

Roll No.

Total No. of Questions : 09]

[Total Pages : 06

(2054)

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**UG (CBCS) (Second Year) Annual
EXAMINATION, 2024**

B. Sc. COMPUTER SCIENCE

Computer System Architecture

COMP201TH

Time : 3 Hours]

[Maximum Marks : 70

The candidates shall limit their answer precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit of Part B.
Q. No. 1 (Part A) is compulsory.

Part A

(Compulsory Question)

I. (a) Attempt all parts : $10 \times 1 = 10$

Fill in the blank spaces :

- (i) Program Counter (PC) holds.....
- (ii) The floating point representation of a number has two parts.....and.....
- (iii) Control Word has..... bits.
- (iv)circuit is used for converting binary data into decimal.
- (v)is an Universal Gate.
- (vi) A group of bits that tell the computer to perform a specific operation is known as.....

State whether the statement is *true* or *false* :

- (vii) A group of bits that tells the computer to perform specific task is known as *micro-operation*.

(True/False)

Answer the following MCQ's by selecting the most appropriate option :

(viii) Computer bus consists of :

- (a) registers
- (b) accumulators
- (c) set of parallel lines
- (d) computer clock

(ix) The disadvantage(s) of the hardwired approach is :

- (a) It is less flexible
- (b) It cannot be used for complex instructions
- (c) It is costly
- (d) Less flexible and cannot be used for complex instructions

(x) The Instruction fetch phase ends with :

- (a) Placing the data from the address in MAR into MDR
- (b) Placing the address of the data into MAR

- (c) Completing the execution of the data and placing its storage address into MAR
- (d) Decoding the data in MDR and placing it in IR
- (b) Answer the following in 25 to 50 words each : $5 \times 4 = 20$
- (i) What do you mean by Combinational Circuits ?
- (ii) Discuss logical micro-operations.
- (iii) What do you mean by Micro-Programmed Control ?
- (iv) Explain the modes of data transfer.
- (v) What are the instruction formats ?

Part B

Unit I

2. Discuss the following circuits in brief : $4 \times 2.5 = 10$
- (a) Decoder
- (b) Multiplexer
- (c) Register
- (d) Flip-Flop.

3. Discuss Binary, Octal and Hexadecimal Number Systems in detail. Also explain, how floating-point numbers are represented. 10

Unit II

4. (a) Discuss the common Bus System which transfers information between registers and memory. 5
- (b) What do you mean by Instruction Cycle ? 5
5. Discuss the General Register and Stack Organizations. 10

Unit III

6. What is an Instruction Format ? Discuss the most common fields present in an Instruction Format. 10
7. Explain the following : $4 \times 2.5 = 10$
- (a) Machine Language
- (b) Assembly Language

- (c) Addressing Modes
- (d) Instruction Codes.

Unit IV

8. What are Peripheral Devices ? Why are they required ? Also, discuss the role of I/O Interface. 10
9. Describe the difference between programmed I/O, interrupt-driven I/O and Direct Memory Access in terms of data transfer methods and their impact on system performance. 10