Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5352]-562

S.E. (Com. Engg.)(I-Sem.) EXAMINATION, 2018

DIGITAL ELECTRONICS AND LOCIC DESIGN

(2015 PATTERN)

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

N.B. **:—** (*i*) Attempt **Q.1** or **Q.2**, **Q.3** or **Q.4**, **Q.5** or **Q.6**, **Q,7** or **Q.8**.

(*ii*) Neat diagram must be draw wherever necessary.

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

1. (*a*) Design two bit comparator using gates (consider A1 MSB and A0 LSB) [4]

(*b*) Minimize the following logic function using K-map and realize using logic gates : [4]

$F(A,B,C,D) = \Sigma M(1, 5, 7, 13, 15) + d (0, 6, 12, 14)$.

(*c*) Design 3-bit synchronous counter using T filp-flop. [4]

Or

2. (*a*) Design a sequence generator for the sequence 1010 using shift register. [6]

(*b*) Simplify the following function using Qunie-McCluskey minimization technique : [6]

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

P.T.O.

3. (*a*) State and explain basic components of ASM chart. Draw ASM chart for MOD 3 UP counter. [6]

(*b*) Implement 3 bit binary to gray code converter using PLA.[6]

Or

4. (*a*) Write VHDL code for full adder using data flow modeling style.[4]

(*b*) Explain entity declaration for 4 : 1 multiplexer having enable line. [2]

(*c*) Design BCD to Excess-3 code converter using PLA. [6]

5. (*a*) Explain with neat diagram CMOS inverter. [4]

(*b*) State the following characteristics of digital IC logic family TTL and CMOS : [4]

(*i*) FAN out

(*ii*) Noise Margin

(*c*) Explain TTL open collector logic. [5]

Or

6. (*a*) Give the classification of logic family. [4]

(*b*) Draw three imput standard TTL NAND gate and explain its operation. [5]

(*c*) Explain wired logic in CMOS. [4]

7. (*a*) Give the significance of the following pins of mirocontroller 8051 : [7]

(*i*) ALE

(*ii*) $\overline{\text{INT1}}$

(*iii*) TXD

(*vi*) $\overline{\text{PSEN}}$

(*v*) $\overline{\text{EA}}$

(*vi*) WR

(*vii*) RXD.

(*b*) Explain addressing modes of 8051 with example (any **3**).[6]

Or

8. (*a*) Which pins of 8051 are used for interrupt. Draw and explain IF register. [5]

(*b*) Compare microprocessor and microcontroller. [2]

(*c*) Explain the following instructions with respective to microcontroller 8051 and give example of each : [6]

(*i*) DIV

(*ii*) L JUMP

(*iii*) PUSH.