SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECB204 – LINEAR AND DIGITAL CIRCUITS

II YEAR/ III SEMESTER

UNIT 4 – COMBINATIONAL and SEQUENTIAL CIRCUITS
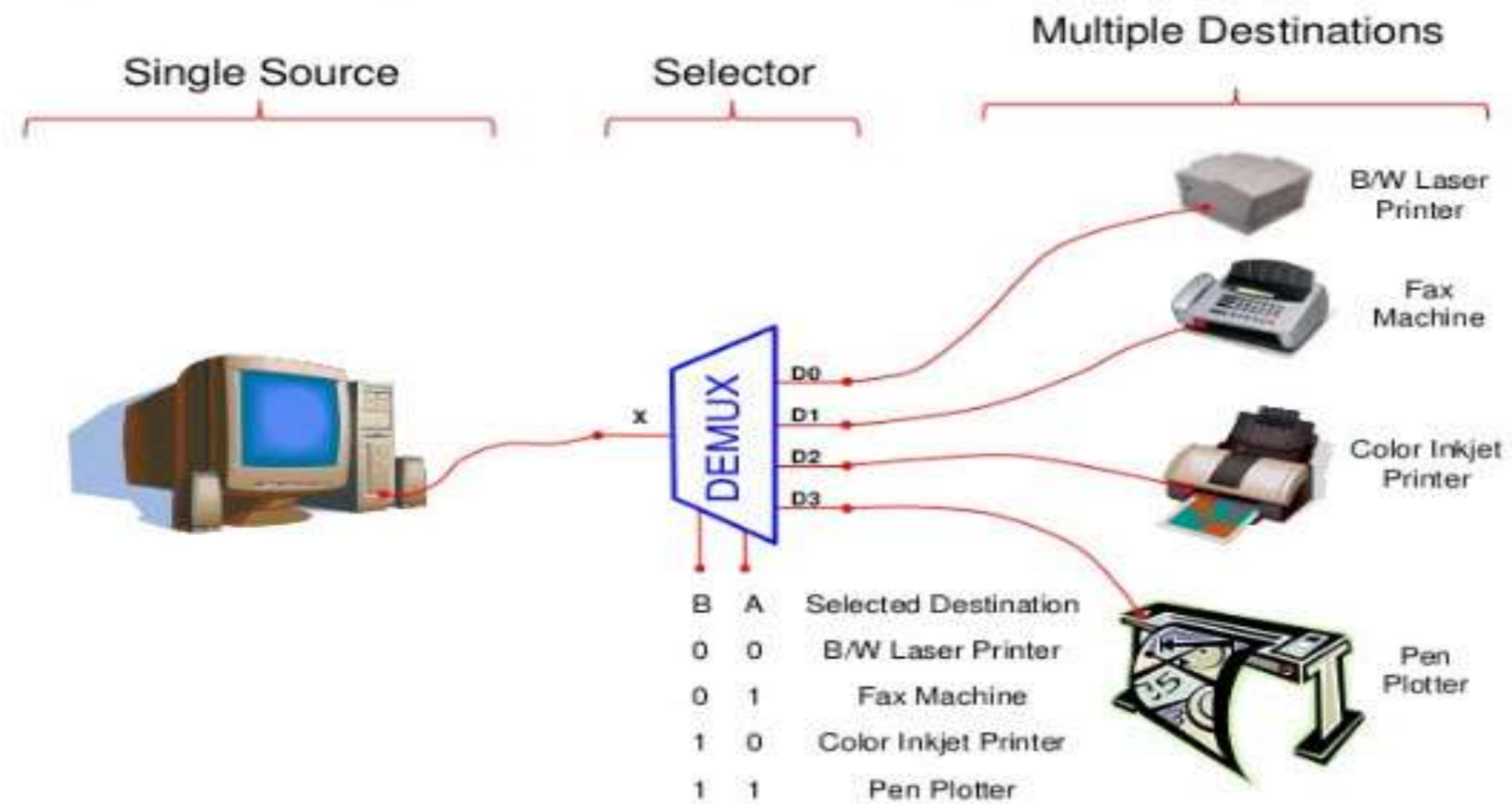
TOPIC 1 – DEMULTIPLEXER

What is De Multiplexer?

➢ De-Multiplexer is a combinational circuit that performs the reverse operation of Multiplexer. It has single input, 'n' selection lines and maximum of 2n outputs.

➢One of these data inputs will be connected to the output based on the values of selection lines..
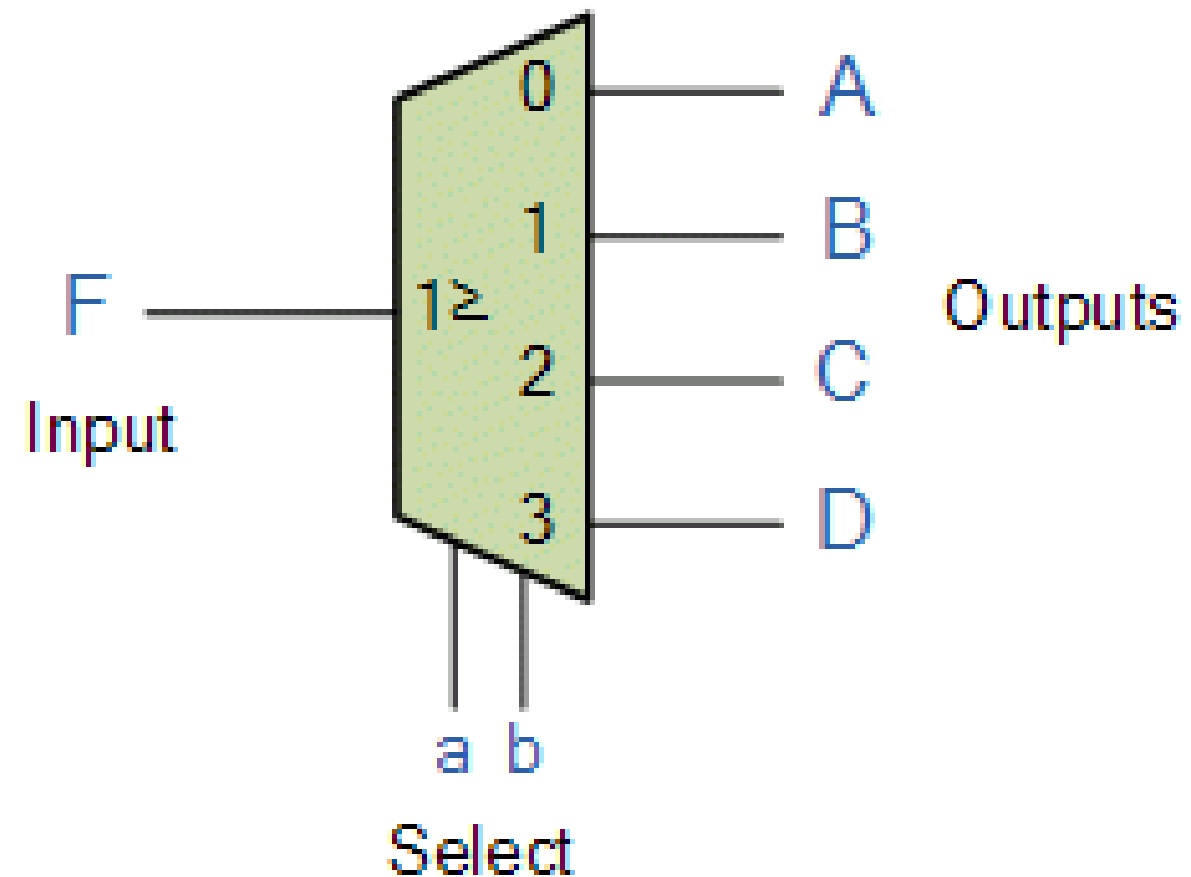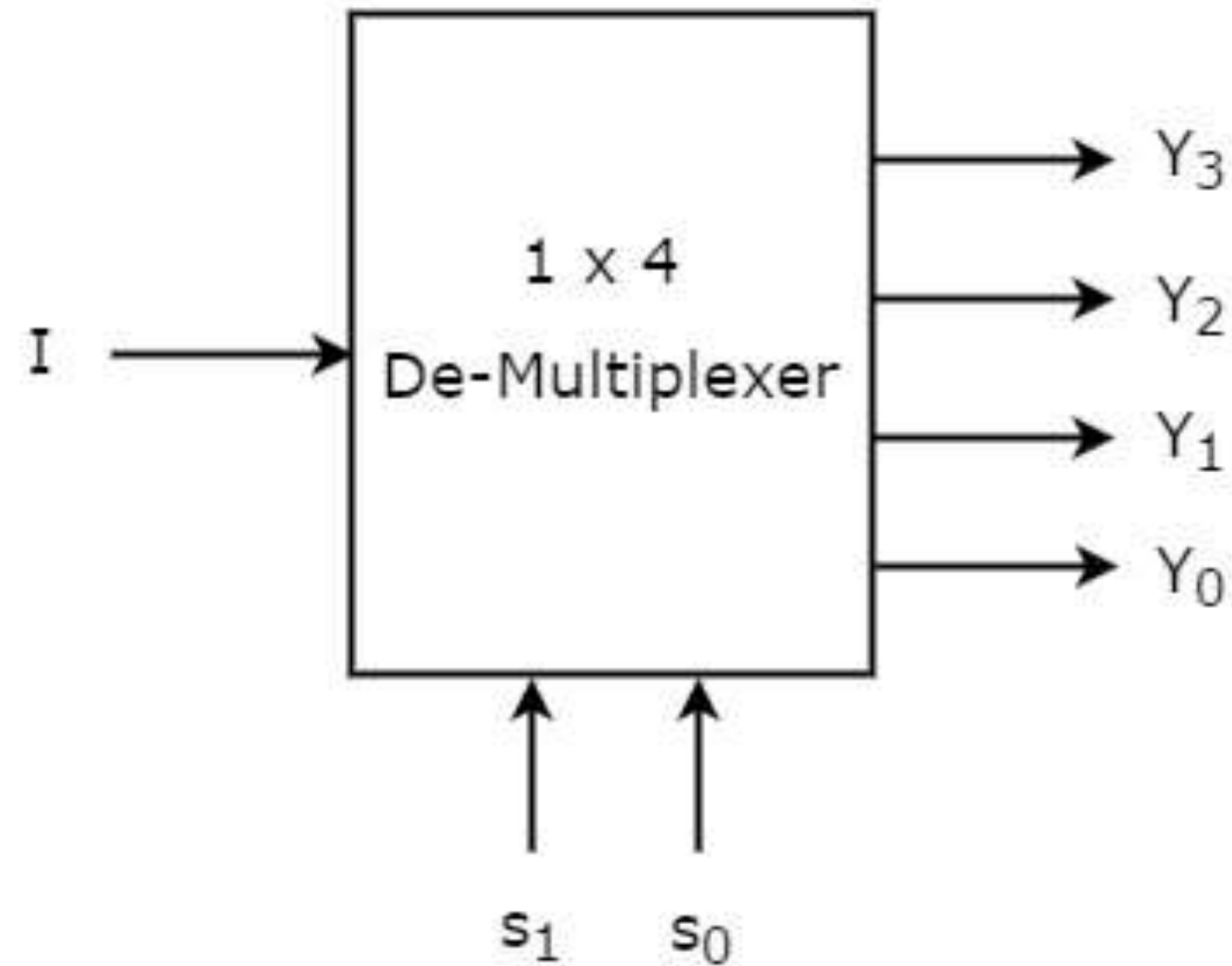
DeMultiplexer - Types

1x4 De-Multiplexer

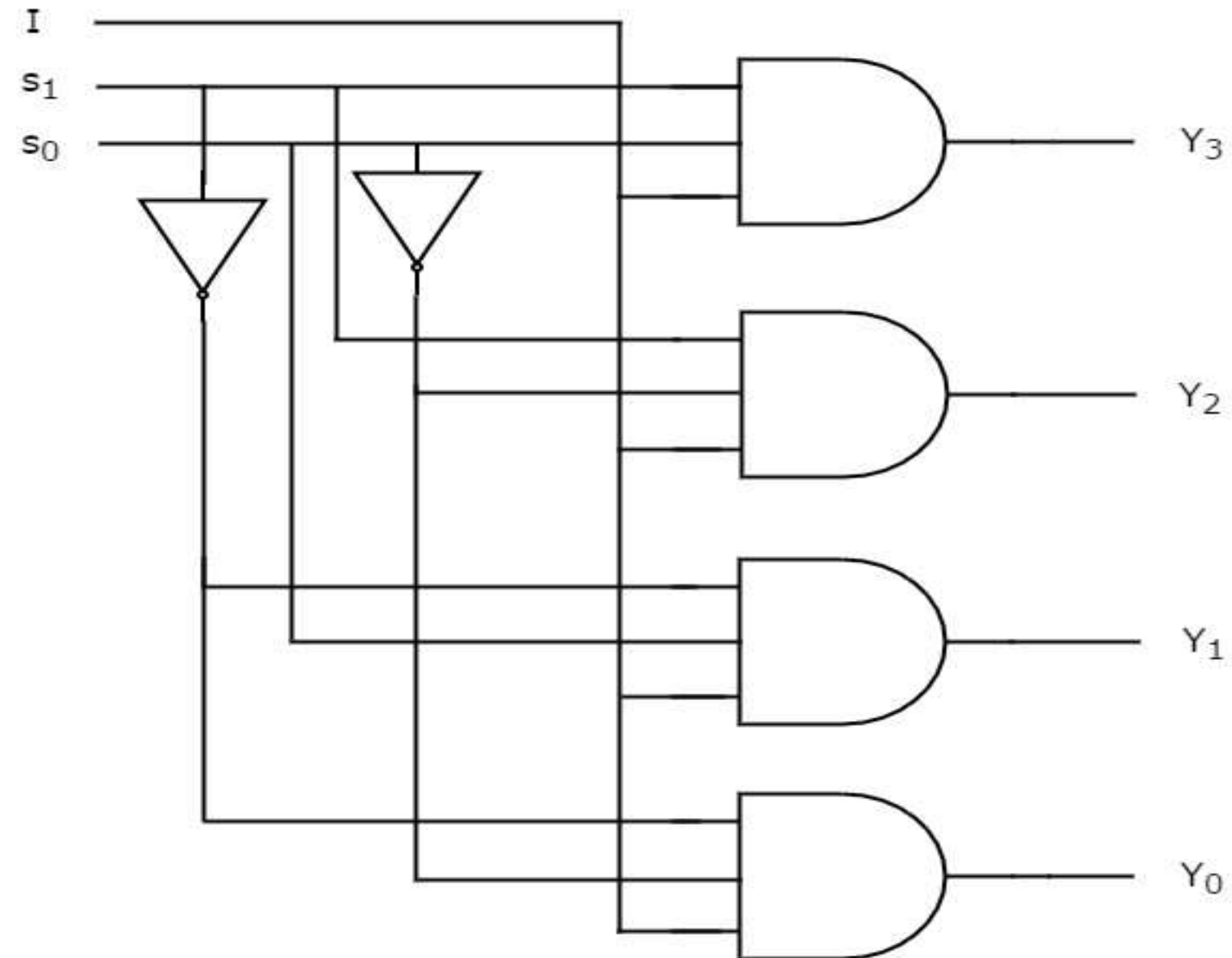➢ 1x4 De-Multiplexer has one input I, two selection lines, s1 & s0 and four outputs Y3, Y2, Y1 &Y0.

➤ The single input 'I' will be connected to one of the four outputs, Y3 to Y0 based on the values of selection lines s1 & s0. The Truth table of 1x4 De-Multiplexer is shown below.

Selection Inputs		Outputs			
S_1	S_0	Y_3	Y_2	Y_1	Y_0
0	0	0	0	0	I
0	1	0	0	I	0
1	0	0	I	0	0
1	1	I	0	0	0

We can implement these Boolean functions using Inverters & 3-input AND gates. The circuit diagram of 1x4 De-Multiplexer is shown in the following figure.
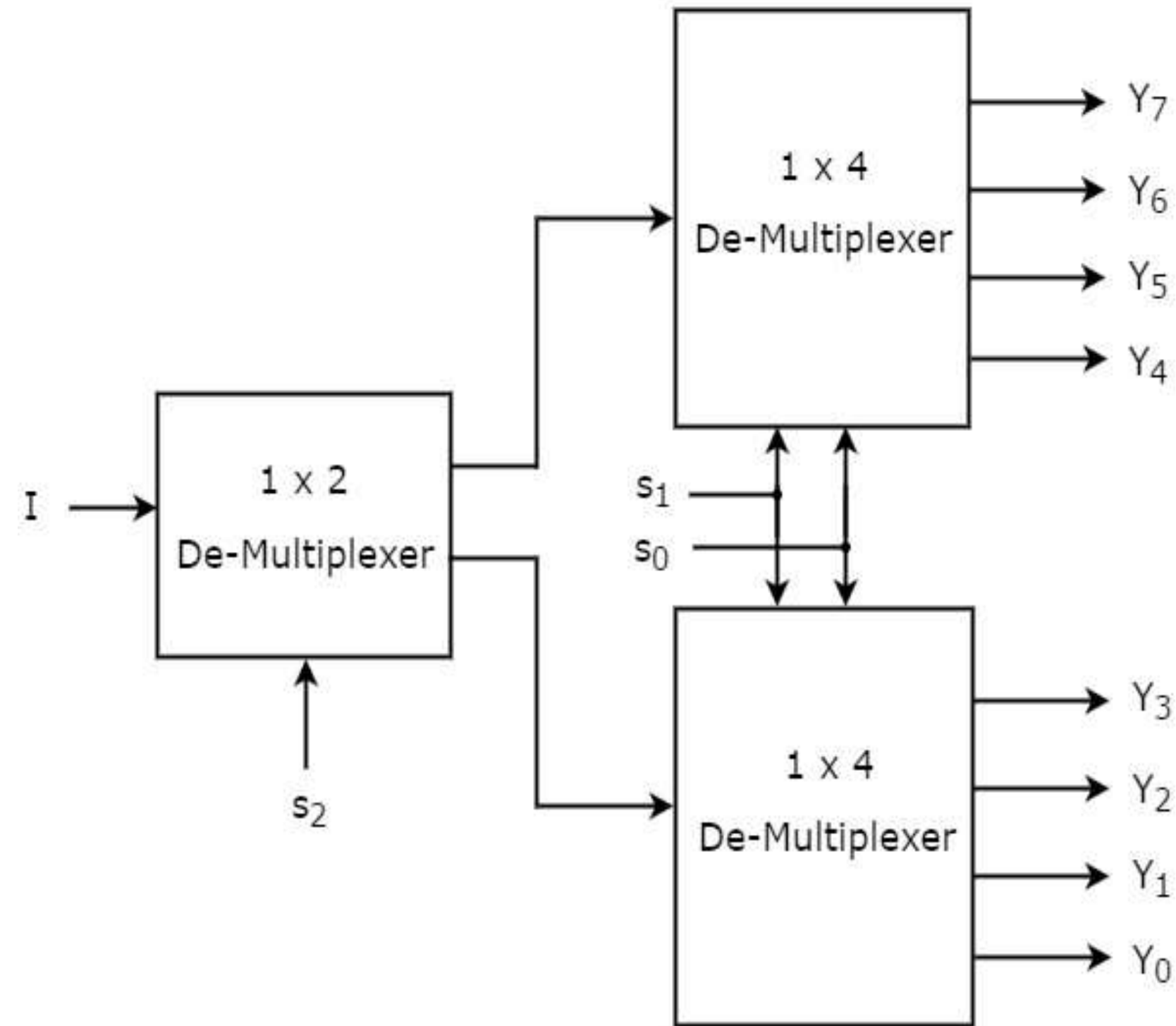
1x8 De-Multiplexer

1x8 De-Multiplexer has single input, three selection lines and eight outputs.

1x8 De-Multiplexer has one input I, three selection lines s2, s1 & s0 and outputs Y7 to Y0. The Truth table of 1x8 De-Multiplexer is shown below.

Selection Inputs			Outputs							
s_2	s_1	s_0	Y_7	Y_6	Y_5	Y_4	Y_3	Y_2	Y_1	Y_0
0	0	0	0	0	0	0	0	0	0	I
0	0	1	0	0	0	0	0	0	I	0
0	1	0	0	0	0	0	0	I	0	0
0	1	1	0	0	0	0	I	0	0	0
1	0	0	0	0	0	I	0	0	0	0
1	0	1	0	0	I	0	0	0	0	0
1	1	0	0	I	0	0	0	0	0	0
1	1	1	I	0	0	0	0	0	0	0

Activity Time
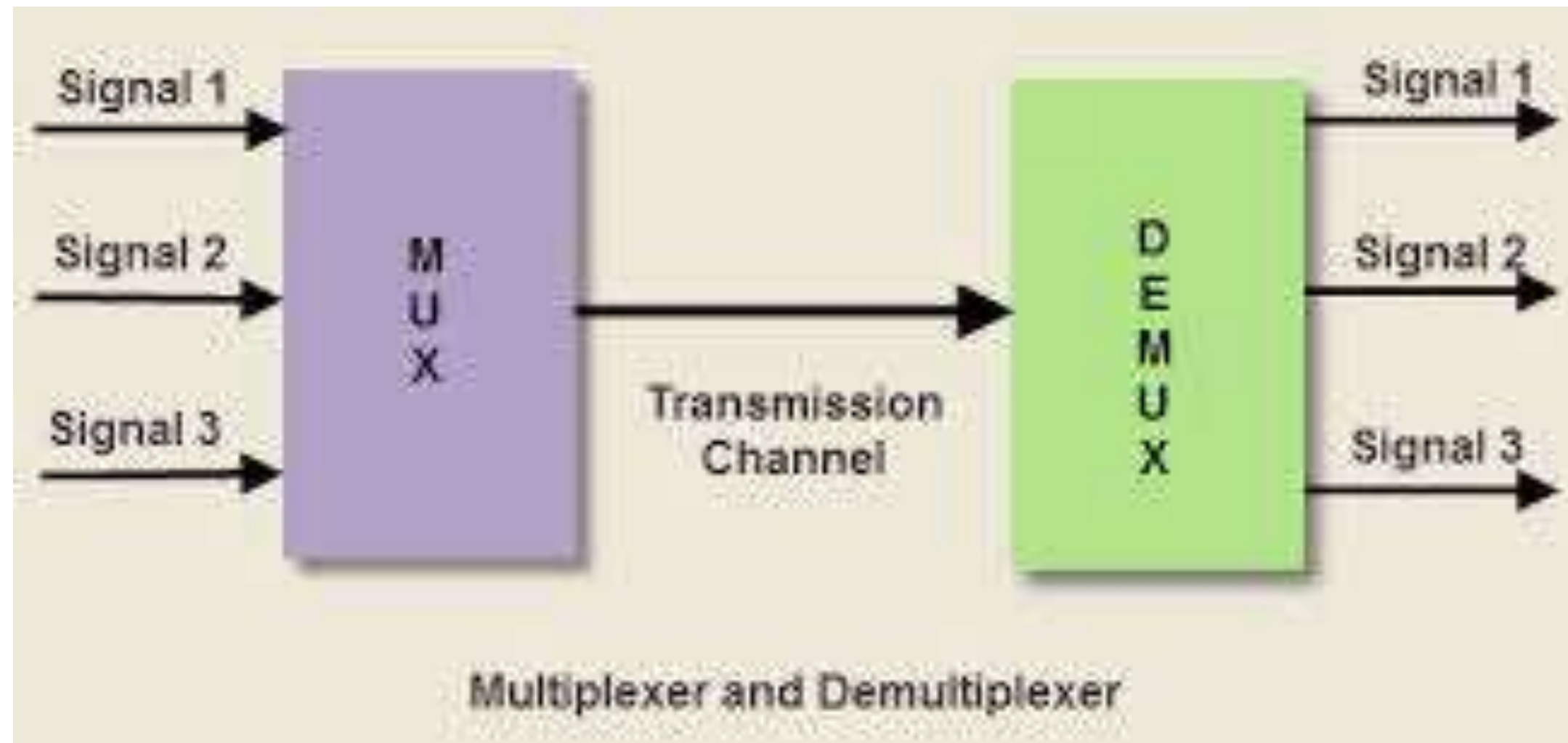
Applications

Demultiplexer is used to connect a single source to multiple destinations. The main application area of demultiplexer is communication system where multiplexer are used.

Multiplexer and Demultiplexer
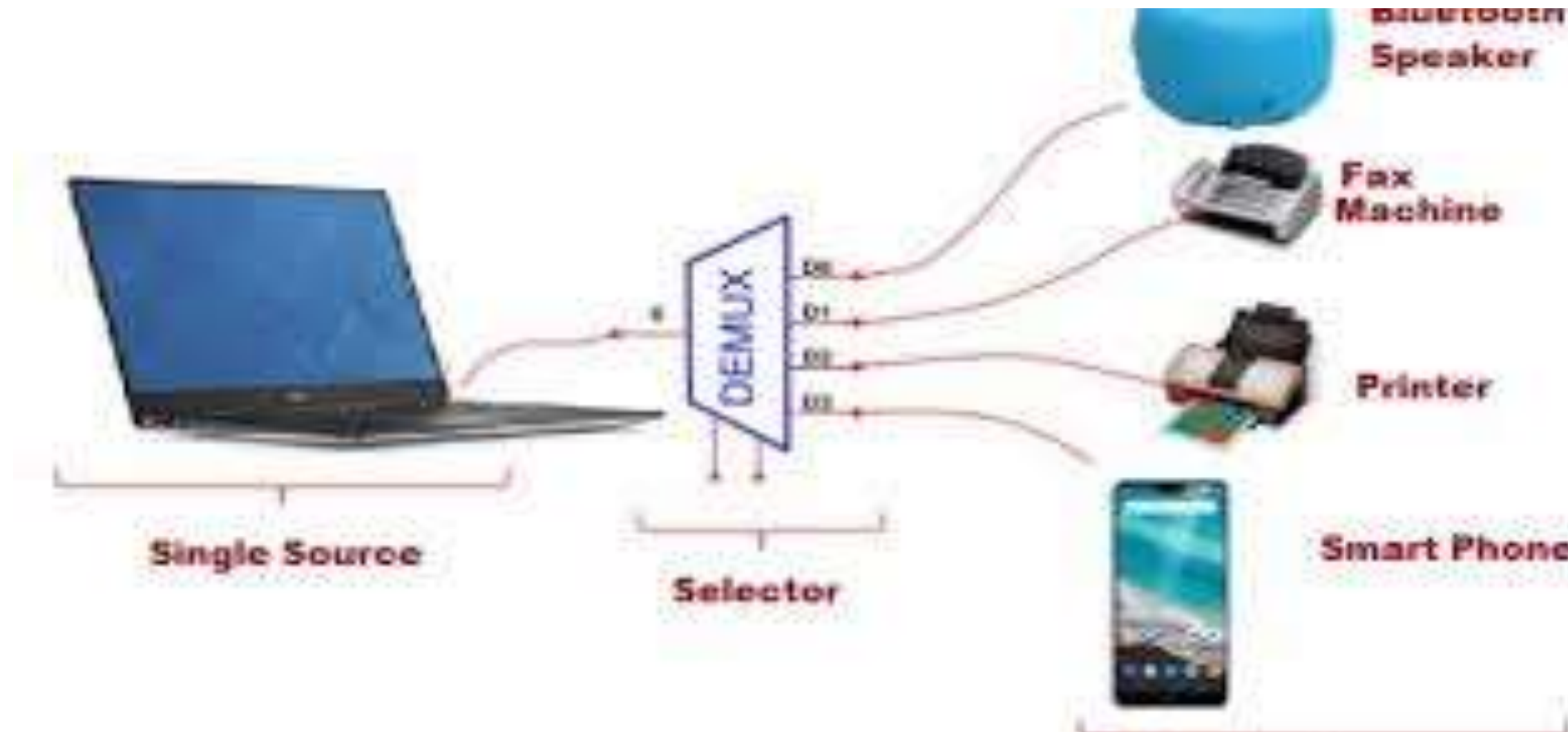
THINK
(Yourself)

PAIR
(With a partner)

SHARE
(Whole class)

THANK YOU