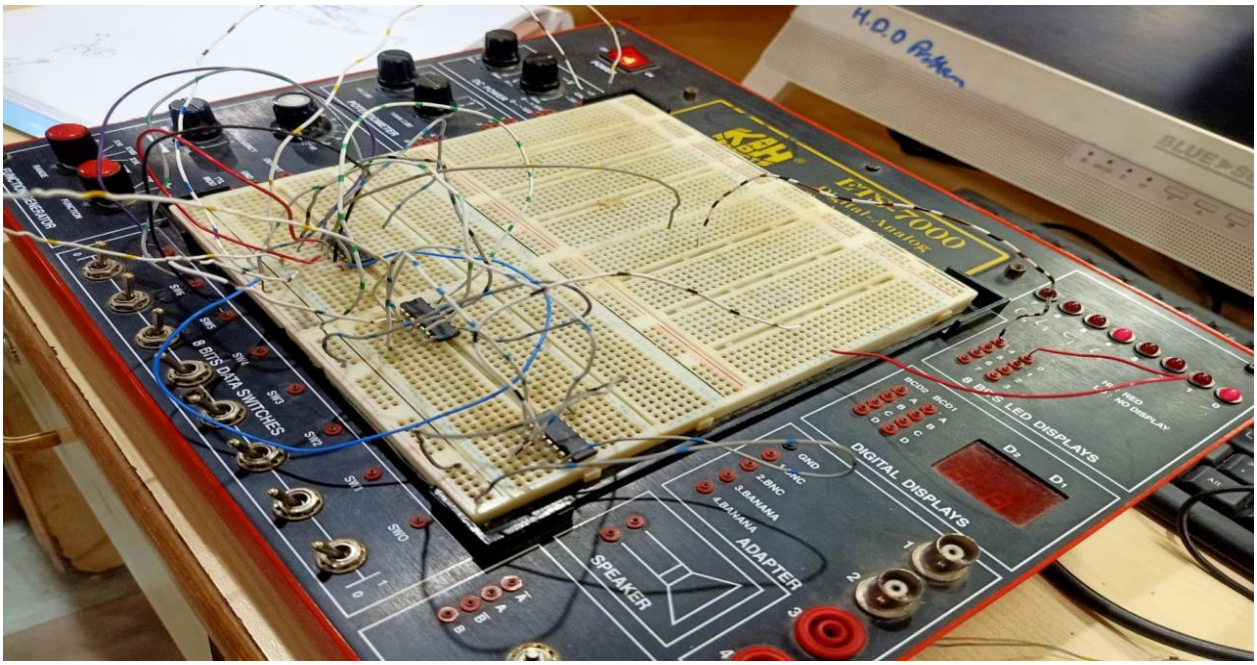
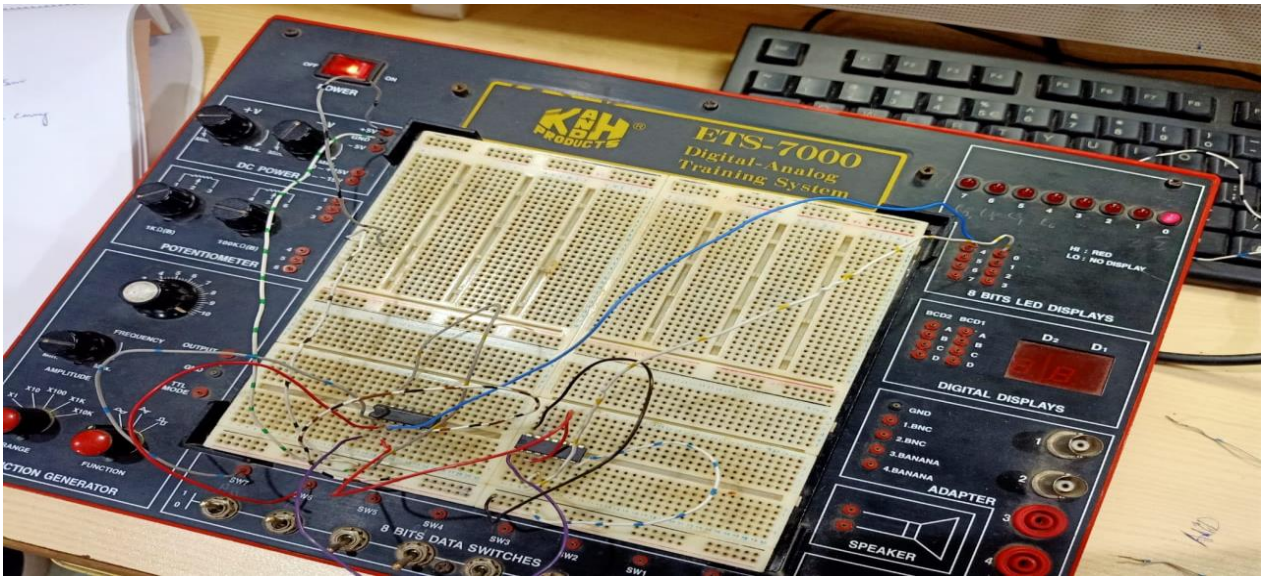
Roll no- 20k-0409

Name: Mukand Krishna

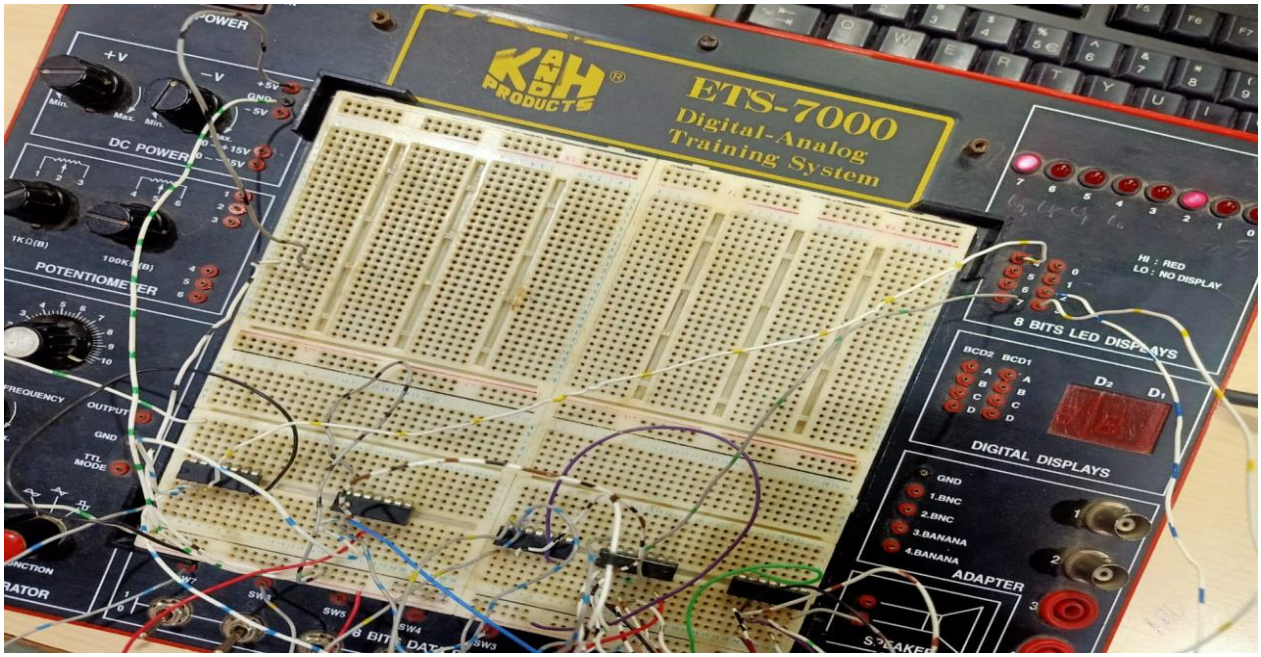
Q 1 - Full adder circuit.



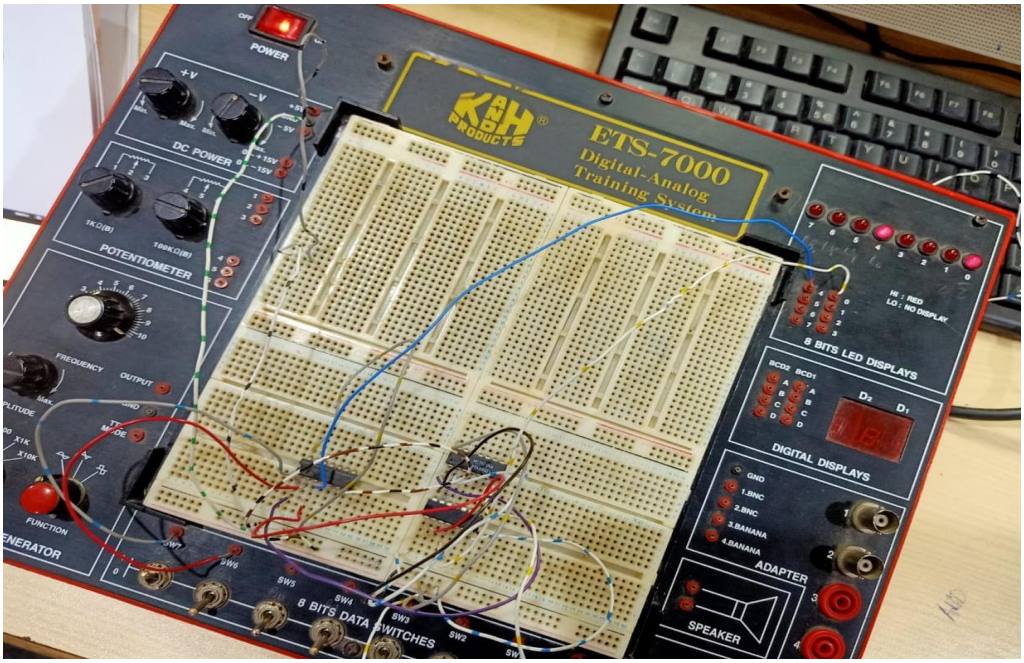
Q 2 – Half adder circuit



Q 3 – 2*2 Bit Multiplier



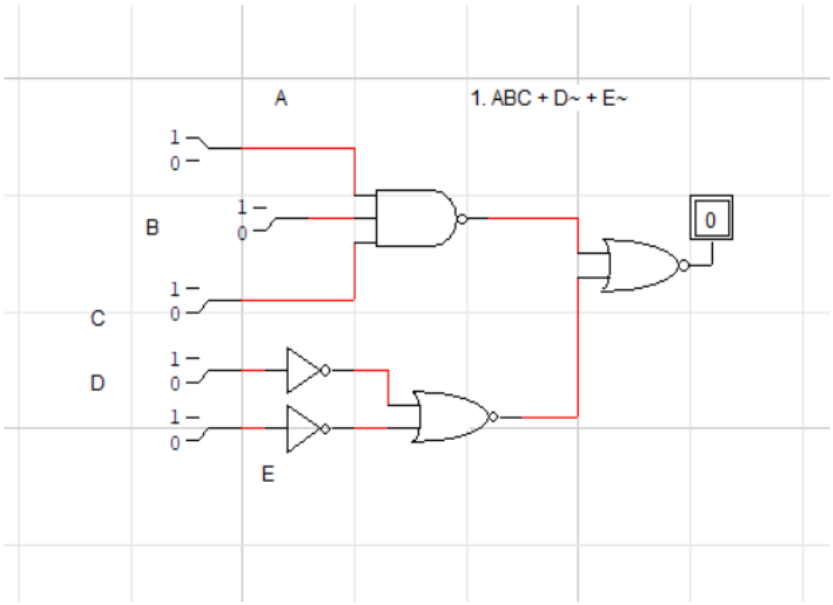
Q 4 – Half Subtractor



Q5. Design circuit on trainer for given expressions by using either NAND or NOR gate

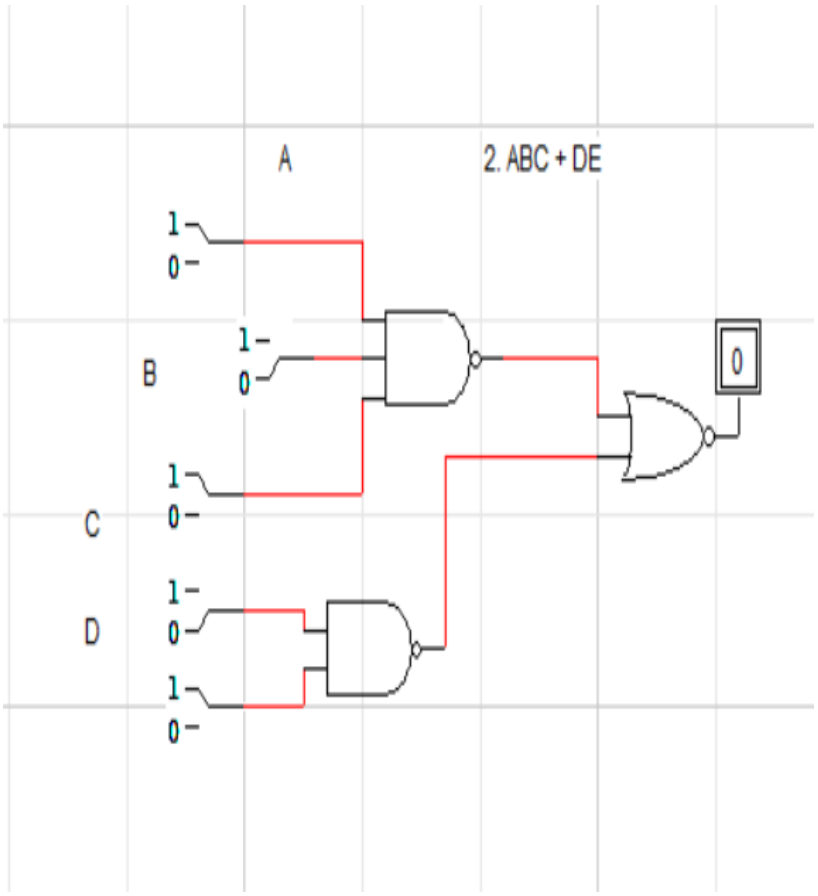
Part 1 ***ABC + D~ + E~***

A	B	C	D	E	ABC +D~+E~
0	0	0	0	0	0
0	0	0	0	1	0
0	0	0	1	0	0
0	0	0	1	1	0
0	0	1	0	0	0
0	0	1	0	1	0
0	0	1	1	0	0
0	0	1	1	1	0
0	1	0	0	0	0
0	1	0	0	1	0
0	1	0	1	0	0
0	1	0	1	1	0
0	1	1	0	0	0
0	1	1	0	1	0
0	1	1	1	0	0
0	1	1	1	1	0
1	0	0	0	0	0
1	0	0	0	1	0
1	0	0	1	0	0
1	0	0	1	1	0
1	0	1	0	0	0
1	0	1	0	1	0
1	0	1	1	0	1
1	0	1	1	1	0
1	1	0	0	0	0
1	1	0	0	1	1
1	1	0	1	0	0
1	1	0	1	1	0
1	1	1	0	0	1
1	1	1	0	1	1
1	1	1	1	0	1
1	1	1	1	1	0



Part 2. ***ABC + DE***

A	B	C	D	E	ABC +DE
0	0	0	0	0	0
0	0	0	0	1	0
0	0	0	1	0	0
0	0	0	1	1	0
0	0	1	0	0	0
0	0	1	0	1	0
0	0	1	1	0	0
0	0	1	1	1	0
0	1	0	0	0	0
0	1	0	0	1	0
0	1	0	1	0	0
0	1	0	1	1	0
0	1	1	0	0	0
0	1	1	0	1	0
0	1	1	1	0	0
0	1	1	1	1	0
1	0	0	0	0	0
1	0	0	0	1	0
1	0	0	1	0	0
1	0	0	1	1	0
1	0	1	0	0	0
1	0	1	0	1	0
1	0	1	1	0	0
1	0	1	1	1	0
1	1	0	0	0	0
1	1	0	0	1	0
1	1	0	1	0	0
1	1	0	1	1	0
1	1	1	0	0	0
1	1	1	0	1	0
1	1	1	1	0	0
1	1	1	1	1	1



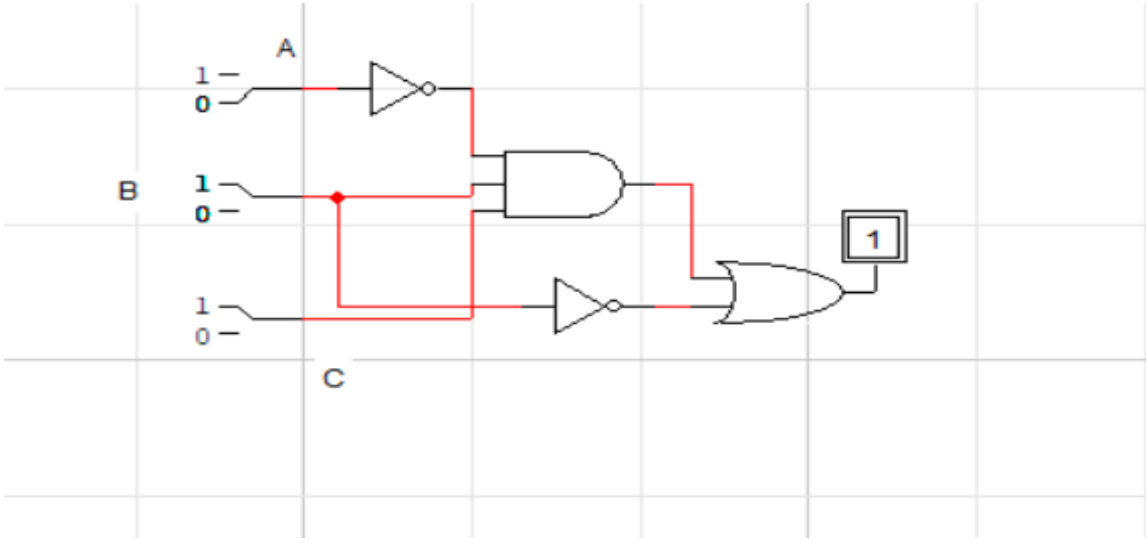
Q 6 Use a Karnaugh map to minimize the following standard SOP expression and design circuit on trainer.

AB~C + A~BC + A~B~C + A~B~C~ + AB~C~

Positioning 1's in the k map

	B~C~	B~C	BC	BC~
A~	1	1	1	
A	1	1		

Simplified expression: B~ + A~BC



Q7. Use a Karnaugh map to minimize the following standard POS expression and design circuit on trainer.

(B + C + D) (A + B + C~ + D) (A~ + B + C + D~) (A~ + B + C + D~) (A + B~ + C + D) (A~ + B~ + C + D)

(AA~ + B + C + D) (A + B + C~ + D) (A~ + B + C + D~) (A~ + B + C + D~) (A + B~ + C + D) (A~ + B~ + C + D)

(A + B + C + D) (A~ + B + C + D) (A + B + C~ + D) (A~ + B + C + D~) (A~ + B + C + D~) (A + B~ + C + D) (A~ + B~ + C +

Positioning 0's in the k map

	C+D	C+D ~	C~+D~	C~+D
A+B	0	0		
A+B~	0	0		0
A~+B~				
A~+B	0			

Simplified expression: (A + C) (A~ + B + C + D~) (A + B~ + C + D)