MULTIPLEXERS AND DEMULTIPLEXERS

The multiplexer is a special combinational circuit that is one of the most widely used standard circuits in digital design. The multiplexer (or data selector) is a combinational logic circuit that accepts one out of several inputs & provides single output. The input selected is controlled by a set of select inputs. i.e. multiplexer is a logic circuit in which there is a number of inputs but only one output hence it is also called a "multi into one" or "many into one". Multiplexers can handle two types of data i.e., analog and digital. For analog application, the multiplexer is built using relays and transistor switches. For digital application, they are built from standard logic gates.

Multiplexers come in multiple variations – 2 : 1 multiplexer, 4 : 1 multiplexer, 16 : 1 multiplexer, 32 : 1 multiplexer

Selection Lines		Output
S_1	S_0	Y
0	0	I_0
0	1	I_1
1	0	I_2
1	1	I_3

Truth table of 4x1 Multiplexer.

Applications of Multiplexer

The multiplexer is used in various fields where multiple data need to be transmitted using a single line. Following are some of the applications of multiplexers –

1. Communication System.
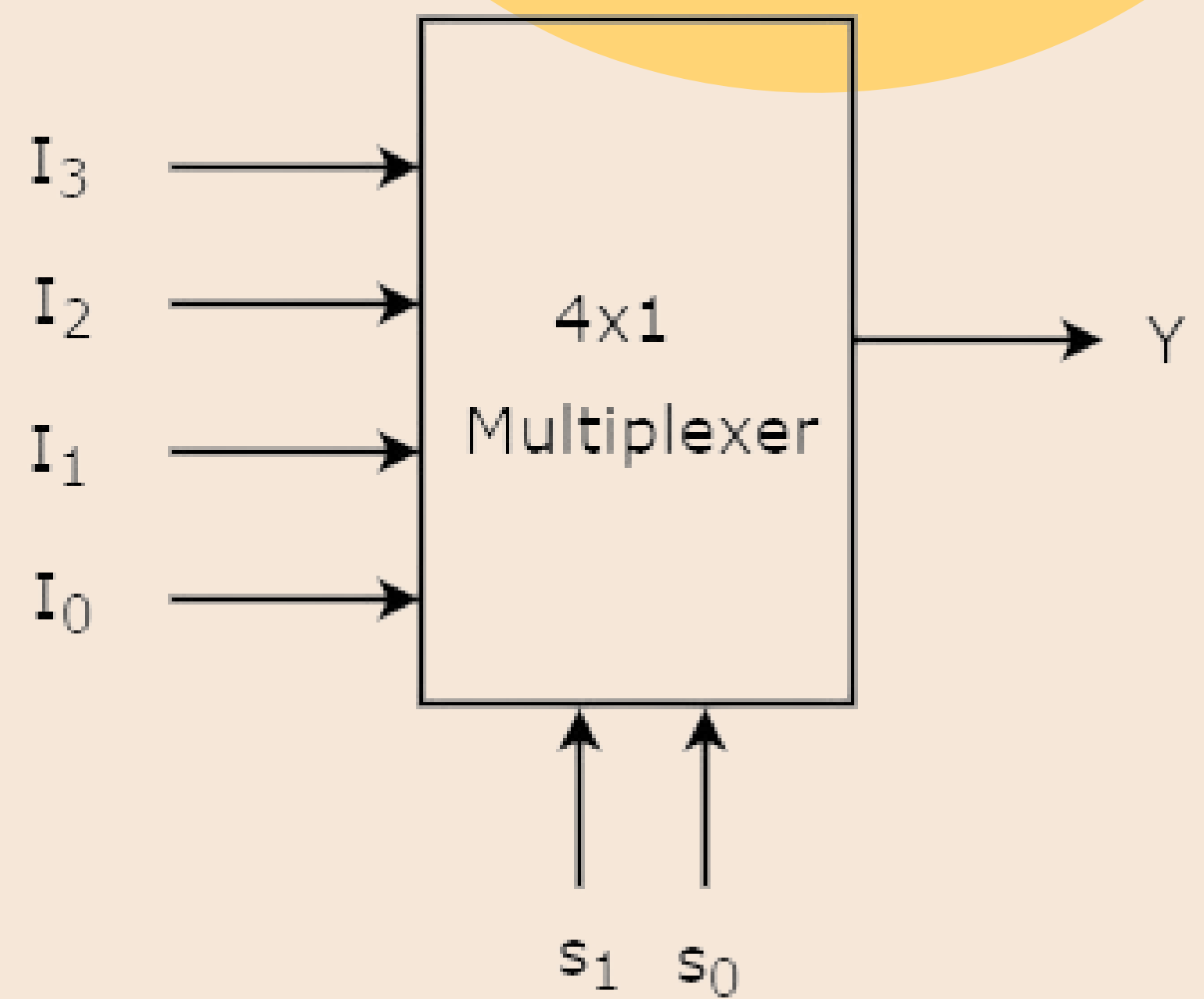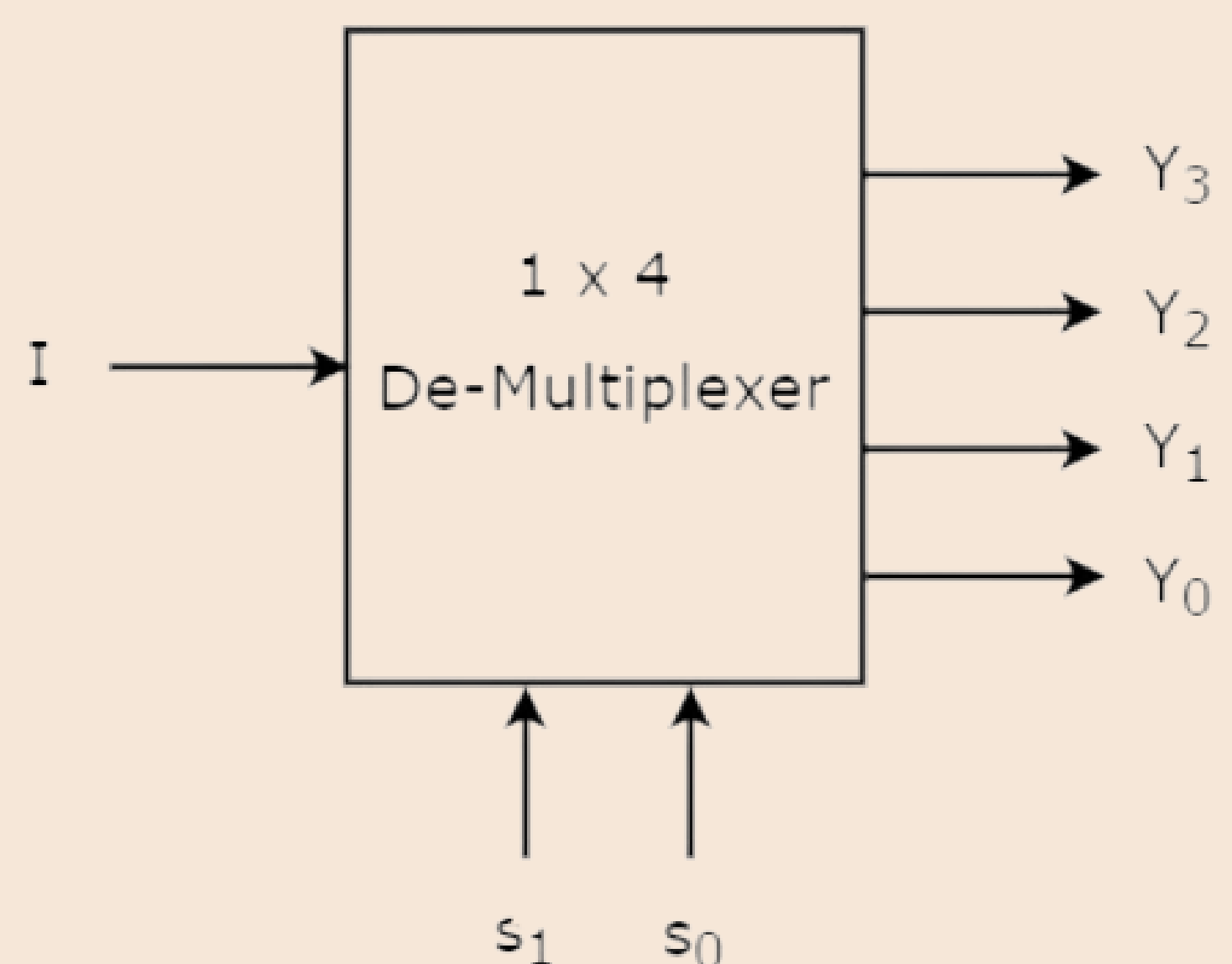2. Telephone Network.
3. Computer Memory.
4. Transmission from the Computer System of a Satellite.

The demultiplexer performs the reverse operation of a multiplexer. It accepts a single input and distributes it over serval outputs, figure gives the block diagram of a demultiplexer, the select input code determines to which output the data input will be transmitted.

Demultiplexers are classified into four types- 1-2 demultiplexer, 1-4 demultiplexer, 1-8 demultiplexer, 1-16 demultiplexer.

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

Truth table of 1x4 De-Multiplexer

Applications of Demultiplexer

1. Communication System
2. ALU (Arithmetic Logic Unit)
3. Serial to Parallel Converter

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TAE Assesment Sheet for FY Btech

SR.NO	ROLL NO	DIVISION	NAME OF THE STUDENT	TAE NO	POSTER/PRESENTATION
1	A69	A	Soham Yugraj Tiwari	1	Poster
2	A70	A	Amaan Ayyub Nalband		
3	A71	A	Shravan Vijaypratap Singh		
4	A72	A	Pratik Rajesh Jade		

Rubrics For Assesement

CATEGORY	Contents	Presentation	Spelling and pronunciation	Oral Presentation	TOTAL
MARKS	2	1	1	1	5
			Teacher sign (With name and date)		