22536

24225

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) Write any special instructions if any. Preferably, write the answers in sequential order.

Marks

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

a) Define with an example a SOP logical expression.

b) Draw block diagram of a mealy machine model.

c) Draw the diagram of a 2 bit up/down counter.

d) Show the construction of T flipflop using JK flipflop.

e) Explain meaning of races.

f) State any two advantages of FPGA.

g) Draw the basic block diagram of frequency counter.

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

a) Explain a 2 bit comparator using IC 7485.

b) Design a 4 bit even parity generator using IC 74180.

c) Design a sequential generator using state reduction method.

d) Define asynchronous sequential circuit. Draw and explain.

P.T.O.

Marks

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

a) Define multiplexers. Explain 4:1 multiplexer along with its truth table.

b) Describe the sequential circuit model. Give its classification.

c) Explain hazards. Explain its elimination methods.

d) Draw and describe the architecture of PAL.

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

a) Realize T flipflop using SR flipflop.

b) Design a D flipflop using JK flipflop.

c) Describe the block diagram of GAL.

d) Using PLA combinational logic, design a full adder circuit.

e) Explain ADD 3501 IC internal diagram.

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

a) Using mealy model, design a sequential generator for the sequence 110.

b) Design D flipflop using sequential logic PLA.

c) Explain the operation of single digit common anode display using IC 7447 decoder, along with truth table and circuit diagram.

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

a) Describe the instrument to measure time with block diagram for the unknown i/p signal.

b) Using PLA, implement the following Boolean function –

$Y_1 = f(A, B, C) = \Sigma (0, 2, 5, 6)$

$Y_2 = f(A, B, C) = \Sigma (0, 1, 3,7)$

c) Design a four decimal digits multiplexed display.
