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

Seat No.	

[5559]-182

S.E. (Computer) (First Semester) EXAMINATION, 2019

DIGITAL ELECTRONICS AND LOGIC DESIGN

(2015 PATTERN)

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

Instructions to the candidates:

1) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8,*
2) *Neat diagram must be drawn wherever necessary*
3) *Assume suitable data if necessary*

Q.1. Solve the following equations using corresponding minimization techniques : [12]

(*i*) Z = *f*(A, B, C, D) = (2, 7, 8, 10, 11, 13, 15)

(*ii*) Z = *f*(A, B, C, D) = (0, 3, 4, 9, 10, 12, 14).

OR

Q.2. a. Solve by Quine-McClusky technique : [8]

Z = *f*(A, B, C, D) = (0, 1, 3, 4, 6, 8, 10, 12, 14).

b. Difference between Sequential and Combinational Circuit [4]

Q.3. a. What is an ASM chart ? Give its applications and explain the MUX controlled method with suitable example [6]

b. A combinational circuit is defined by following functions : [6]

F1 (A,B,C) = ∑m (0,2,4,5), F2 (A,B,C) = ∑m (1,3,6,7)

Implement this circuit using PLA

P.T.O.

OR

Q.4. a. What is VHDL ? Explain entity architecture declaration for 2-Bit X-NOR gate [2]

b. Write VHDL code for 2 bit comparator using data flow Modeling Technique. [5]

c. Design BCD to Gray code converter and Implement using PLA [5]

Q.5. a. Draw 2-i/p standard TTL NAND gate with Totem Pole. Explain operation of transistor (ON/OFF) with suitable input conditions and truth table. [7]

b. Explain Tristate logic and Tristate TTL inverter [6]

OR

Q.6. a. Compare CMOS and TTL logic Family [7]

b. Define the following terms and mention its standard value for TTL logic family. [6]

1. Voltage and Current Parameter

2. Power dissipation

3. Noise Margin

Q.7. a. State the registers used in Timer counter operation. Explain TMOD register [7]

b. Draw and explain the Program Status Word of 8051. [6]

OR

Q.8. a. Explain any three addressing modes of 8051 with example [7]

b. Explain the function of following pins of 8051 [6]

i) $\overline{(PSEN)}$

ii) RST

iii) ALE

iv) $\overline{EA}$