22323

11920

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

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

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(6) Any calculator is not permissible.

Marks

1. Attempt any FIVE of the following: **10**

a) List one application of each of following:

(i) Gray code

(ii) ASCII code

b) State the principle of multiplexer and mention its two types.

c) Draw the circuit of one bit memory cell.

d) List features of 8086 microprocessor. (Any four)

e) Convert the following numbers into Hexadecimal number.

(i) $(10110111)_2 = (?)_{16}$

(ii) $(567)_8 = (?)_{16}$

f) State four characteristics of RISC processor.

g) Give example of any two types of addressing mode of 8086.

Marks

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

a) Perform the following subtraction using 1's compliment and 2's compliment $(1010\ 0101)_2 - (1110\ 1110)_2$.

b) Simplify the given equation into standard SOP form

$Y = AB + A\overline{C} + BC$ and represent the same equation in standard POS form.

c) Differentiate between D FF and T FF.

d) Describe the characteristics of digital IC's (Any four).

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

a) Reduce the following boolean expression using laws of Boolean algebra and realize using basic logic gates.

$Y = (A + BC)\ (B + \overline{C}A)$

b) Write an assembly language program to transfer block of 10 numbers from one memory location to another. (Assume suitable data.)

c) For the given circuit, identify the inputs and outputs. Name the circuit and draw its truth table. Refer Fig. No. 1.

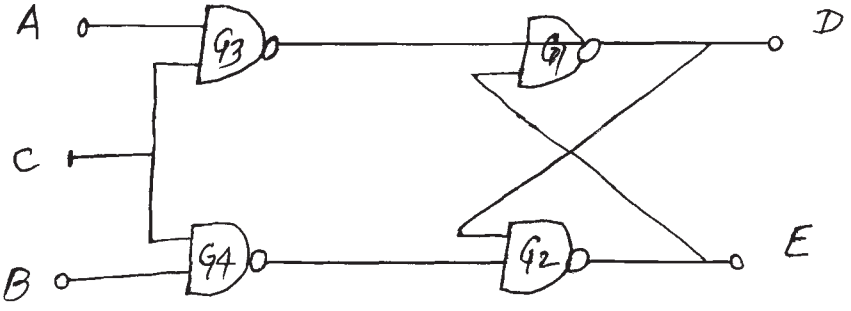

Fig. No. 1

d) Simplify the given K-map using standard form and realize the circuit using gates. Refer Fig. No. 2.

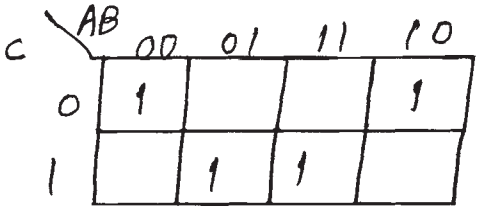

Fig. No. 2

Marks

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

a) Write an assembly language program to find the sum of series of ten numbers stored in memory. (Assume suitable data.)

b) Minimize the four variable logic function using K-map.

$f(A,B,C,D)\ \Sigma m\ (0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$

c) Differentiate between sequential and combinational logic circuits. (Any four points)

d) Describe the use of flag register and segment registers in 8086.

e) Describe the construction of half adder using K-map.

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

a) Write an assembly language program to find the factorial of a number using looping process.

b) Describe the principle of working of JK FF and draw its circuit diagram and truth table.

c) Differentiate between CISC and RISC and justify use of each of them in practice.

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

a) Describe the concept of piplelining and process of physical address generation in 8086 microprocessor.

b) State the names of universal logic gates and design basic gates using universal gates.

c) Describe the use of shift and rotate instructions as well as string instructions with the help of one relevant examples of each.