

Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No.

EC-403(N)

B. E. (Fourth Semester) EXAMINATION, June, 2011
(Electronics & Communication Engg. Branch)

DIGITAL ELECTRONICS

[EC-403(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt any *one* question from each Unit. All questions carry equal marks.

Unit-I

1. (a) Convert the following :

(i) $(225.225)_{10} = ()_8$

(ii) $(623.77)_8 = ()_{10}$

(iii) $(11010111.110)_2 = ()_8$

(iv) $(2AC5.D)_{16} = ()_8$

(b) Using a K-map simplify the following function and realize using NAND gates :

$$F(w, x, y, z) = \Sigma (1, 4, 6, 7, 8, 9, 10, 11, 15)$$

Or

2. (a) (i) Using 10's complement, subtract $72532 - 3250$.

(ii) Use 2's complement to perform $1010100 - 1000100$.

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[2]

EC-403(N)

- (b) Reduce the following expressions using Boolean Algebra :

(i) $\overline{A} B C + A \overline{B} C + A B \overline{C} + A B C$

(ii) $(A + B)(\overline{A} \overline{C} + C)(\overline{B} + A C)$

Unit – II

3. (a) Implement a full adder circuit using two half adders and an OR gate.
(b) Explain the working of a look ahead carry generator.

Or

4. (a) Design a BCD adder.
(b) Implement the following function using a 8×1 multiplexer :

$$F(A, B, C, D) = \Sigma(0, 1, 3, 4, 8, 9, 15)$$

Unit – III

5. (a) Explain the operation of monostable multivibrator with the help of waveforms.
(b) Differentiate between synchronous and asynchronous counters. Design a 4 bit up/down counter.

Or

6. (a) Explain the working of J-K flip-flop. What is race around condition in flip-flop and how is it eliminated ?
(b) Design a BCD Ripple Counter.

Unit – IV

7. (a) What is PLA ? Explain. How its capacity is specified ?
(b) Draw the logic diagram of a 4×4 RAM and describe the operation.

[3]

Or

8. Explain organization and construction of the following :
- (i) PAL
 - (ii) ROM

Unit – V

9. (a) Explain ECL logic. Why is it faster than TTL logic ?
(b) Explain the working of CMOS logic. Compare its speed with PMOS and NMOS. Give reasons for your answer.

Or

10. (a) Compare in detail RTL, DTL, TTL, ECL, IIL.
(b) Discuss interfacing between TTL and MOS.