

B.C.A Semester - 2 (CBCS) Examination**March/April – 2026 (New Course)****Computer Organization and Architecture (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1(A)	Answer following Questions	(03)
	(1) _____ logical gate is known as universal gate.	
	(2) _____ will be the output of a NAND gate if both inputs are 1.	
	(3) _____ gate produces a HIGH (1) output only when at least one of the inputs is HIGH.	
Que.1(B)	Answer Any Two	(06)
	(1) Explain block diagram of Digital Computer.	
	(2) Explain AND & OR Gate with truth table.	
	(3) Explain Boolean algebra.	
	(4) Explain sum of product.	
Que.1(C)	Answer Any One	(05)
	(1) Explain De Morgan's Theorem.	
	(2) Explain NAND & NOR gate. Explain don't care condition.	
Que.2(A)	Answer following Questions	(03)
	(1) _____ is a basic building block of sequential circuits.	
	(2) _____ flip-flop is also known as a "toggle flip-flop".	
	(3) _____ sequential circuit is used for counting purposes.	
Que.2(B)	Answer Any Two	(06)
	(1) Explain block diagram of combinational circuit.	
	(2) Explain JK flip flop.	
	(3) What is state table and state diagram?	
	(4) Explain Master Slave flip flop.	
Que.2(C)	Answer Any One	(05)
	(1) Write short note on sequential circuit.	
	(2) Write short note on D flip flop and T flip flop.	
Que.3(A)	Answer following Questions	(03)
	(1) _____ type of register allows data to be shifted left or right.	
	(2) A multiplexer with 4 input lines requires _____ select lines.	
	(3) A decoder with n inputs can have a maximum of _____ outputs.	
Que.3(B)	Answer Any Two	(06)
	(1) Explain 4 bit synchronous counter.	
	(2) What is register? Explain bidirectional shift register with parallel load.	
	(3) Explain De-Multiplexer.	
	(4) Explain quadruple 2 to 1 line multiplexer.	
Que.3(C)	Answer Any One	(05)
	(1) What is decoder? Explain 3 to 8 line decoder.	
	(2) Write short note on Multiplexer.	
Que.4(A)	Answer following Questions	(03)
	(1) _____ register temporarily holds data during execution.	
	(2) _____ unit generates the control word in a CPU.	
	(3) Give full form of CMOS.	

- Que.4(B) Answer Any Two (06)
- (1) Explain major components of CPU.
 - (2) List out registers for basic computer. Explain any two.
 - (3) Explain Control word.
 - (4) Explain Polish Notation.
- Que.4(C) Answer Any One (05)
- (1) Explain Reverse Polish Notation.
 - (2) Write short note on stack organization.
- Que.5(A) Answer following Questions (03)
- (1) A small program that loads the operating system into memory is ____.
 - (2) Transfers data between the CPU and peripheral devices is primary function of ____ Bus.
 - (3) Hard Disk Drive is ____ type of memory.
- Que.5(B) Answer Any Two (06)
- (1) Explain typical RAM chip block diagram and function table.
 - (2) What is Bootstrap loader?
 - (3) Explain I/O Bus and interface modules.
 - (4) Explain block diagram of computer with I/O processor.
- Que.5(C) Answer Any One (05)
- (1) Write short note on DMA.
 - (2) Explain I/O versus memory bus. Explain I/O interface unit.
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