FACULTY OF ENGINEERING
B.E. 2/4 (CSE) I – Semester (Supplementary) Examination, July 2014

Subject : Logic and Switching Theory

Time : 3 hours   **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.
PART – A (25 Marks)

1   Convert the given function into other canonical form.   3
     $F(x, y, z) = x + yz$
2   Write the Boolean expression and logic symbol for the given Truth table.   2

x	y	F
0	0	0
1	0	1
0	1	1
1	1	0

3   Realize the AND gate functionality using NOR-gates only.   3
4   Define the terms prime implicant and essential prime implicant. Give example. 2
5   Realize the function $F(x, y, z) = \Sigma (0, 1, 2)$ using multiplexers only. 3
6   Write a VHDL-code to design a 2-bit adder circuit.   3
7   Write the excitation and characteristic tables for JK and RS flip-flops.   2
8   Write the VHDL-code to design 2-bit counter.   2
9   Determine whether a given function $F(x,y,z) = x'y'z + xy'z' + x'y z'$ is symmetric or not.   3
10 Draw the relay contact network for the given function $F(a,b,c) = a + b'c$. 2

PART – B (50 Marks)

11 a) Represent the given decimal number into octal, hexadecimal and binary form.   6
        i) $(12.50)_{10}$ ii) $(34.25)_{10}$
    b) Convert the given function into canonical sum-of-products and canonical product-
        of-sums form.   4
         $F(A,B,C) = AB' + C'$

12 a) Simplify the Boolean function into minimum number of literals using K-map
        method.   5
         $F(w,x,y,z) = \sum (0, 3, 5, 9, 11) + \sum_d (1,2)$
    b) Simplify the function using tabulation method.   5
         $F(x,y,z) = \sum (0, 1, 2, 3, 6, 7)$