

313305

25226

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Answer each next main Question on a new page.
- (3) Illustrate your answer with neat sketches wherever necessary.
- (4) Figures to the right indicate full marks.
- (5) Assume suitable data, if necessary.
- (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
- a) List any four boolean laws.
- b) State the rules for conversion of hexadecimal to BCD.
- c) State any two advantages of pipe lining in 8086 microprocessor.
- d) State function of:
- i) Linker
- ii) Assembler.
- e) Write any Assembly Language Program (ALP) using branching structure instruction.
- f) Draw symbol and truth table of NAND and EX-OR gates.
- g) Write any two arithmetic instructions with example.

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- 2. Attempt any THREE of the following: 12**
- a) State and prove De Morgan's theorem.
 - b) Draw logic diagram of 8:1 multiplexer and write its truth table.
 - c) Describe memory segmentation in 8086.
 - d) Write assembly language program for addition of two hexadecimal numbers.
- 3. Attempt any THREE of the following: 12**
- a) Explain conversion of binary to other number systems with suitable example (Any two).
 - b) Simplify following Boolean expression using K-map and realize it using logic gates:
$$Y = \sum m (0, 1, 2, 3, 8, 10) + \sum d (5, 7)$$
 - c) Explain any four addressing modes of 8086.
 - d) Explain string instructions of 8086.
- 4. Attempt any THREE of the following: 12**
- a) Design OR, AND, NOT, NAND gates by using NOR gate only.
 - b) Differentiate between multiplexer and demultiplexer.
 - c) Draw architecture block diagram of 8086.
 - d) Explain any four flag manipulation instructions of 8086.
 - e) Write assembly language program for transfer of block of data.
- 5. Attempt any TWO of the following: 12**
- a) Explain minimum mode configuration of 8086 in detail.
 - b) Draw logic diagram of J-K Flip Flop and write its truth table.
 - c) Write assembly language programs for sorting of data. Draw flow chart for the same.

6. Attempt any TWO of the following:**12**

- a) Explain the following in short:
 - i) Combinational circuit
 - ii) Sequential circuit
 - iii) Latch
 - iv) Clock signal
 - b) Write assembly language instructions of 8086 to:
 - i) Multiply 4H by 5H
 - ii) Rotate content of AX by 4-bit towards left
 - iii) Perform logical AND operation of AX and BX.
 - c) Write assembly language program for multiplication of two BCD numbers. Draw flow chart for the same.
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