22323

21222

3 Hours / 70 Marks Seat No. | | | | | | | | |

15 minutes extra for each hour

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) 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 term 2'S complement.

b) State the necessity of Multiplexer.

c) List the types of triggering.

d) List any four features of 8086 microprocessor.

e) Convert $(85.63)_{10}$ to binary number.

f) State the functions of following pins of 8086 microprocessor.

i) ALE

ii) DT / $\overline{R}$

iii) M / $\overline{Io}$

iv) HOLD

g) State the function of STC and AAA instructions of 8086 microprocessor.

Marks

2. Attempt any THREE of the following: **12**

a) Explain with Justification NAND gate as a Universal gate.

b) With reference to K-MAP explain

i) Disallowed group

ii) Quad

iii) Octet

iv) Overlapping group

c) Explain J-K flip flop with the help of neat diagram. Write its truth table.

d) With the help of boolean laws prove

$(A + \overline{B} + AB)\ (A + B)\ \overline{A} \cdot \overline{B} = 0$

3. Attempt any THREE of the following: **12**

a) Convert following decimal number in BCD code an Excess-3 code.

i) $(48)_{10}$

ii) $(222)_{10}$

b) Compare the following terms

i) RCR and RCL

ii) JUMP and CALL

c) Explain S-R flip flop using NOR gate. Write truth table.

d) Design half substractor using logic gates. Write truth table.

4. Attempt any THREE of the following: **12**

a) Explain Addressing modes of 8086 microprocessor.

b) Design 4:1 Multiplexer using NAND gates only.

c) Compare sequential logic circuit and combinational logic circuit.

d) Explain concept of pipelining with neat diagram.

e) Explain Min term and Max term in detail with suitable example.

Marks

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

a) Describe the operation performed by instruction IMUL and AAM.

b) Draw output waveform at point A and at point B for the circuit shown in given Figure No. 1.

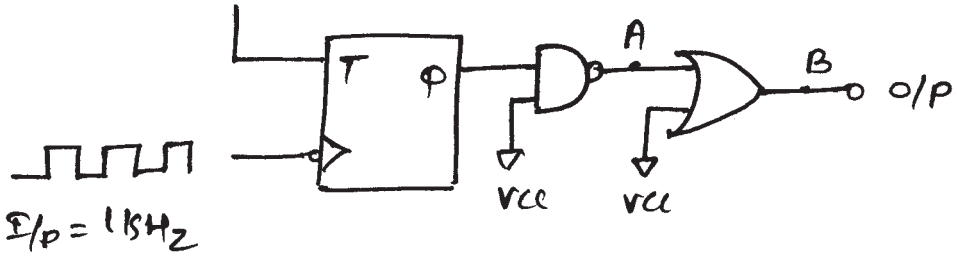

Fig. No. 1.

c) Draw flag register format of 8086 microprocessor. Explain TF, DF, IF, CF flag registers.

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

a) Describe physical address generation steps with suitable example.

b) Design T. flip flop using J-K flip flop. Write its truth table.

c) Identify the addressing modes used in following instructions

i) MOV DS, AX

ii) MOV AX, [4172H]

iii) MUL AL, BL

iv) ADD AX, [SI]

v) ADD AX [SI] BX [04]

vi) INC [4712H]