

**POST GRADUATE DIPLOMA IN
COMPUTER APPLICATIONS
(PGDCA-NEW)**

Term-End Examination

June, 2025

MCS-202 : COMPUTER ORGANIZATION

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

Note : *Question No. 1 is compulsory and carries 40 marks. Attempt any **three** questions from Q. No. 2 to Q. No. 5.*

1. (a) Write the binary equivalent for the following decimal numbers : 6
- (i) -23456
- (ii) 299
- (iii) 17.89

- (b) Explain the importance of locality of reference with the help of an example. 5
- (c) What is the role of a 'flag' register in 8086 microprocessor ? Can it be used as a general purpose register ? 5
- (d) List and explain any *four* data transfer instructions of a computer. 4
- (e) Add the following decimal numbers by converting them to 8 bit signed 2's complement notation : 4
- (i) + 56 and - 56
- (ii) + 121 and + 8
- (f) What is an I/O interface ? List major functions of I/O interface. 4

- (g) With the help of a block diagram, explain the concept of Direct Memory Access (DMA). 4
- (h) Write an 8086 assembly program that interchanges the values of two memory locations. 4
- (i) How are characters recognised by voice-based input devices ? 4
2. (a) Simplify the function : 5

$$f = \left((A' + B) + (A \cdot B')' \right)'$$

- (b) Define SOP and POS form of Boolean functions with the help of an example of each. 5
- (c) What is a flip-flop ? How is it different from a latch ? Also, explain the working

of the following flip-flops along with
necessary diagrams : 10

(i) Master-Slave flip-flop

(ii) Edge-Triggered flip-flop

3. (a) Assume that a computer system has the
following memories : 6

(i) RAM 64 words with 16-bits word.

(ii) Cache of 8 blocks (block size – 32
bits).

Find in which location of Cache memory
a decimal address '21' can be found if
direct mapping is used.

(b) List the advantages and disadvantages
of Associative Memory. 4

- (c) Explain how RAID technology enhances the performance and reliability of data storage. Also, summarize the characteristics of any *three* RAID-levels.

10

4. (a) Explain the role of the following types of registers :

6

(i) General purpose register

(ii) Address register

(iii) Data register

- (b) With the help of a block diagram, explain the fixed-point arithmetic logic unit.

8

- (c) Explain the process of execution of a micro-program.

6

5. Write short notes on the following : $4 \times 5 = 20$

(a) Indirect Addressing Mode

(b) COM Program

(c) Dynamic Random Access Memory

(DRAM)

(d) Von Neumann Architecture

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