



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A++' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

19ECB231 – DIGITAL ELECTRONICS

II YEAR/ III SEMESTER

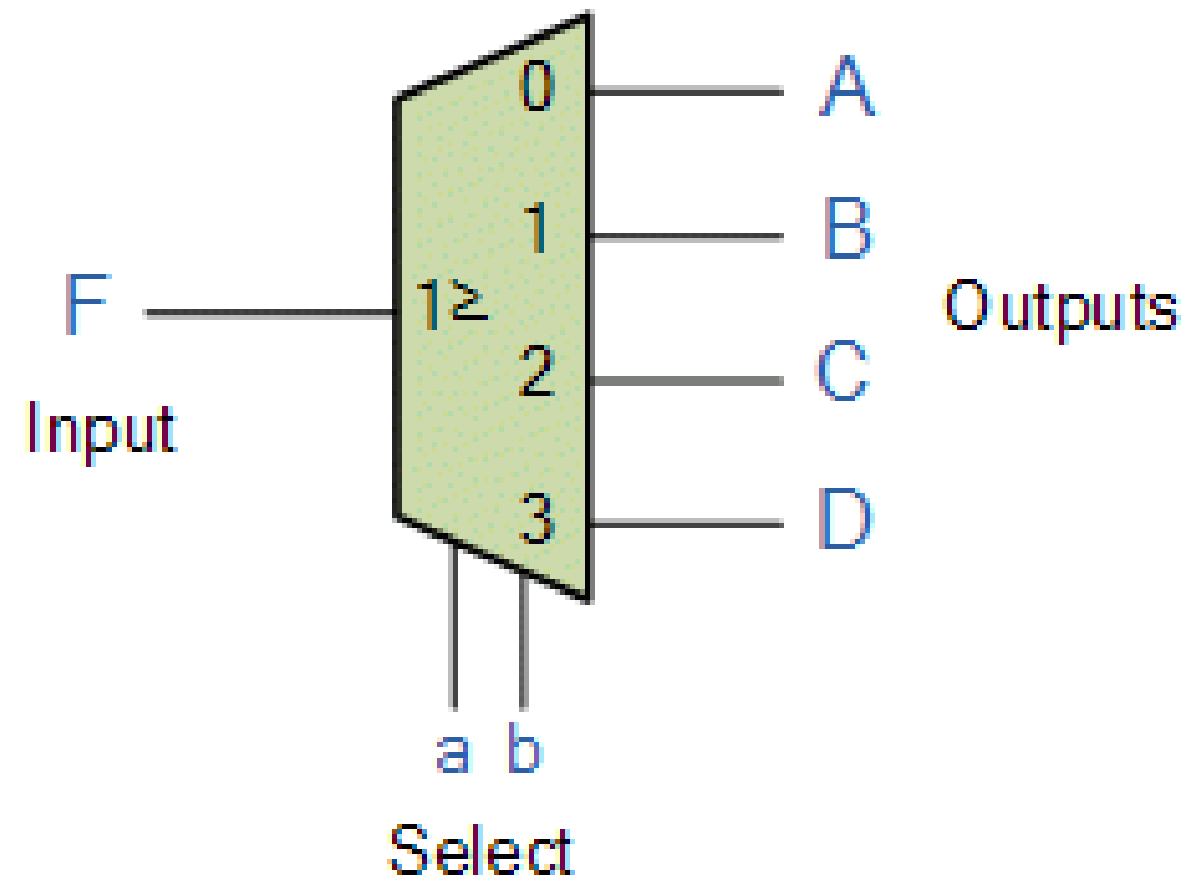
UNIT 2 – COMBINATIONAL CIRCUITS

TOPIC – 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 2^n outputs.
- One of these data inputs will be connected to the output based on the values of selection lines..

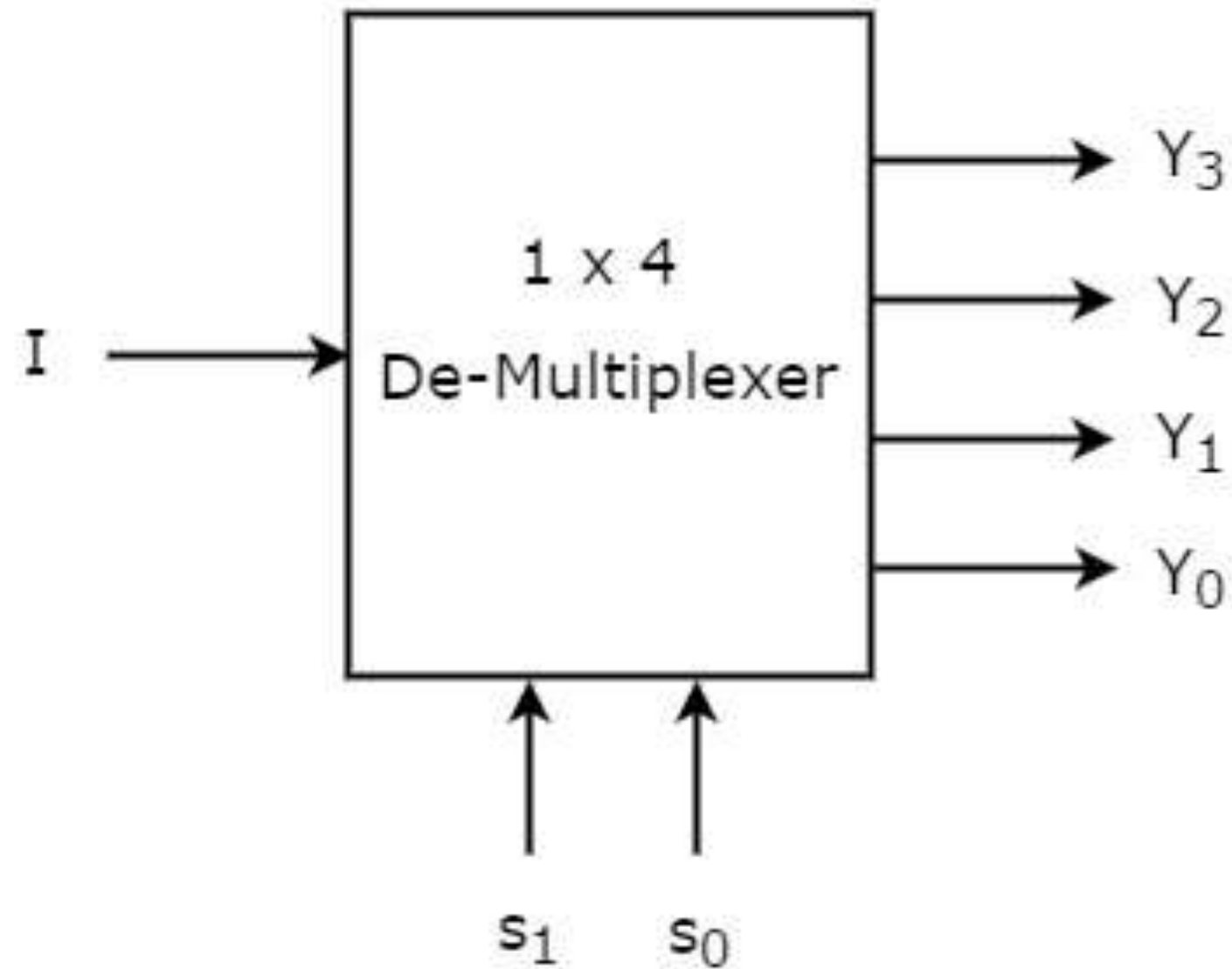




1x4 De-Multiplexer



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



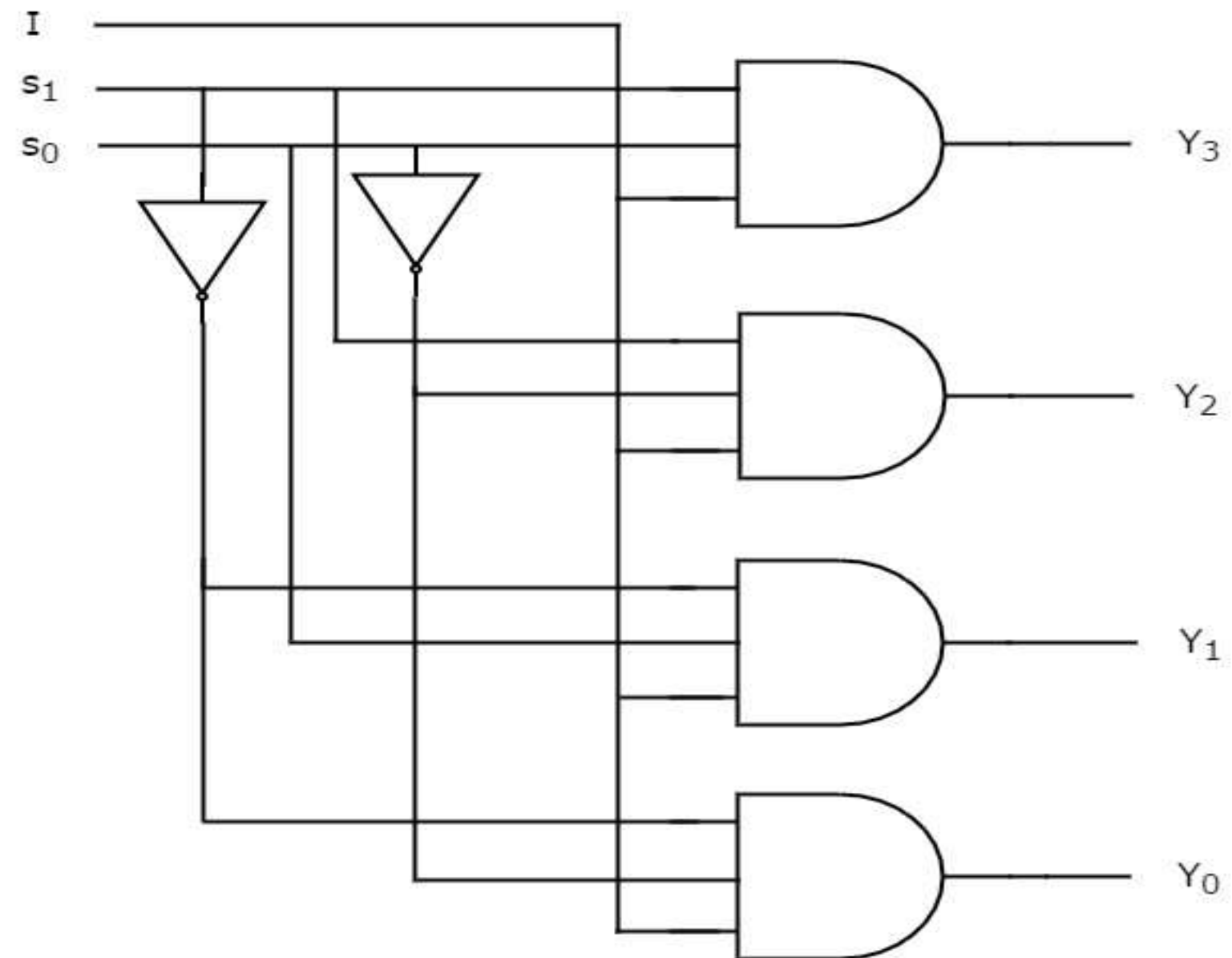


- The single input 'I' will be connected to one of the four outputs, Y3 to Y0 based on the values of selection lines s1 & s0. The Truth table of 1x4 De-Multiplexer is shown below.

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.

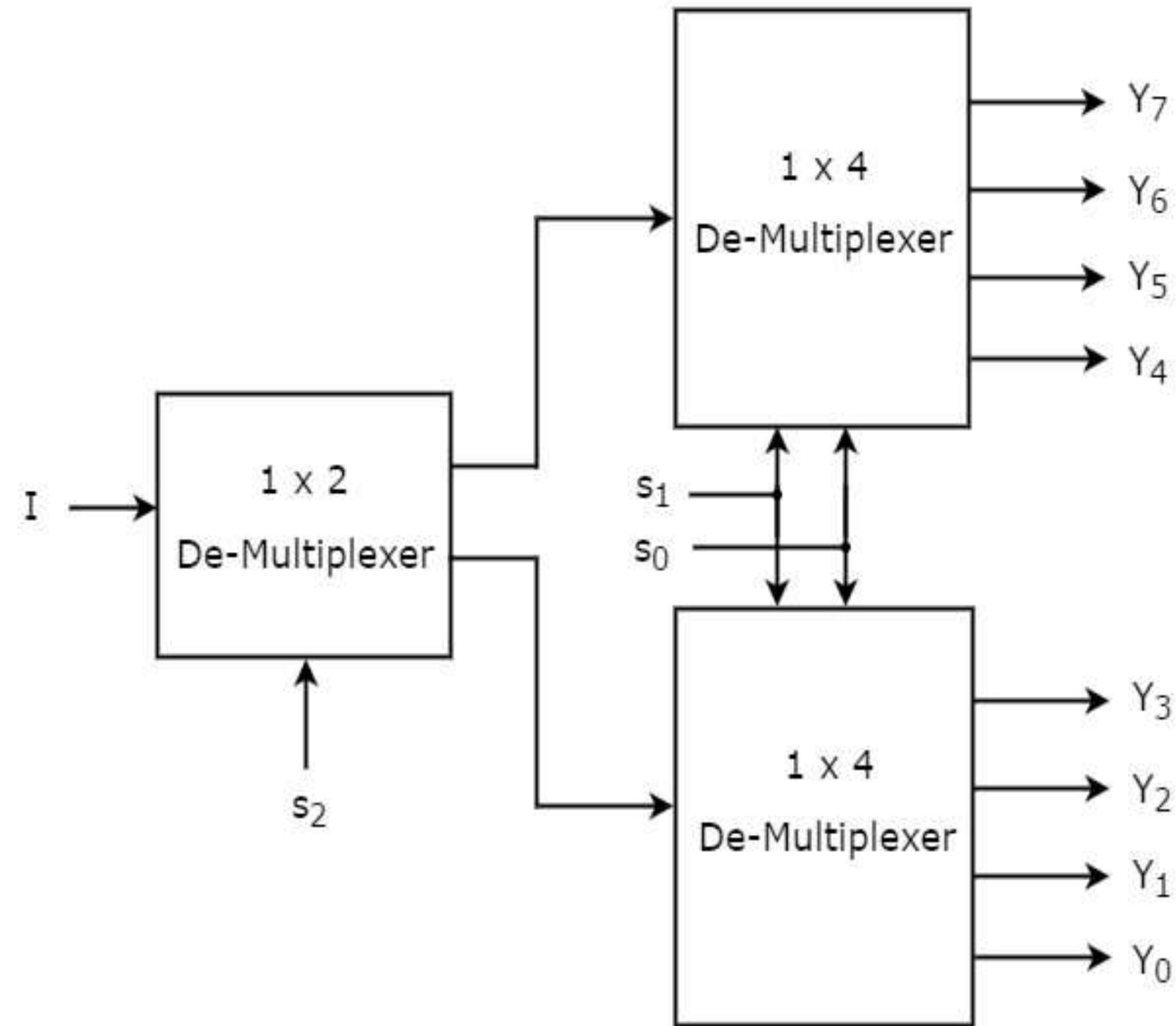




1x8 De-Multiplexer



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





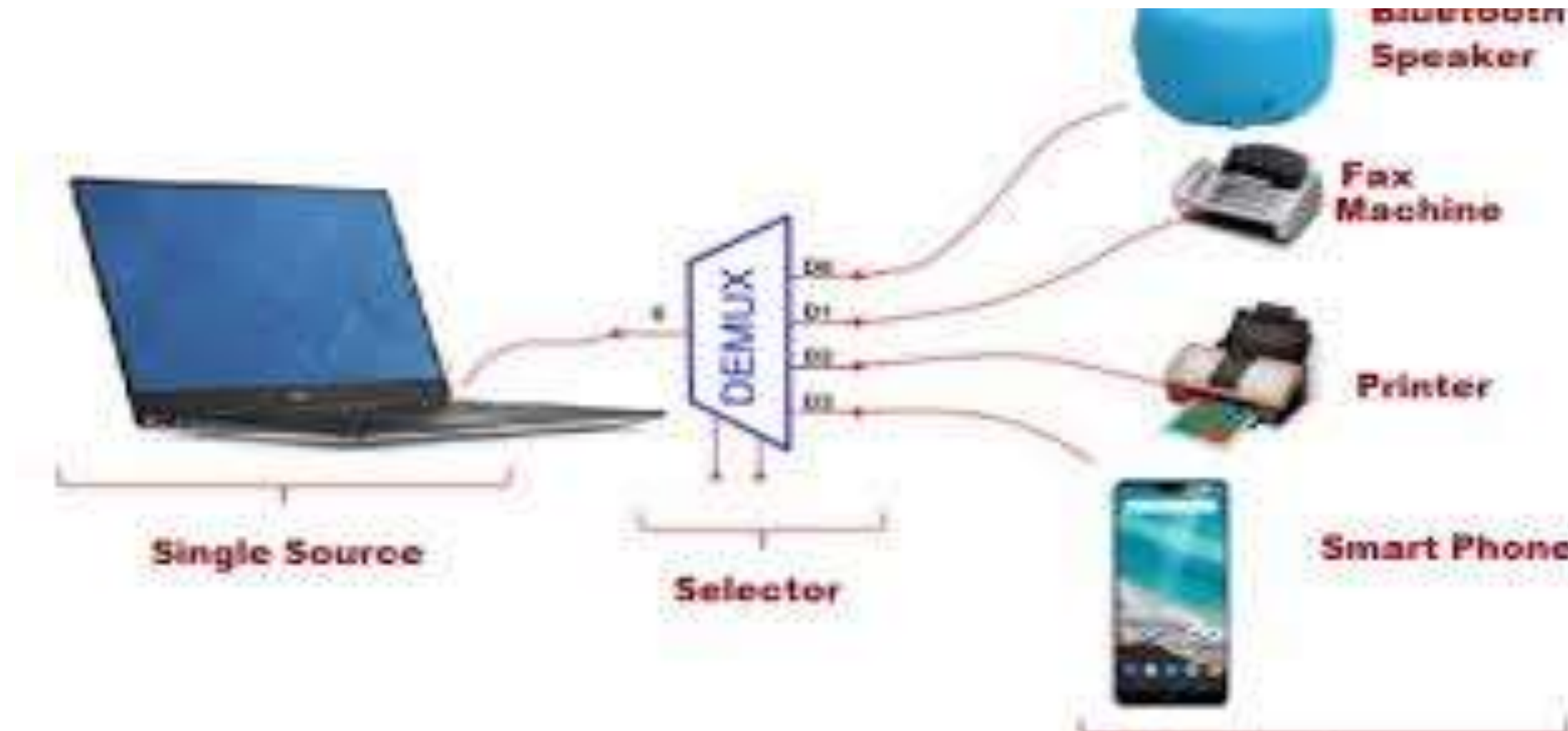
1x8 De-Multiplexer has one input I, three selection lines s₂, s₁ & s₀ and outputs Y₇ to Y₀. The Truth table of 1x8 De-Multiplexer is shown below.

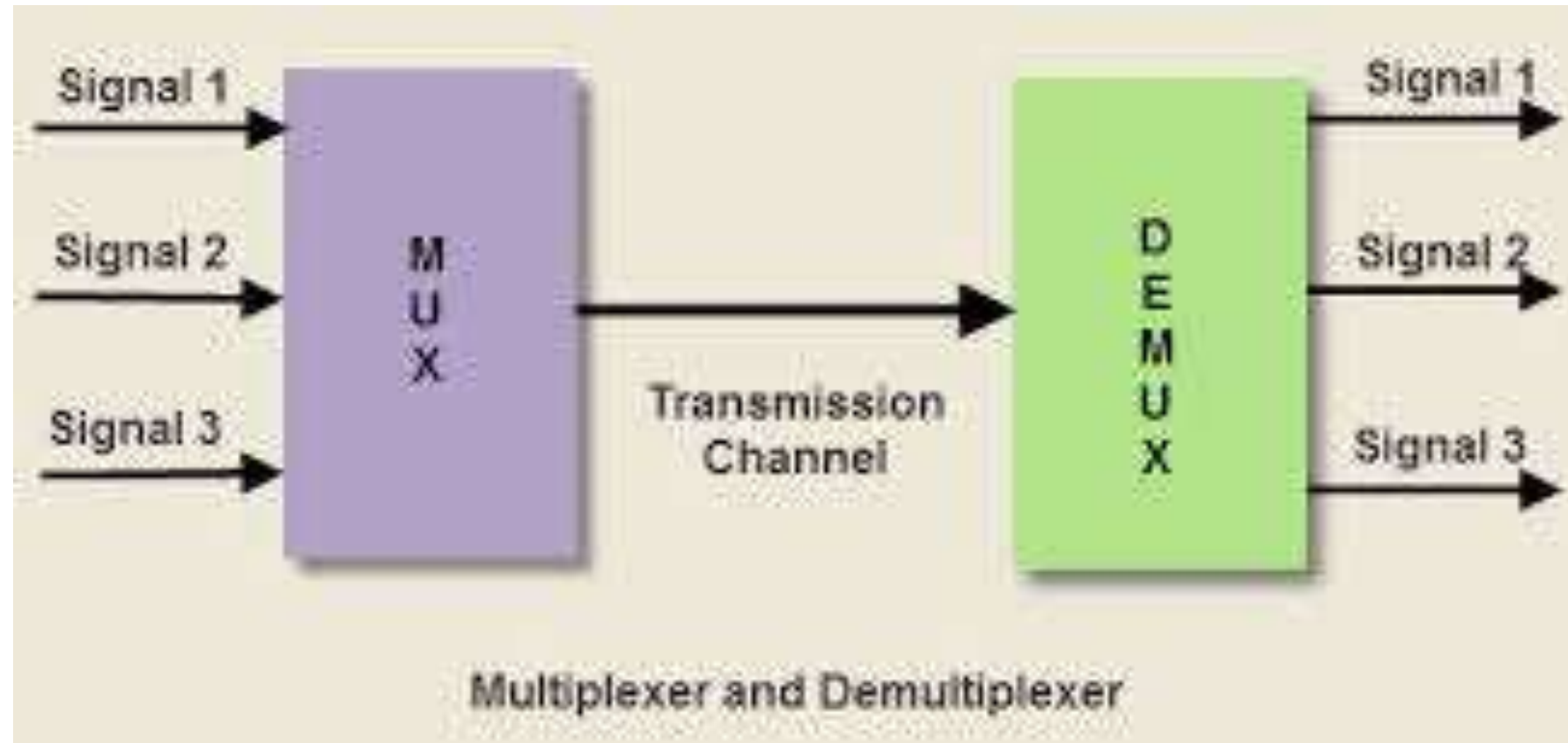
Selection Inputs			Outputs							
s ₂	s ₁	s ₀	Y ₇	Y ₆	Y ₅	Y ₄	Y ₃	Y ₂	Y ₁	Y ₀
0	0	0	0	0	0	0	0	0	0	I
0	0	1	0	0	0	0	0	0	I	0
0	1	0	0	0	0	0	0	I	0	0
0	1	1	0	0	0	0	I	0	0	0
1	0	0	0	0	0	I	0	0	0	0
1	0	1	0	0	I	0	0	0	0	0
1	1	0	0	I	0	0	0	0	0	0
1	1	1	I	0	0	0	0	0	0	0



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.







THANK YOU