

2501298

UG (CBCS) (Second Year) Annual EXAMINATION, 2025

B. Sc. COMPUTER SCIENCE

COMP201TH

Computer System Architecture

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 Part. Q. No. 1 is compulsory.

Compulsory Question

1. (A) Attempt all parts :

1×10=10

- (i) Which of the following is used to hold and transfer instruction and data that are being immediately used by CPU ?
 - (a) Microprocessor (b) ROM (c) Registers (d) Data buses
- (ii) Which of the following building blocks can be used to implement any combinational logic circuit ?
 - (a) AND (b) NAND (c) OR (d) NOT
- (iii) In the case of, Zero address instruction method the operands are stored in.....
 - (a) Registers (b) Push down stacks
 - (c) Accumulators (d) Cache
- (iv) Subtraction in computer is carried out by :
 - (a) 1's complement (b) 2's complement
 - (c) 9's complement (d) 3's complement
- (v) During DMA transfer, DMA controller transfers data :
 - (a) directly between memory and register
 - (b) directly between the I/O modules and main memory
 - (c) directly from memory to CPU
 - (d) directly from CPU to memory
- (vi) The example of implied addressing is :
 - (a) Stack addressing (b) Indirect addressing
 - (c) Immediate addressing (d) None of the above

- (vii) Which register holds the address of the next instruction to be executed ?
 (a) Program Counter (b) Instruction Register
 (c) Accumulator (d) Memory Address Register
- (viii) What does the instruction MOV A, B mean in assembly language ?
 (a) Move the content of register A to register B
 (b) Move the content of register B to register A
 (c) Add A and B
 (d) Subtract A from B
- (ix) Which of the following operations are implemented using a binary counter or combinational circuit ?
 (a) Register transfer (b) Logical (c) Arithmetic (d) All of these
- (x) Which of the following is a group of bits that tells the computer to perform a particular operation ?
 (a) Accumulator (b) Instruction code (c) Register (d) None of these
- (B) Answer the following in 25 to 50 words each : 5×4=20
- Convert $(127543)_8$ into Hexadecimal notation.
 - What is the difference between isolated I/O and memory mapped I/O ?
 - Explain the block diagram of RAM.
 - What is machine language ?
 - Perform the arithmetic operation $(-70) + (-80)$ with binary notation in 2's complement representation.

Part B

- Simplify using Boolean Algebra $(A'B + ABC' + ABC)$. Also list the truth table of the function. 10
- What are sequential circuits ? Explain the various types of flip-flops. 10

Part C

- What are the various computer registers ? How are they connected to common Bus system ? 10
- Explain general register organization with ALU. What is control word ? 10

Part D

- Explain different addressing modes in computer. 10
- What is input output programming ? Write the program to input and output one character. 10

Part E

- What are peripheral devices ? List two peripheral devices that produce an acceptable output for a person to understand. 10
- Explain Direct Memory Access. 10