

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) What is the role of PC, IR registers? [2]
- b) How many references to memory are needed for direct address instruction to bring an open and into a processor register? [3]
- c) What are the advantages of DMA? [2]
- d) Explain daisy-chain priority interrupt. [3]
- e) What is hit ratio? [2]
- f) What is the transfer rate of an eight-track magnetic tape whose speed is 120 inches per second and whose density is 1600 bits per inch? [3]
- g) What is the function of 8086 index registers? [2]
- h) What is non-maskable interrupt? [3]
- i) What is the use of 'CMPS' 8086 instruction? [2]
- j) Explain 'ROR' and 'ROL' 8086 instructions. [3]

PART - B**(50 Marks)**

2. Explain various instruction formats. [10]
 3. Explain various addressing modes with examples. [10]
 4. Draw and explain the block diagram of DMA controller. [10]
- OR**
5. Explain source-initiated and destination initiated data transfer using handshaking. [10]
 6. The access time of a cache memory is 100 ns and that of main memory 1000 ns. It is estimated that 80% of the memory requests for 'read' and remaining 20% for 'write'. The hit ratio for read accesses only is 0.9. A write-through procedure is used.
 - a) What is the average access time of the system considering only memory read cycles?
 - b) What is average access time of the system considering only memory read cycles?
 - c) What is the hit ratio taking into consideration the write cycles? [4+3+3]

OR

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7.a) Explain the set-associative mapping of cache memory. [5+5]
b) Write short notes on virtual memory.

8. Explain the fields in 8086 flag register. [10]

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9. Explain the pin diagram of 8086 with figure. [10]

10. Write 8086 assembly language program to convert a 16-bit binary number into Equivalent BCD number. [10]

OR

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11. Write a 8086 assembly language program to find two 16-bit operands. [10]

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