Group A

1. Simplify (Using k-map) the given Boolean function in both SOP and POS using the don't care condition d: and draw a NAND-NAND logic diagram for minimal SOP and NOR-NOR for the minimal POS, F(A,B,C,D) = (0,1,3,7,8,12)and πα(5,9,13,14).

2. Design a combinational circuit has four inputs and one output. The output is equal to i when (1) all the inputs are equal to 1 or (2) none of the inputs are equal to 1 or (3) an odd number of inputs are equal to 1.
a Obtain the truth table.
b. Find the simplified output function in SOP.
c. Find the simplified output function in POS.
d. Draw the logic diagrams for both SOP and POS.

Group B

3. Convert (573.35)8 into decimal and Hexadecimal.

4. Subtract (735.4-55.3) using both 10's and 9's complement.

5. Perform A+B, B-A:
A = +19 and B=-37

6. What is Boolean algebra? Simplify the given Boolean expression using the algebraic method:
z(y+z) (x+y+z)

7. What is Universal Logic Gate? Realize NAND Gate as Universal Logic Gate.

8 Express the given function in Sum of minterms.
F(x, y, z) = x y + z

9. Define parity bit? Design 3- bit even parity generator circuit with logic diagram and truth table.

10. Implement full adder circuit using two half adder circuits and one OR gate.