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FIFTH SEMESTER (CUFYUGP) DEGREE EXAMINATION, NOVEMBER 2026

COMPUTER APPLICATION

BCA5CJ303 Digital Electronics and Computer Architecture

2024 Admission onwards

Maximum Time :2 Hours | **Maximum Marks :70**

Section A

All Questions can be answered. Each Question carries 3 marks (Ceiling : 24 Marks)

1	Perform binary addition of 101101_2 and 11011_2.
2	Explain why NAND and NOR gates are called universal gates.
3	State and explain De Morgan's theorems.
4	Differentiate between a half adder and a full adder
5	What is a flip-flop? Why is it used in digital circuits?
6	Differentiate between synchronous and asynchronous counters.
7	What is a register? Give two examples of registers.
8	What is an instruction cycle? Name its main steps.
9	What is cache memory? State two advantages of cache memory
10	What are addressing modes? Name any three addressing modes.

Section B

All Questions can be answered. Each Question carries 6 marks (Ceiling : 36 Marks)

11	Explain the concept of parallel processing and state its advantages.
12	Explain the common bus system used in a computer.
13	Explain the working of a Multiplexer with a suitable example
14	Simplify the following Boolean expression using a 3-variable K-map: F(A,B,C)=Σ(1,3,5,7)
15	Explain the working of a D flip-flop and T flip-flop with their truth tables.
16	What is pipelining? Explain the basic idea of instruction pipelining.
17	Explain the difference between hardwired control and microprogrammed control.
18	What is DMA (Direct Memory Access)? Explain its working.

Section C

Answer any ONE .Each Question carries 10 marks (1x10=10 Marks)

19	Explain different logic gates with their truth tables.
20	Explain general register organization, stack organization and addressing modes.