1.) It means that the gates can be used to express all possible truths/can be used to create and, or, & not gates.

2.) TBP: that and, or, & not are logically complete

TBP: Any logic circuit can be made with these logic gates

Given circuit C. C has a truth table.

Consider an arbitrary series of inputs that produce the output 1. $a=0, b=1, c=0$, Therefore $\neg a \wedge b \wedge \neg c = 1$.

This is what the truth table will look like:

a	b	c	T
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

Now we disjunct all the and gates together to make another table $(\neg a \wedge b \wedge \neg c) \vee (a \wedge b \wedge c) = C$:

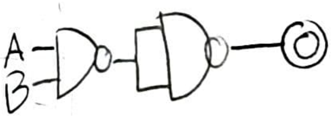
a	b	c	T
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Be cause we can build a circuit with the Same number of inputs as C with only one 1 row in any given row using just and, or, & not together to make any pattern of 0 and 1 output, and, or, & not are logically complete.

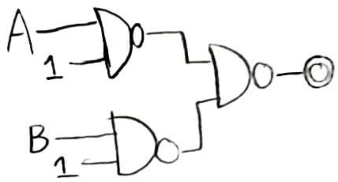
3

a

and



or



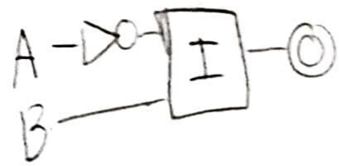
not

b This result is used by chip designers put using nand gates often to create other logic gates in chips, making there design simpler by regularly using nands.

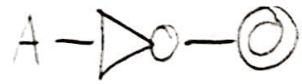
4.

and

or



not

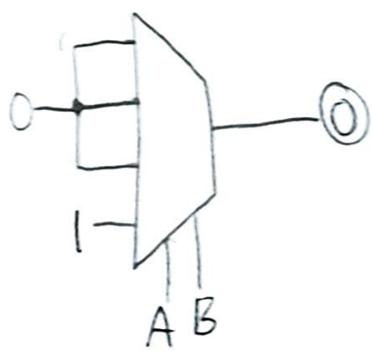


= implies gate

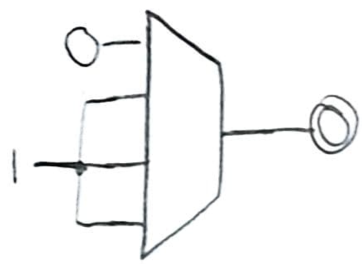
A -> B

5.

and



or



not