Total No. of Questions—**8**] [Total No. of Printed Pages—**2**

Seat No.	

[5152]-573

S.E. (Information Technology) (First Semester)

EXAMINATION, 2017

DIGITAL ELECTRONICS AND LOGIC DESIGN

(2015 Course)

Time : Two Hours **Maximum Marks : 50**

N.B. :— (*i*) Answer Question **1** *or* **2, 3** *or* **4, 5** *or* **6** and **7** *or* **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Assume suitable data, if necessary.

1. (*a*) Explain any *three* characteristics of Digital ICs. [6]

(*b*) Implement the following Boolean function using single 8:1 multiplexer : [6]

$F(A, B, C, D) = \Sigma m(1, 4, 6, 9, 13)$

Or

2. (*a*) Do the following [6]

(*i*) $(7F)_{16} - (5C)_{16}$ using 2's complement method

(*ii*) $(735.25)_{10} = (?)_{16}$

(*iii*) $(101011.111011)_2 = (?)_8 (?)_{16}$

(*b*) Simplify the following Boolean function using Quine MC-Clusky Technique $F(A, B, C, D) = \Sigma(0, 1, 3, 7, 8, 9, 11, 15)$. [6]

3. (*a*) Design and draw logic diagram of mod 45 counter using IC 7490 [6]

(*b*) Design sequence generator to generate the sequence 1011 using shift register IC 74194. [6]

P.T.O.

Or

4. (*a*) Explain with a neat diagram Ring Counter. [6]

(*b*) Design flip-flop conversion logic to convert JK flip-flop to T flip-flop. [6]

5. (*a*) Draw the ASM chart for 2-bit binary Up/ Down counter with control input M such that if M=0 counter counts in Up direction and if M=1 Counter counts in Down Direction.

Design the same using MUX Controller Method using D flip-flops. [7]

(*b*) Explain architecture of CPLD with the help of suitable diagram. [6]

Or

6. (*a*) Design Full Adder using PLA [7]

(*b*) Compare CPLD and FPGA [6]

7. (*a*) Explain VHDL modeling styles with example. [7]

(*b*) Write VHDL program for 3:8 decoder. [6]

Or

8. (*a*) What is VHDL ? Write features of VHDL. Explain the structure of VHDL module. Define entity and architecture for 2 input OR gate. [7]

(*b*) Explain the difference between concurrent and sequential statements with an example. [6]