Date 1·3·24

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TITLE : Design a composite Logic Unit using Multiplexer.

Objective : To design a composite Logic Unit using Multiplexer.

Theory : Logic microoperations are very useful for manipulating individual bits or a portion of a word stored in a register. They can be used to change bit values, delete group of bits or insert new bit values into a register. These microoperations require different logic gates to be inserted for each bit or pair of bits in the register to perform the required operation. Although there are several logic microoperations, most computers use only four - AND, OR, XOR and NOT - from which all others can be derived.

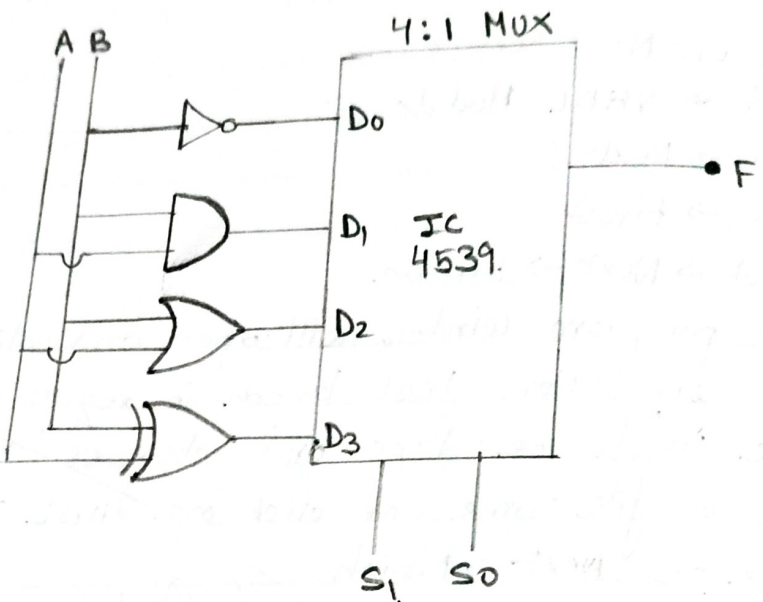
Function Table :

Selection lines		Output (F)	Operation
S_1	S_0		
0	0	A'	NOT
0	1	$A.B$	AND
1	0	$A+B$	OR
1	1	$F = A \oplus B$	XOR

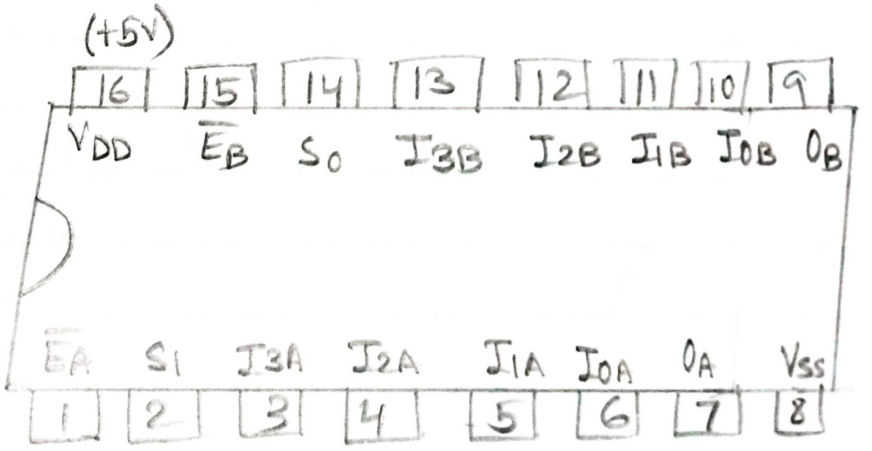
Instruments & Components Required :

Sl No.	Item	Specification	Qty.
1.	NOT gate	IC-4069	1
2.	AND gate	IC-4081	1
3.	OR gate	IC-4071	1
4.	XOR gate	IC-4070	1
5.	Multiplexer.	4:1 IC 4539	1

Teacher's Signature _____



Logic Diagram of Composite logic Unit Using Multiplexer



Pin Diagram of Dual 4-input multiplexer

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Verification Table :

Select lines		Input		Output (Fi)	Operation
S1	S0	Ai	Bi		
0	0	0	0	0	AND
0	1	0	1	1	OR
1	0	1	1	0	OR
1	1	1	1	1	AND

Conclusion : Thus with the help of above logic gates, logic microoperations can be performed and a composite logic Unit using multiplexer can be created.