

313305

12425

03 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) Define the term:
 - i) Bit
 - ii) Byte
 - b) State any four applications of 8086 microprocessor.
 - c) State any four features of 8086 microprocessor.
 - d) List different addressing modes of 8086.
 - e) Write instructions to add and subtract two numbers.
 - f) Draw symbol and truth table of:
 - i) AND gate
 - ii) NOR gate
 - g) State any four assembler directives of 8086 microprocessors.

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- 2. Attempt any THREE of the following:** **12**
- a) State and prove De-Morgans theorem.
 - b) Draw and explain half adder circuit.
 - c) Calculate physical address of following:
 - i) 4370H : 561EH
 - ii) 7A32 : 6028H
 - d) Write an assembly language program to multiply two 8 bit numbers.
- 3. Attempt any THREE of the following:** **12**
- a) Perform following using 2's compliment:
 - i) $(53)_{10} - (38)_{10}$
 - ii) $(35)_{10} - (42)_{10}$
 - b) Minimize the following Boolean expression using K-map.
 $Y = \sum m (1, 3, 5, 7, 8, 10, 14)$
 - c) Explain addressing Modes of 8086 Microprocessor.
 - d) Describe use of shift and rotate instructions with suitable example.
- 4. Attempt any THREE of the following:** **12**
- a) Design basic gates using NAND gates only.
 - b) Differentiate between combinational and sequential circuits.
 - c) Draw and explain the flag register of 8086 Microprocessor.
 - d) Explain string instructions of 8086 Microprocessor.
 - e) Write an assembly language program to add sum of series of 10 numbers.

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

- a) i) Design 16:1 multiplexer using 8:1 multiplexer.
ii) Draw circuit diagram of 1:4 DEMUX using logic gates. Write its truth table.
- b) Draw architecture of 8086 Microprocessor and state the functions of execution unit and bus interface unit.
- c) Write ALP for finding smallest number from Array of 'n' numbers.

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

- a) Explain the following in short:
 - i) Clock signal
 - ii) Flip flop
 - iii) Latches
 - iv) Counter circuit.
 - b) Interpret the given instructions and specify the output for the following situation.
MOV AX, 34F9H
MOV BX, 3A69H
 - i) Masking of lower nibble of AX.
 - ii) Rotate right through carry contents of BX by 4 positions.
 - iii) Shift left contents of BX by 6 positions.
 - iv) XOR AX, BX.
 - c) Write an assembly language program to arrange any array of 10 bytes in ascending order. Draw flow chart for the same.
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