

**Laboratory 7****Combinational Circuits-III**  
**Decimal to BCD Encoder and Decoders****1. Introduction and Purpose of Experiment**

Students will learn to design and implement a circuit for Decimal to BCD Encoder.

**2. Aim and Objectives**

**Aim:** Design and implement a circuit for Decimal to BCD Encoder

**Objectives:** At the end of this lab, the student will be able to

- Develop a circuit for Decimal to BCD Encoder
- Understand the basics of Decoders

**3. Experimental Procedure**

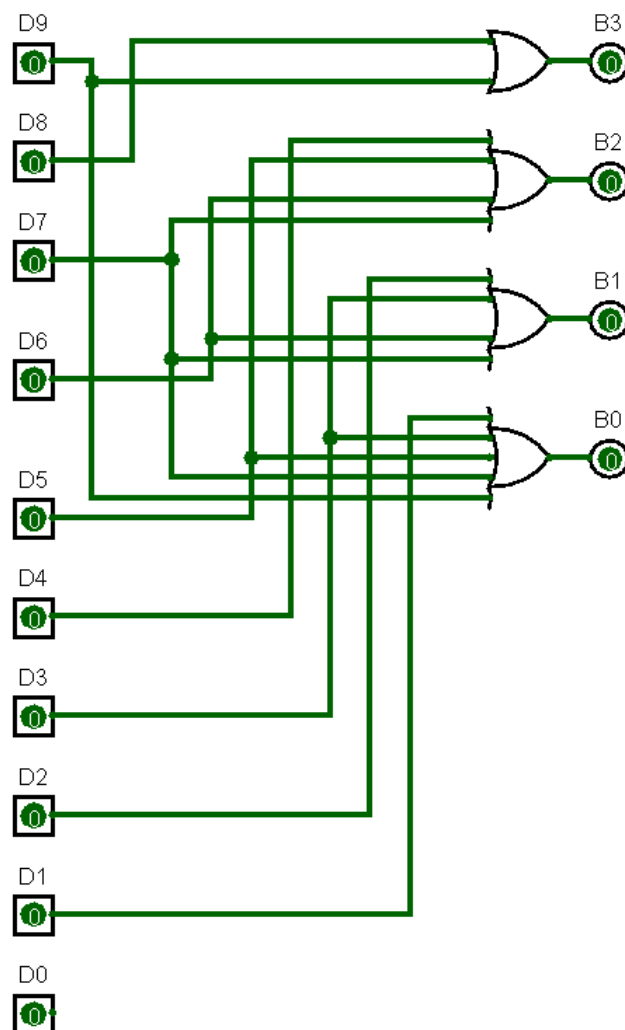
- a. Write truth table and block diagram for Decimal to BCD Encoder
- b. Construct the circuits for Decimal to BCD Encoder using appropriate ICs. Verify the functionality and show the output to the course leader
- c. Using an example, describe how a decoder can be implemented using a Demultiplexer.

Your document should include:

- Handwritten truth table and block diagrams for the circuit in 3(a).
- Answer to 3(c)

**Name: DEEPAK R**  
3.b

**Reg. No: 18ETCS002041**



**Name: DEEPAK R**

**Reg. No: 18ETCS002041**

3.c

To see how a demultiplexer can be made into a decoder let's first see the function tables of a demultiplexer and a decoder, and the example we will be taking here will be of a 1:4 DEMUX and a 2:4 DECODER:

1:4 DEMUX			
I	S1	S0	Y
I0	0	0	I0
I1	0	1	I1
I2	1	0	I2
I3	1	1	I3

2:4 DECODER					
I1	I0	Y0	Y1	Y2	Y3
0	0	1	0	0	0
0	1	0	1	0	0
1	0	0	0	1	0
1	1	0	0		1

From this we can observe that in a DEMUX the input is directly sent to the corresponding output line given the right select bits, and in a decoder its essentially the same thing, just that the output is 1 for the line number corresponding to the select bit. So if we make the input line of a demux as 1, it becomes a decoder, the select lines of the demux become the input for the decoder.

