(6 pages) **Reg. No. : .....**

Code No. : 7056 **Sub. Code : ZCAM 12**

M.C.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2022

First Semester

Computer Application – Core

COMPUTER ORGANIZATION AND ARCHITECTURE

(For those who joined in July 2021 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. What kind of operation occurs in a J - K flip flop when both inputs J and K are equal to 1?

   (a) Preset operation

   (b) Reset operation

   (c) Clear operation

   (d) Toggle operation

2. Which of these flip – flops cannot be used to construct a serial shift register?

   (a) D – flip flop (b) SR flip – flop

   (c) T flip – flop (d) JK flip – flop

3. The main advantage of multiple bus organisation over a single bus is _____

   (a) Reduction in the number of cycles for execution

   (b) Increase in size of the registers

   (c) Better Connectivity

   (d) All the above

4. _____ converts the programs written in assembly language into machine instructions.

   (a) Machine compiler

   (b) Interpreter

   (c) Assembler

   (d) Converter

5. The addressing mode, where you directly specify the operand value is _____

   (a) Immediate (b) Direct

   (c) Definite (d) Relative

6. Which of the following processor has a fixed length of instructions?

(a) CISC (b) RISC

(c) EPIC (d) Multi-core

7. The 1's complement of 1 in 4 bits is _____

(a) 0001 (b) 0

(c) 1001 (d) 1110

8. _____ transmission mode can transmit data in both the directions but transmits in only one direction at a time.

(a) simplex (b) half duplex

(c) full duplex (d) half-simplex

9. Which of the following is the fastest means of memory access for CPU?

(a) Registers (b) Cache

(c) Main memory (d) Virtual Memory

10. Which of the following is independent of the address bus?

(a) Secondary memory

(b) Main memory

(c) Onboard memory

(d) Cache memory

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Derive the truth table for the following function : F = x + y z'.

Or

(b) Write brief notes on Counters.

12. (a) What is Register Transfer? Give Example.

Or

(b) Explain the various functions in an Instruction cycle.

13. (a) Mention the address sequencing capabilities required in a control memory of a Microprogrammed Control Unit.

Or

(b) Write about Data Transfer Instruction's names and the Mnemonics and its use.

14. (a) How will you perform the Addition and Subtraction with Signed-2's Complement Data?

Or

(b) Write about the strobe control method of asynchronous data transfer.

15. (a) Write about the RAM chip and its function table.

Or

(b) Write brief notes on Time-shared common bus.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Illustrate the design procedure for a Combinational circuit with block diagram.

Or

(b) What are shift registers? Explain the four basic types of shift registers.

17. (a) Explain in detail about Memory transfers.

Or

(b) Illustrate the Arithmetic Logic Shift Unit with diagram.

18. (a) Specify the steps for executing a single computer instruction in a Microprogrammed Control Unit.

Or

(b) Describe Stack Organization and Register Stack with diagram.

19. (a) Illustrate the hardware for multiplication operation with block diagram.

Or

(b) Illustrate the connection of IO bus with IO devices with block diagram.

20. (a) Illustrate the memory hierarchy in a computer system with block diagram.

Or

(b) Describe the important characteristics of Multiprocessors.

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