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[5352]-562

S.E. (Com. Engg.)(I-Sem.) EXAMINATION, 2018
DIGITAL ELECTRONICS AND LOGIC 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]
- $$F(A,B,C,D) = \sum M(1, 5, 7, 13, 15) + d(0, 6, 12, 14).$$
- (c) Design 3-bit synchronous counter using T flip-flop. [4]

Or

2. (a) Design a sequence generator for the sequence 1010 using shift register. [6]
- (b) Simplify the following function using Quine-McCluskey minimization technique : [6]
- $$Y(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14).$$

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 input 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 microcontroller 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 respect to microcontroller 8051 and give example of each : [6]

(i) DIV

(ii) L JUMP

(iii) PUSH.