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# F-1845

## M.C.A (First Semester)
## EXAMINATION, Dec. - Jan., 2021-22
### (New Course)
## COMPUTER SYSTEM ARCHITECTURE
### (MCA-104)

*Time : Three Hours]*        *[Maximum Marks:100*
                             *[Minimum Pass Marks:40*

**Note : Attempt all sections as directed**

### Section - A            (1 mark each)

#### (Objective/Multiple Choice Questions)
**Note: Attempt all questions.**

   **Choose the correct answer:**

1. Logic gates required to build up a half adder circuit are
   (A) Ex-OR Gate and NOR gate
   (B) Ex-Or gate and OR gate
   (C) Ex-OR gate and AND gate
   (D) Ex-NOR gate and NAND gate

2. The output of two input AND gate is high
   (A) only if both inputs are high
   (B) only if both inputs are low
   (C) only if one input is high and other is low
   (D) if at least one of the inputs is low

3. Where is the decoded instruction stored?
   (A) Registers
   (B) MDR
   (C) PC
   (D) IR

4. NAND gate means
   (A) Inversion followed by AND gates
   (B) AND gate followed by an invertor
   (C) AND gate followed by OR gate
   (D) None of these

5. The expression for Absorption low is given by -
   (A) $A + AB = A$
   (B) $A + AB = B$
   (C) $AB + AA' = A$
   (D) $A + B = B + A$

6. Which of the following memory of the computer is used to speed up the computer processing?
   (A) Cache memory
   (B) RAM
   (C) ROM
   (D) None of the above

7. What does MIMD Stand for
   (A) Multiple Instruction Memory Data
   (B) Multiple Instruction Multiple Data
   (C) Memory Instruction Multiple Data
   (D) Memory Information Memory Data

8.  What does a computer bus line consists of?

    (A)   Set of parallel lines

    (B)   Accumulators

    (C)   Registers

    (D)   None of the above

9.  In which flip-flop the present input will be the next output

    (A)   S-R

    (B)   J-K

    (C)   D

    (D)   T

10. When S = O R = O, CLK = X then output will be -

    (A)   No change

    (B)   Set

    (C)   Reset

    (D)   Invalid

11. The example of inplied addressing is

    (A)   Stack addressing

    (B)   Immediate addressing

    (C)   Indirect addressing

    (D)   Accumulator

12. The register used as a working area in CPU is

    (A)   program counter

    (B)   instruction register

    (C)   instruction decoder

    (D)   accumulator

13. The DMA transfers are performed by a control circuit called as-

    (A)   Device interface

    (B)   DMA Controller

    (C)   Data Controller

    (D)   Overlooker

14. How many types of modes of I/O Data transfer are

    (A)   2

    (B)   3

    (C)   4

    (D)   5

15. The method which offers higher speeds of I/O transfers is -

    (A)   Interrupts

    (B)   Memory mapping

    (C)   Program-controlled I/O

    (D)   DMA

16. Pipe lining increases the CPU instruction throughout but it reduces an

    (A)   Resuming time

    (B)   Terminating time

    (C)   Execution time

    (D)   None of the above

17. Device which converts signal from binary codes into output codes is called

    (A)   Encoder

    (B)   Decoder

    (C)   Multiplexer

    (D)   Data Selector

18. Parallel processing may occur
    (A) in the instruction stream
    (B) in the data stream
    (C) both (A) and (B)
    (D) None of the above

19. Which of the following is a characteristic of CISC.
    (A) Fixed format instructions
    (B) Variable format instructions
    (C) instructions are executed by hardware
    (D) None of the above

20. Instruction execution involves five phases which are
    (A) Fetch, decode, operand fetch, execution, results
    (B) Operand fetch, fetch, decode, execution, results
    (C) Fetch, execute, decode, operand fetch, results
    (D) None of the above

## Section - B        (2 marks each)
### (Very Short Answer Type Questions)

**Note: Attempt all questions.**

1. Define combinational circuit.
2. What is K-map?
3. What is RTL?
4. Define Interrupt cycle.
5. What is assembly language?
6. What is stack?
7. What is Cache memory?
8. What is Input/Output processor?
9. Define degree of parallelism (DOP)
10. What is microprocessor?

## Section - C        (3 marks each)
### (Short answer type questions)

**Note: Attempt all questions.**

1. What is Shift Register?
2. Explain half adder.
3. Explain Bus architecture with block diagram.
4. What are the various types of Interrupts?
5. What is general register organization?
6. What are the various instruction formats?
7. What is Asynchronous data transfer?
8. What do you mean by virtual memory?
9. What do you mean by parallel processing?
10. What are the different methods of parallelism?

## Section - D        (6 marks each)
### (Long Answer Type Questions)

**Note- Attempt all questions.**

1. What are the various logic gates? Explain with truth table and logic diagram.

   Or

   Explain J-K flip flop and T flip flop

2. Explain Arithmetic, logic and shift microoperations.

   Or

   Explain various memory reference instructions.

3. Write short notes on

    (A)    Micro-programmed and hardwired control

    (B)    RISC vs CISC

<div align="center">Or</div>

Explain the concept of pipelining in CPU designing.

4.   Write short notes on

    (A)    Programmed I/O

    (B)    Interrupt initiated I/O

<div align="center">Or</div>

What is I/O interface? Explain direct memory access.

5.   What are the different types of parallelism? Write applications of parallel processing.

<div align="center">Or</div>

Describe SISD, SIMD, MISD and MIMD.