Assignment

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Topic: Multiplexer and De- Multiplexer

Section: Sec A (Evening)

Difference between Multiplexer and De- Multiplexer

Multiplexer	De-Multiplexer
Multiplexer is a combinational circuit that has maximum of 2^n data inputs, 'n' selection lines and single output line. One of these data inputs will be connected to the output based on the values of selection lines.	**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. The input will be connected to one of these outputs based on the values of selection lines.
Multiplexer takes two or a lot of signals and returns single output.	**De-multiplexer** reverses what the multiplexer does.
Communication system use **multiplexer** to carry multiple data like audio, video and other form of data using a single line for transmission.	The **demultiplexer** receive the output signals of the **multiplexer** and converts them back to the original form of the data at the receiving end.
A **multiplexer** is used in telephone networks to integrate the multiple audio signals on a single line of transmission.	In an ALU circuit, the output of ALU can be stored in multiple registers or storage units with the help of **demultiplexer**.

Multiplexer of 8x1:

Multiplexer of 8x1 has 8 input lines and 1 output lines,

Select lines will be , $2^s = n$, $2^s = 8$, $2^s = 2^3$, $s = 3$

Truth Table:

S_0	S_1	S_2	Output
0	0	0	O_0
0	0	1	O_1
0	1	0	O_2
0	1	1	O_3
1	0	0	O_4
1	0	1	O_5
1	1	0	O_6
1	1	1	O_7

Circuit Diagram: