

**MASTER OF COMPUTER
APPLICATIONS (REVISED)/ BACHELOR
OF COMPUTER APPLICATIONS
(REVISED)
(MCA/BCA)**

Term-End Examination

December, 2025

**MCS-012 : COMPUTER ORGANISATION AND
ASSEMBLY LANGUAGE PROGRAMMING**

Time : 3 Hours

Maximum Marks : 100

Note : (i) *Question No. 1 is compulsory and carries 40 marks.*

(ii) *Attempt any **three** questions from the rest.*

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1. (a) Differentiate between RISC and CISC architecture. 6

- (b) Differentiate between SRAM and DRAM. 4
- (c) Simplify the following using K-map : 4
$$F(A, B, C, D) = \Sigma(0, 2, 8, 9, 10, 11, 14, 15)$$
- (d) Find 1's and 2's complement of the following : 4
- (i) 10100010
- (ii) 11001100
- (e) Explain flow diagram of instruction cycle with interrupt cycle. 6
- (f) Differentiate between Constant Angular Velocity (CAV) and Constant Linear Velocity (CLV) disks with the help of a diagram of each. 6
- (g) Write a program using 8080 assembly language to convert an ASCII digit into

equivalent binary. You may assume that the ASCII digit is stored in DL register. The result of this conversion is kept in AL register. 6

(h) Find the physical address for the following pairs of 8086 registers : 4

(i) $SS : SP \equiv 0111h : 00FFh$

(ii) $CS : IP \equiv 4101h : 01FFh$

2. (a) Explain the functioning of associative memory with the help of a block diagram. 6

(b) Explain the interrupt-driven Input/Output (I/O) mechanism with the help of a flowchart. How is interrupt-driven I/O different from programmed I/O ? 8

(c) Convert the following numbers in given format : 6

(i) $(23.4)_8 \Rightarrow ()_2$

(ii) $(242)_{10} \Rightarrow ()_{16}$

(iii) $(29)_{10} \Rightarrow ()_2$

3. (a) Find the even and odd parity bits for the following 7-bit data : 4

(i) 0101010

(ii) 0000000

(iii) 1111111

(iv) 1000100

(b) Explain the functioning of Decoders and Multiplexer with the help of a logic diagram. 10

(c) What is instruction pipelining ? Explain its stages. 6

4. (a) Describe Wilkes control unit with the help of a diagram. 8
- (b) Explain the role of large register file in Reduced Instruction Set Computers (RISC) with the help of a diagram. 6
- (c) A memory has a capacity of $4\text{ K} \times 8$: 6
- (i) How many data input and data output lines does it have ?
- (ii) How many address lines does it have ?
- (iii) What is the size of the memory in bytes ?
5. Write short notes on the following : $4 \times 5 = 20$
- (a) Direct Mapping Cache Organisation

- (b) Memory Hierarchy
- (c) Interrupt 21h in 8086 microprocessor
- (d) NEAR and FAR procedure calls in 8080
assembly language

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