Experiment No. 3

***TITLE* :-** Construction of simple decoder & multiplexer circuits using logic gates.

Object :- To construct a simple decoder & multiplexer circuit using logic gates & to show its operation.

List of equipments :-

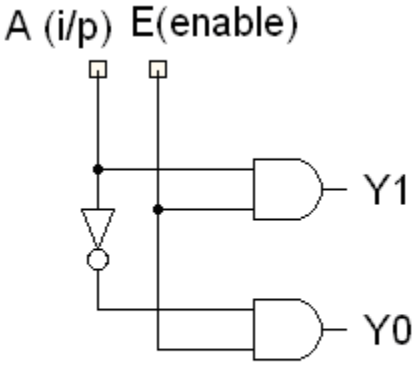
Sl No.	Name	Manufacturer	Model No.	Specification
1	Regulated DC power Supply	ELNOVA	E-61	5V, 5A
2	Logic Probe	Taiwan Make	Model-625	50MHz Frequency Range

Theory :-

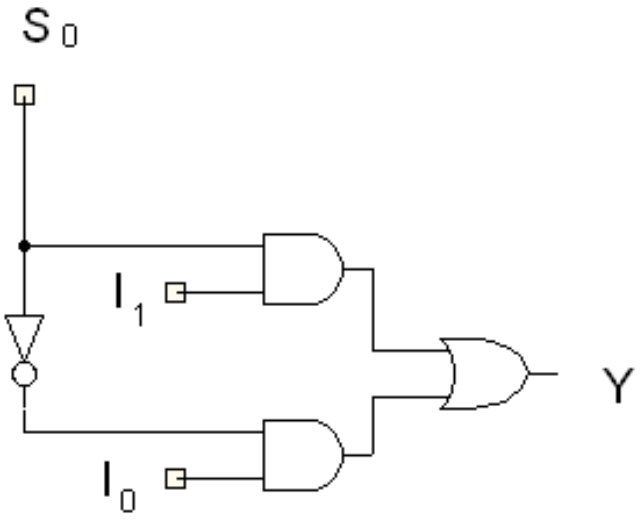
A decoder is a combinational logic circuit that converts binary information from 'n' input lines to a maximum of 2^n unique output lines.

Multiplexing is the process of transmitting a large number of information over a single line. A multiplexer is a combinational logic circuit which has 2^n input line, n select and only one output line. The selection of a particular input line is controlled by the set of select line. It determines which inputs will go to the output.

Circuit diagram



1:2 Decoder



2:1 Multiplexer

Truth table :-

1:2 decoder

Inputs	Enable	Outputs	
A	**E**	**Y_0**	**Y_1**
X	0	0	0
0	1	1	0
1	1	0	1

2:1 MUX

Inputs		Select line	Output
I_0	**I_1**	**S_0**	**Y**
X	X	0	I_0
X	X	1	I_1

Observation table

1:2 Decoder

Input	Enable	Output	
A	**E**	**Y_0**	**Y_0**
L	L	L	L
H	L	L	L
L	H	H	L
H	H	L	H

2:1 Multiplexer

Input		Select line	Output
I_0	**I_1**	**S_0**	**Y**
L	L	L	L
L	H	L	L
H	L	L	H
H	H	L	H
L	L	H	L
L	H	H	H
H	L	H	L
H	H	H	H

CONCLUSION:

NOTE: Here are some Questions. You need not write the questions,You only write the answers

1. What are the use of DECODER and MULTIPLEXER circuit in practical?