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MCS-202

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

Term-End Examination

June, 2026

MCS-202 : COMPUTER ORGANISATION

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

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

(ii) *Attempt any **three** questions from the remaining Question No. 2 to Question No. 5.*

1. (a) Simplify the following :

$$F(A, B, C, D) = \Sigma(0, 4, 8, 11, 12, 13)$$

- using K-map. Also draw the logic diagram of resultant function using AND, OR, NOT Gates. 6
- (b) Draw and explain the logic diagram of a RAM cell. 6
- (c) Explain the direct cache mapping scheme with the help of an example. 6
- (d) What is an interrupt ? List all the steps that are required to be performed by hardware or software to process an interrupt. 6
- (e) Explain the components of 8086 microprocessor with the help of a diagram. 6
- (f) Explain the FAR procedure call in the context of 8086 assembly language. 5
- (g) What is the role of Flag register in 8086 microprocessor ? Explain the role of any *three* flags in this register. 5

2. (a) Write an 8086 assembly language program to add five byte numbers stored in an array in the memory. The result should be stored in AX register. 8
- (b) Draw a general configuration of micro-programmed control unit and discuss its operation. 6
- (c) What are Adders ? Explain half adder and full adder with logic diagram and truth tables. 6
3. Explain the following by giving *one* example or diagram for each : $5 \times 4 = 20$
- (i) CRT
 - (ii) D-flip-flop
 - (iii) Video cards
 - (iv) Register file in RISC
 - (v) The Interrupt Cycle

4. (a) Explain the following addressing modes in assembly language programming with the help of an example for each : 10
- (i) Indirect Addressing
 - (ii) Relative Addressing
 - (iii) Register Addressing
 - (iv) Based Addressing
 - (v) Immediate Addressing
- (b) Differentiate the following : 10
- (i) RISC *vs.* CISC
 - (ii) Unencoded micro-instructions *vs.* Encoded micro-instructions
5. (a) Explain the role of parity bit in error detection with the help of an example. 5
- (b) Explain the following instructions of 8086 microprocessor with the help of one example each : 10
- (i) ROL

- (ii) SHL
 - (iii) XCHG
 - (iv) DEC
 - (v) XOR
- (c) What is the role of Interrupt Vector Table (IVT) in 8086 processor ? Explain.

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