CO3 LL2	4
	d)	Using NAND and NOR gate, construct AND and OR logic gates.	CO3 LL2	8
5.	a)	Using K-Map, Simplify the following expression and draw the circuit diagram F(A,B,C,D) = m1+m2+m4+m5+m9+m11+m12+m13.	CO4 LL2	8
	b)	i) Explain Full-Adder with the circuit diagram.	CO4 LL2	6
		ii) What is Encoder?	CO4 LL2	2
	c)	Explain Full Subtractor with circuit diagram and Truth Table.	CO4 LL2	8
	d)	Explain the followings:		
		i) Encoder and Decoder.	CO4 LL2	4
		ii) Multiplexer	CO4 LL2	4

** *** **