EGE UNIVERSITY
LOGIC DESIGN LABORATORY
EXPERIMENT-3

Combinational Circuit Design

EXPERIMENTAL WORK

Design a combinational circuit that accepts 4-bit number (ABCD) and generates 3-bit binary number output (XYZ) that approximates the square root of the number. (*For example, if the square root is 3.5 or larger, give the result of 4. If the square root is <3.5 and >= 2.5, give a result of 3.*)

1- Fill the truth table and obtain the boolean functions for X, Y and Z outputs using Karnaugh maps.

TRUTH TABLE

Inputs				Outputs		
A	B	C	D	X	Y	Z

KARNAUGH MAP OPTIMIZATION

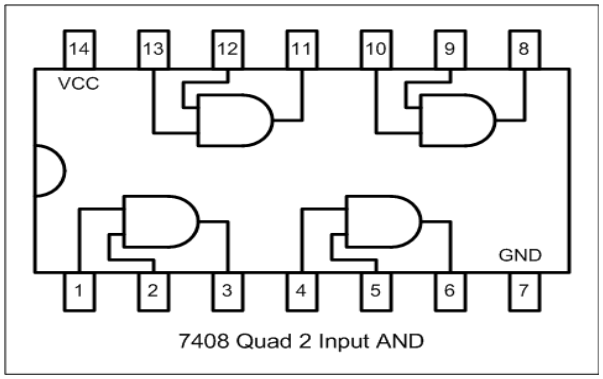
X=

Y=

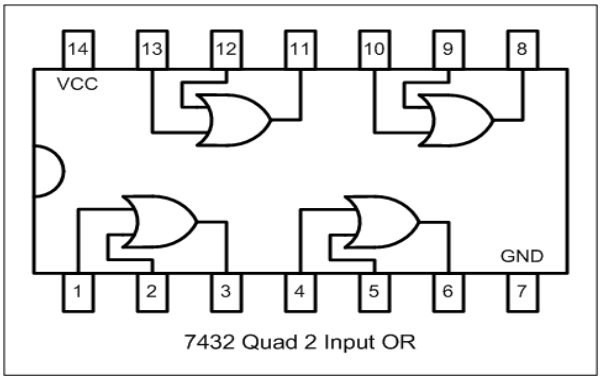
Z=

2- Draw the logic circuit diagram of the Boolean functions X, Y and Z

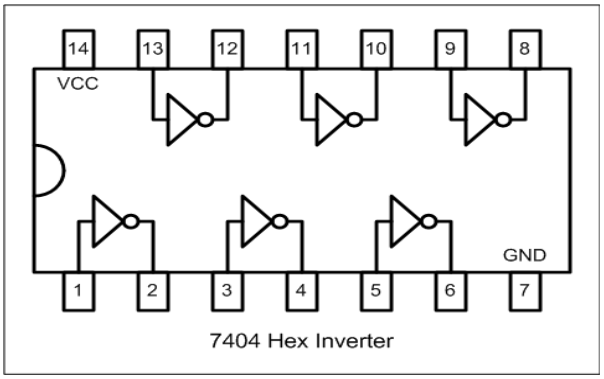
3- Implement these functions using 7408 AND, 7432 OR and 7404 NOT gates. Use switches for the inputs and connect the outputs to a led.



7408 Quad 2 Input AND



7432 Quad 2 Input OR



7404 Hex Inverter