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[5152]-535

S.E. (E&TC/Electronics) (I Sem.) EXAMINATION, 2017

DIGITAL ELECTRONICS

(2015 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :- (i) Answer Q. No. 1 or Q. No. 2, Q. No. 3 or
Q. No. 4, Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Use of calculator is allowed.

(v) Assume suitable data, if necessary.

1. (a) Design 3-bit binary to gray code converter. [6]

(b) Design MOD-6 synchronous counter using Toggle FF(T. FF). [6]

2. (a) Design 3-bit parity generator for even parity bit. [6]

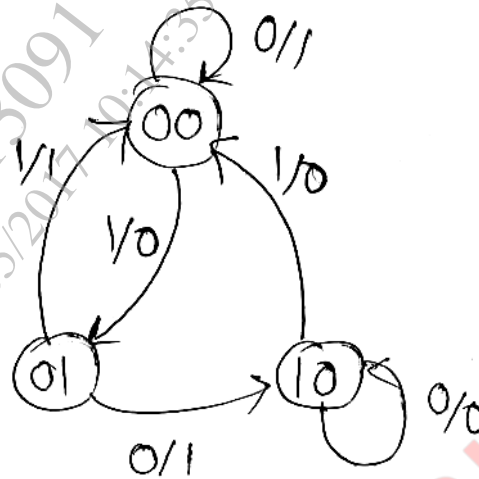
(b) Convert SR FF to JK FF. [6]

3. (a) Design a sequential circuit for the given state diagram using

P.T.O.

delay flip-flop (D FF).

[6]



(b) Draw and explain working of two input TTL NAND gate and list advantages of totem pole output stage. [6]

4. (a) Design mealy type sequence detector to detect a serial input sequence of 1101 using Delay FF (D-FF). [6]

(b) Draw and explain two input CMOS NAND gate. [6]

5. (a) Implement the following functions using PLA : [6]

$$F_1 = \sum m(0, 2, 5, 7)$$

$$F_2 = \sum m(2, 3, 4, 5)$$

(b) Compare PROM, PLA and PAL. [4]

(c) Classify memories on the basis of principle of operation. [3]

6. (a) Draw circuit of one cell of static RAM and explain its working. [6]

- (b) Draw and explain architecture of PLA. [4]
- (c) Explain how will you expand memory capacity (word size). [3]
7. (a) Explain the following pins of 8051 (any *three*) : [6]
- (i) PSEN(active low)
 - (ii) EA (active low)
 - (iii) ALE
 - (iv) RST
- (b) Explain any *four* multi-function pins of port-3 of 8051. [4]
- (c) List out features of 8051. [3]
8. (a) Explain the following instructions with example (any *three*) : [6]
- (i) MOVX A,@DPTR
 - (ii) ADDC A,B
 - (iii) MUL AB
 - (iv) RETI.
- (b) Draw and explain block diagram of 8051 in detail. [4]
- (c) Write a program for 8-bit multiplication of binary numbers. [3]