Summary (Block diagram)

Sparsh Mittal
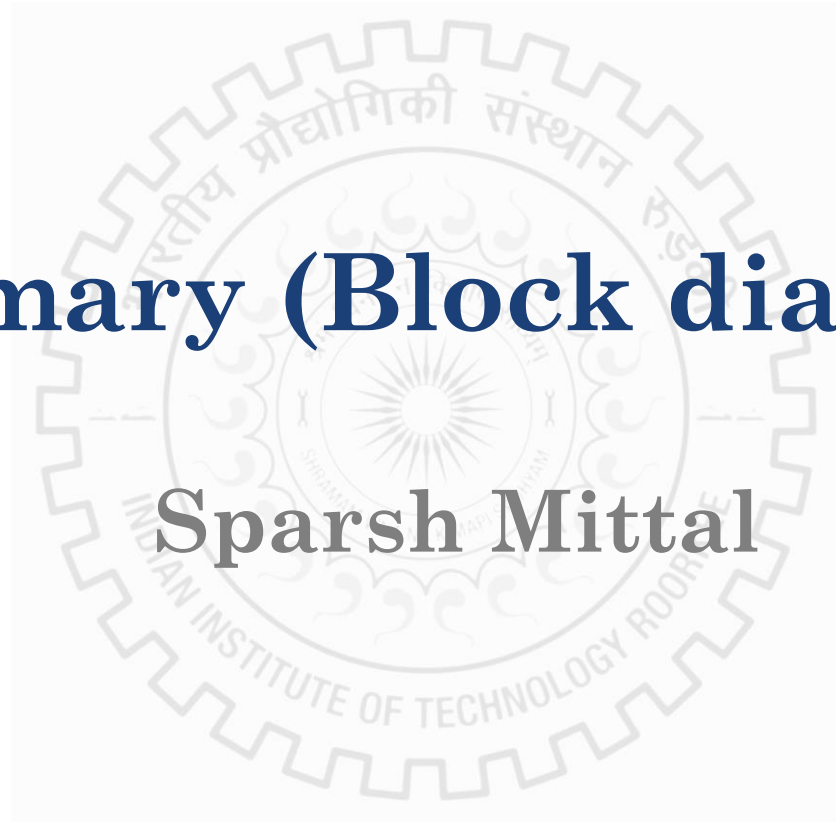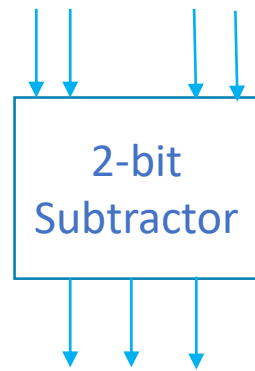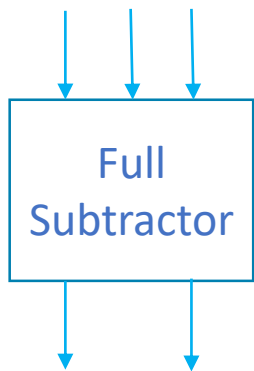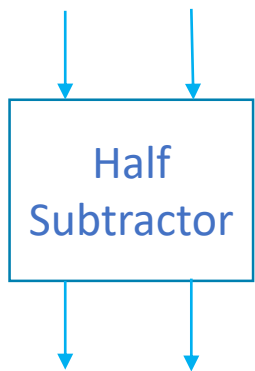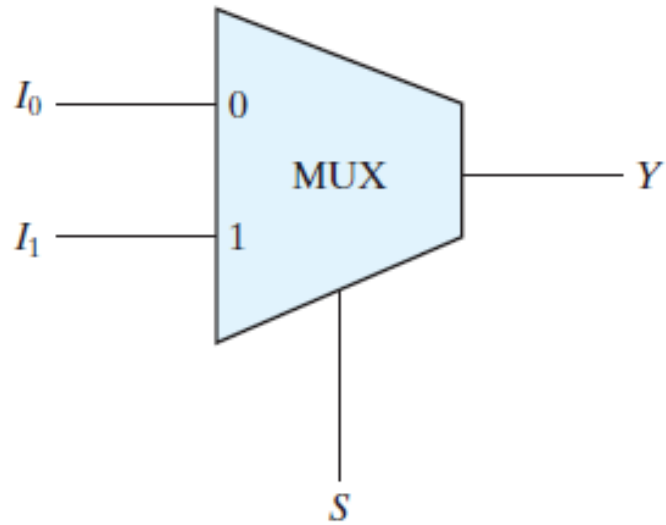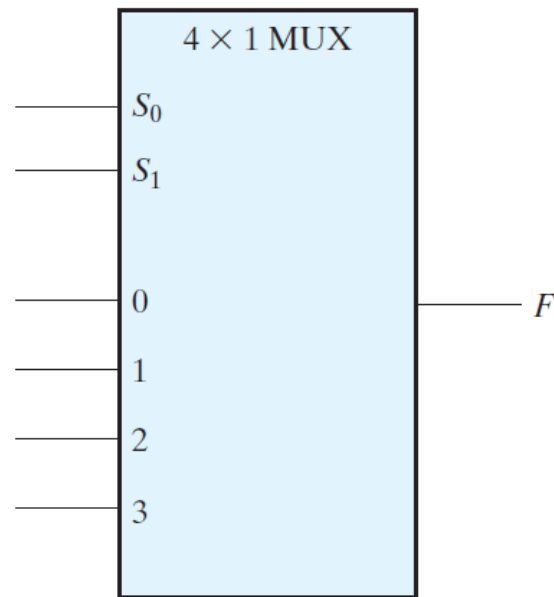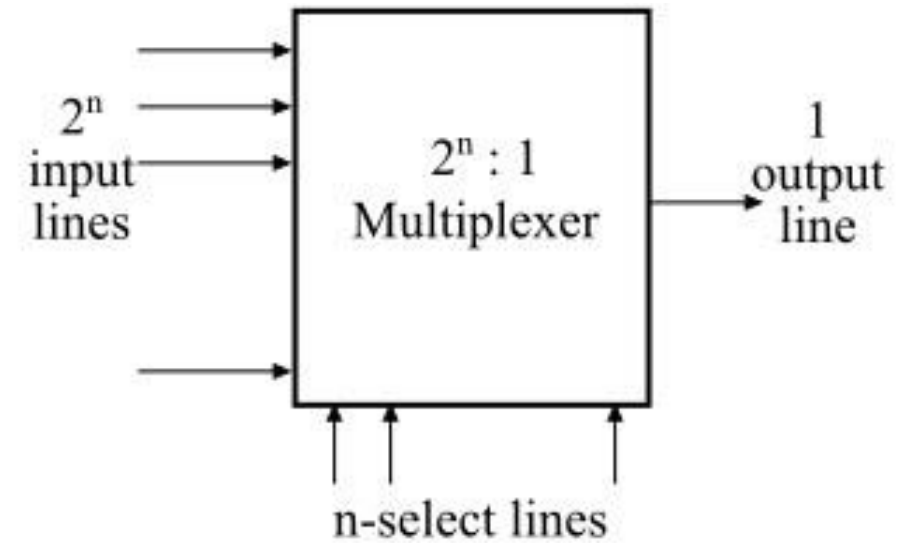
Half Adder	Full Adder	2-bit Adder

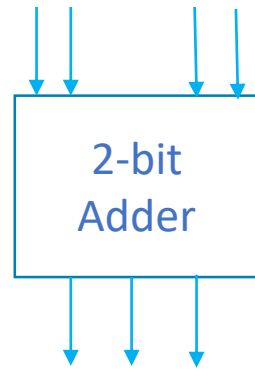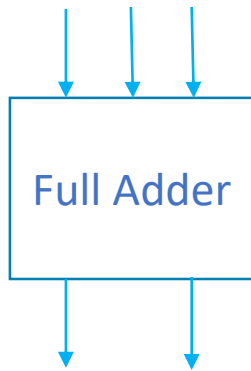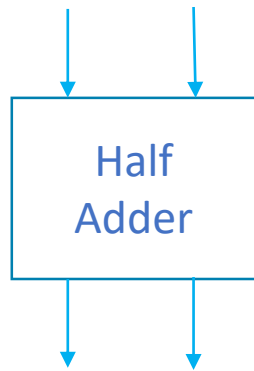| Half Subtractor	Full Subtractor	2-bit Subtractor

MUX

2:1 MUX

4:1 MUX

2^n:1 MUX

I_0 — 0

MUX

I_1 — 1

— Y

S

4×1 MUX

S_0

S_1

0

1

2

3

— F

2^n input lines

$2^n : 1$ Multiplexer

1 output line

n-select lines

Multi-bit MUX

Demux

Input

Din

1 : 8
DEMUX

Outputs

Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7

S2   S1   S0
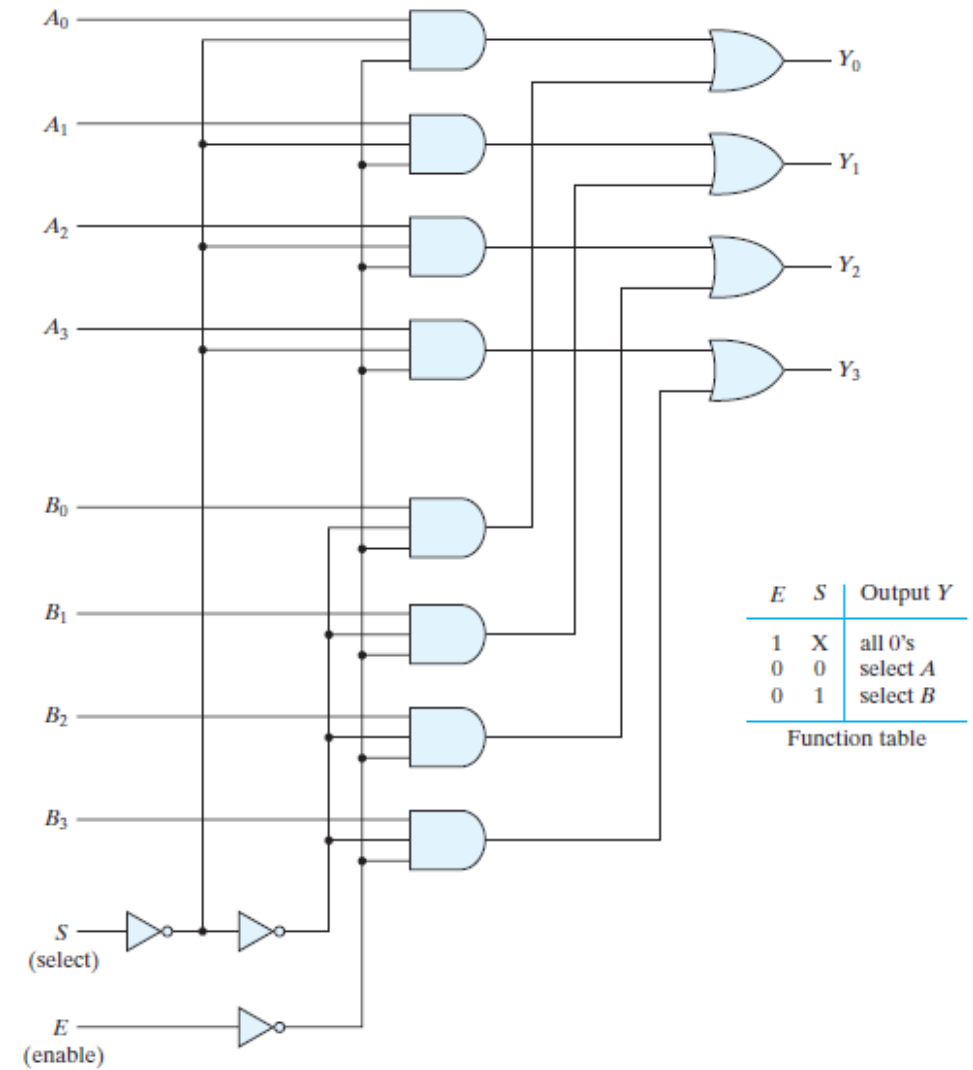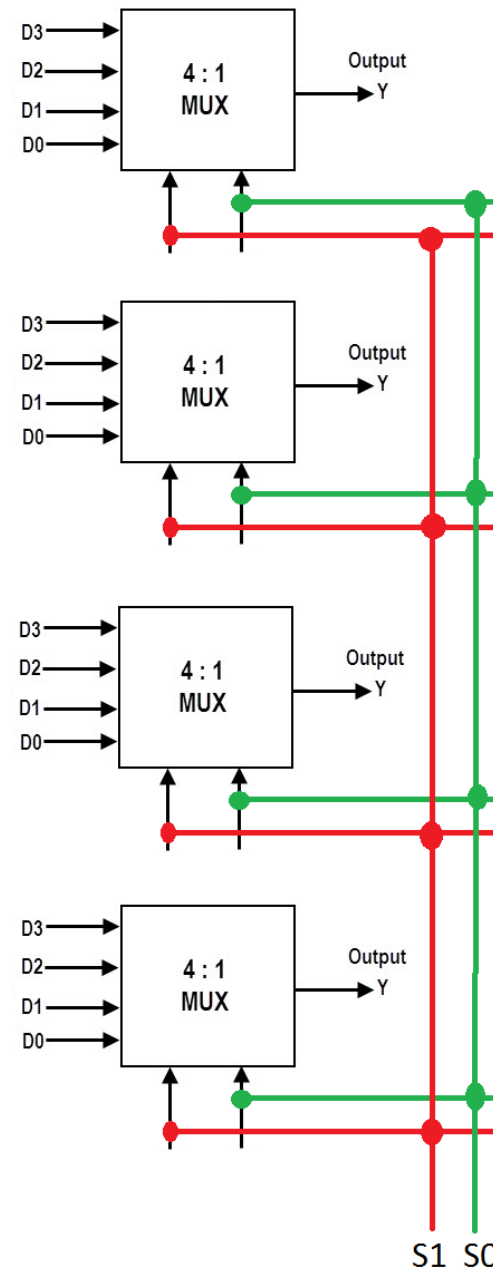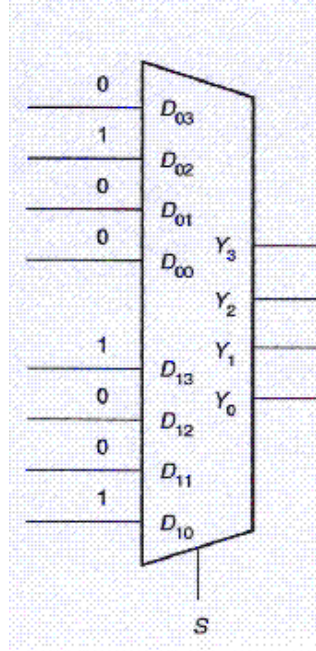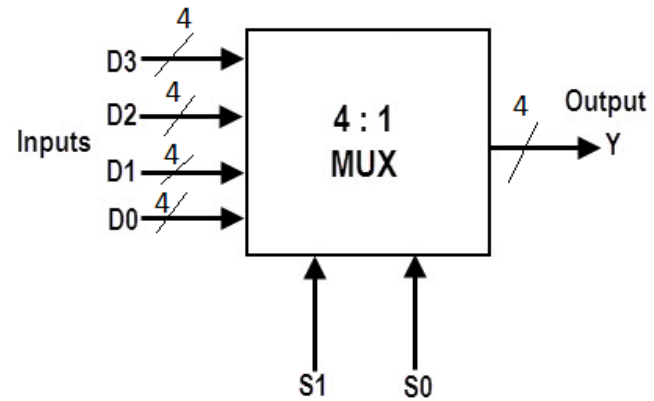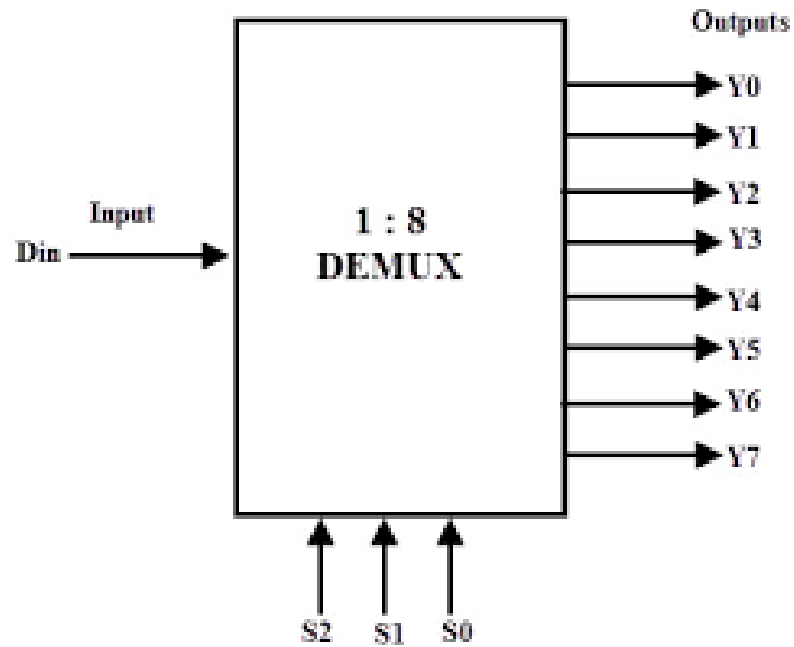
Difference Between MUX and DEMUX

Multiplexer (MUX)

2^n Input Channels
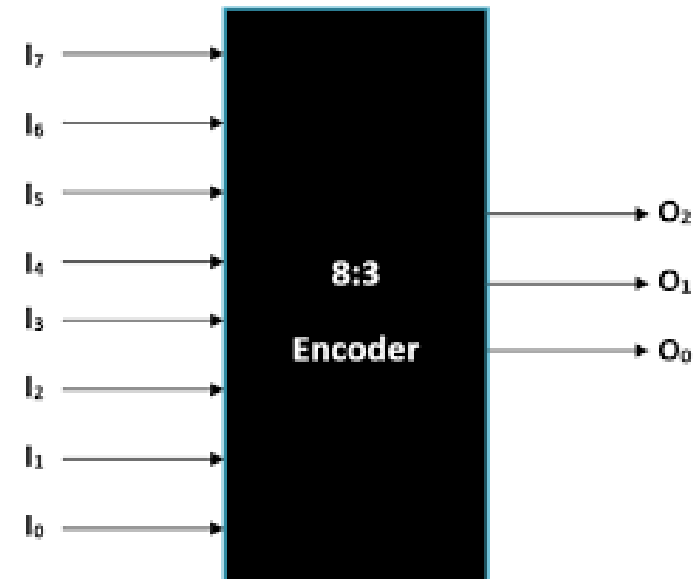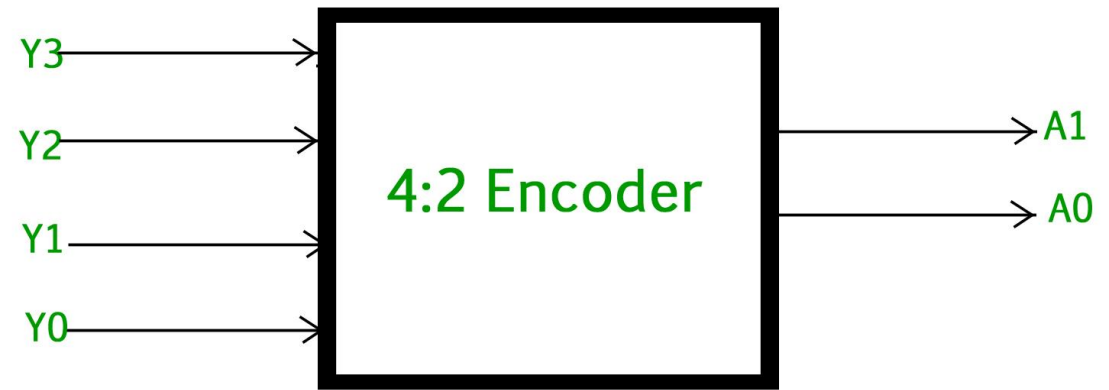
n Control Signals

Enable

MUX Multiplexer

Output

Demultiplexer (DEMUX)

Data Input

n Control Signals

Enable

DEMUX Demultiplexer

2^n Output Channels

I I T ROORKEE
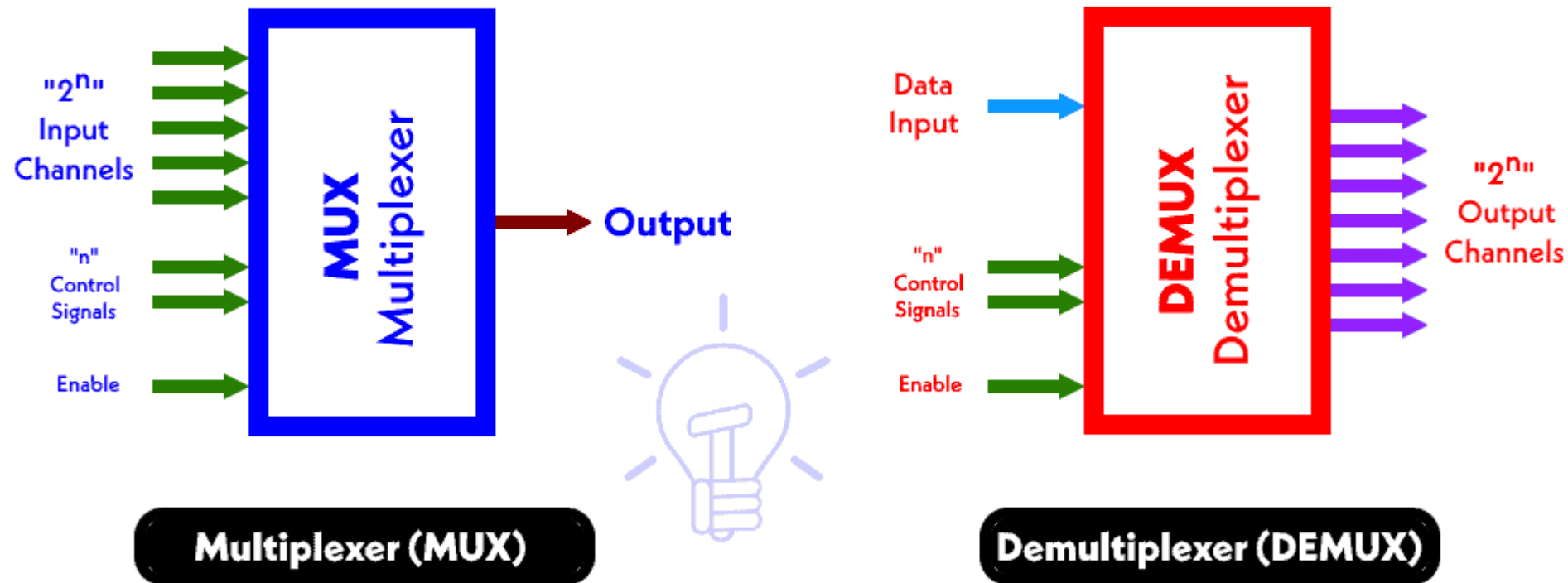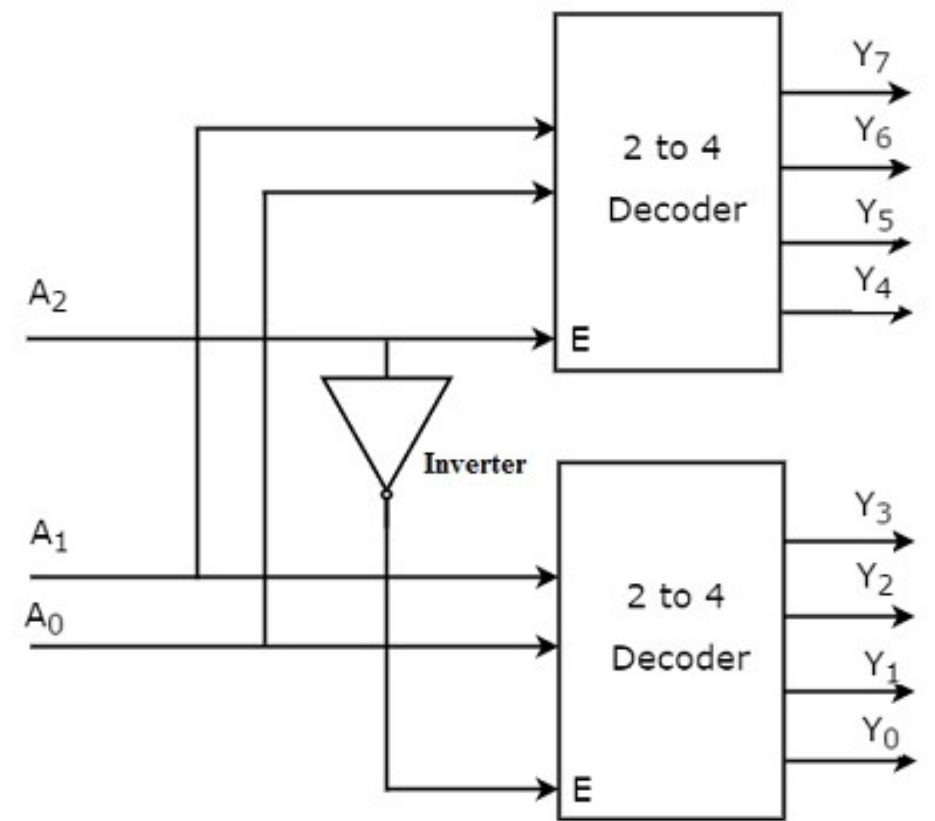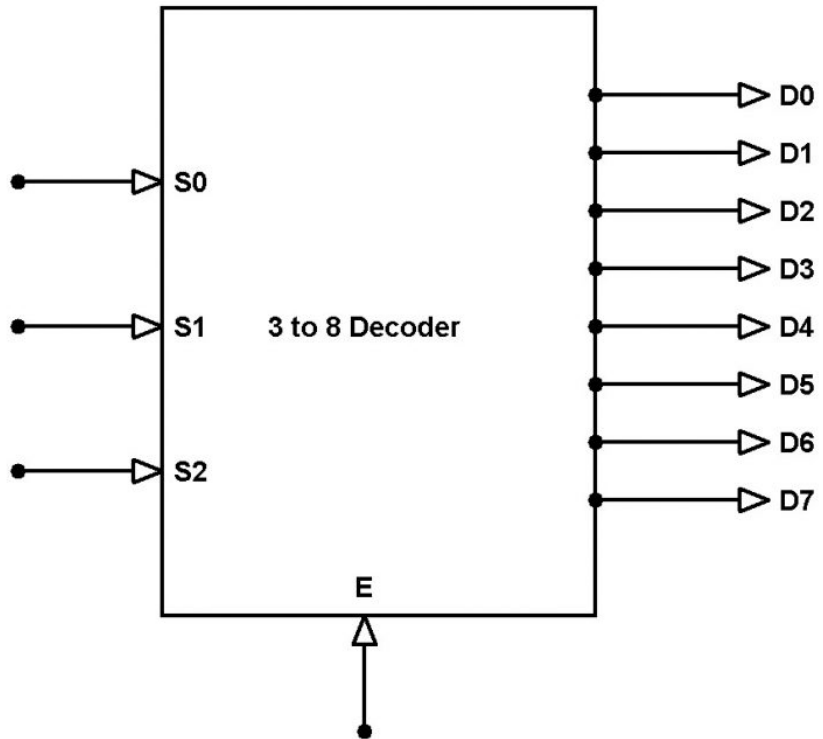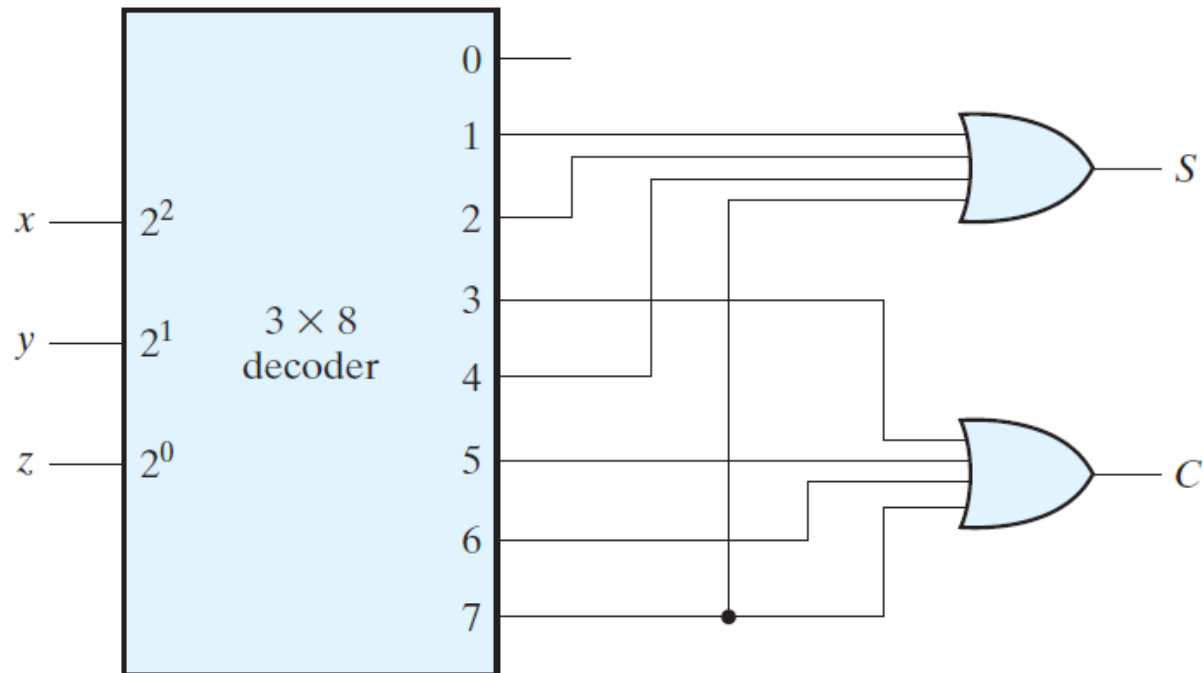
Encoder
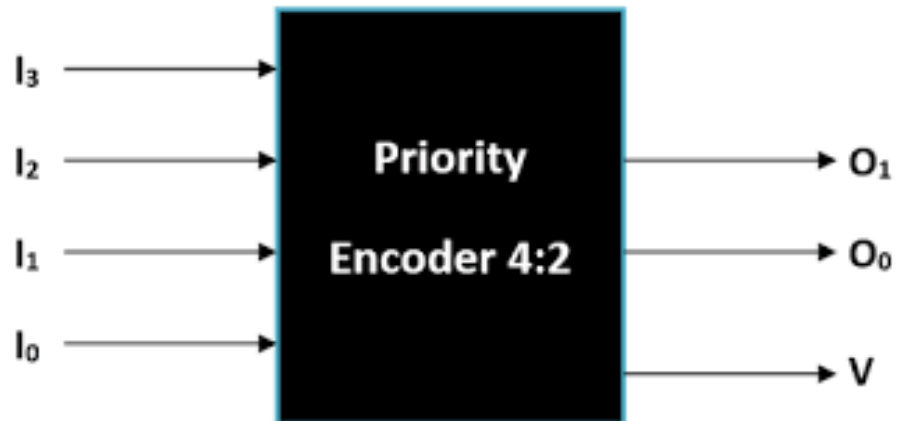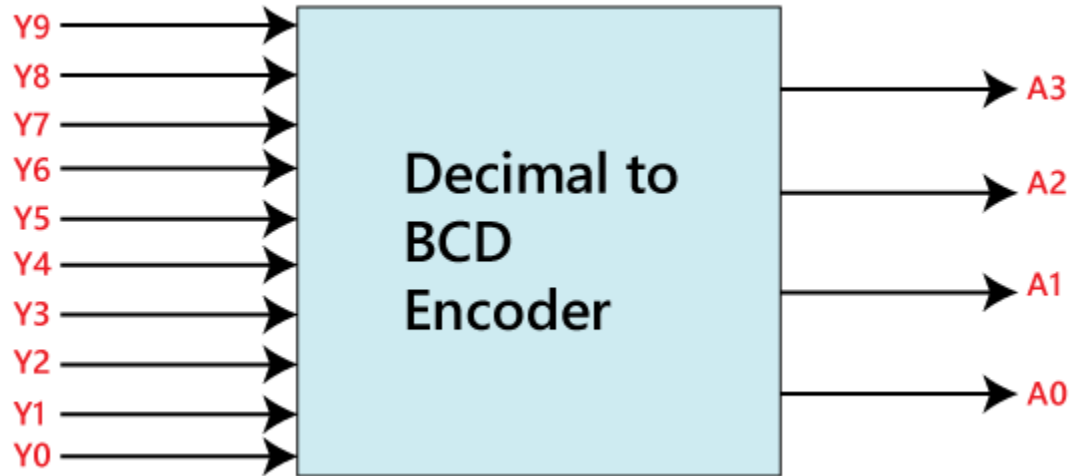
Decoder

Decoder vs MUX

To implement any function using decoder, add required gates at output

To implement any function using MUX, add required gates at input