DIGITAL SYSTEMS AND MICROCONTROLLERS - LAB REPORT 5
18/9/25

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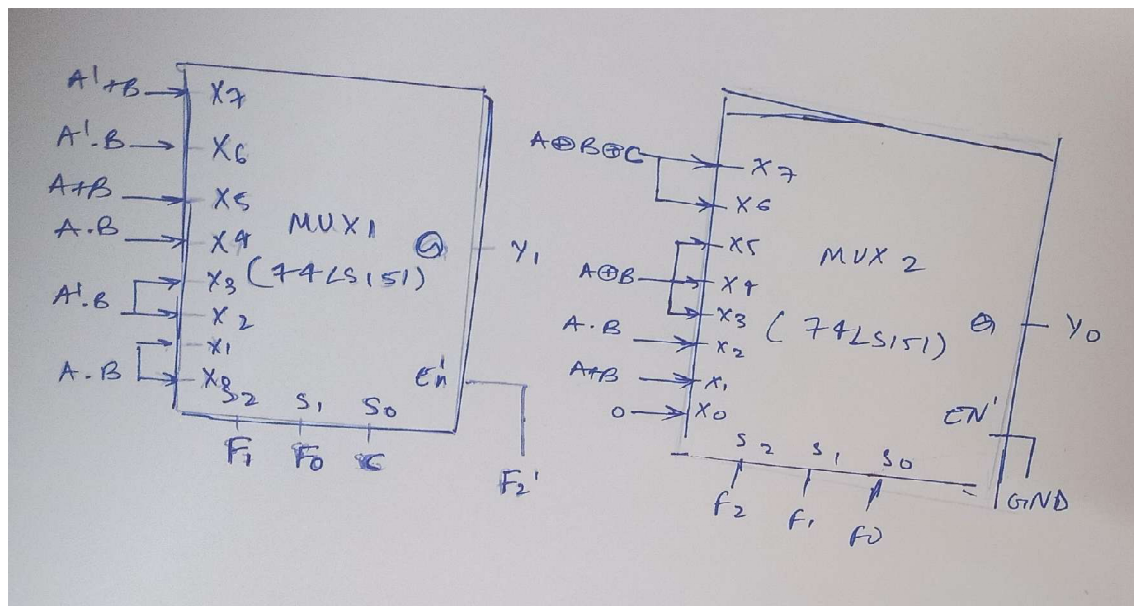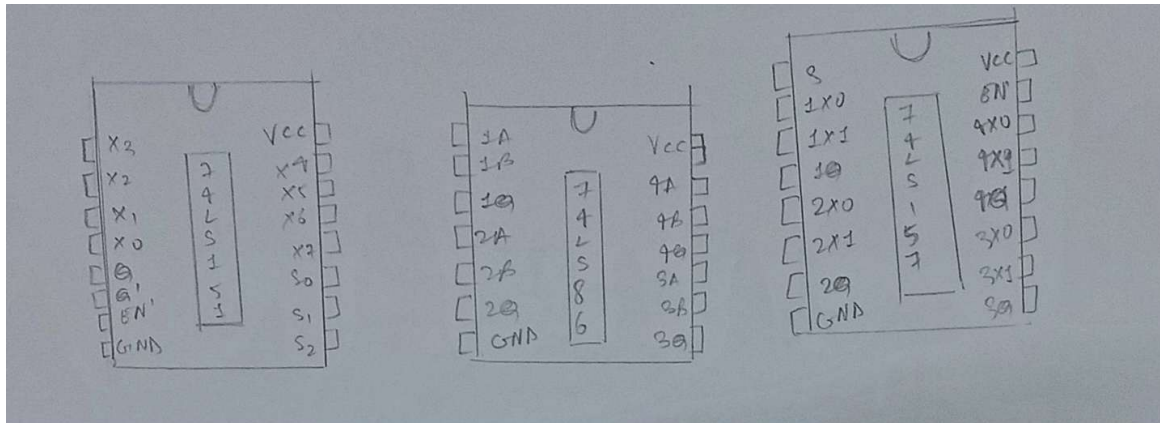2025114007 GROUP-11 TABLE-7

Experiment 1

Objective:

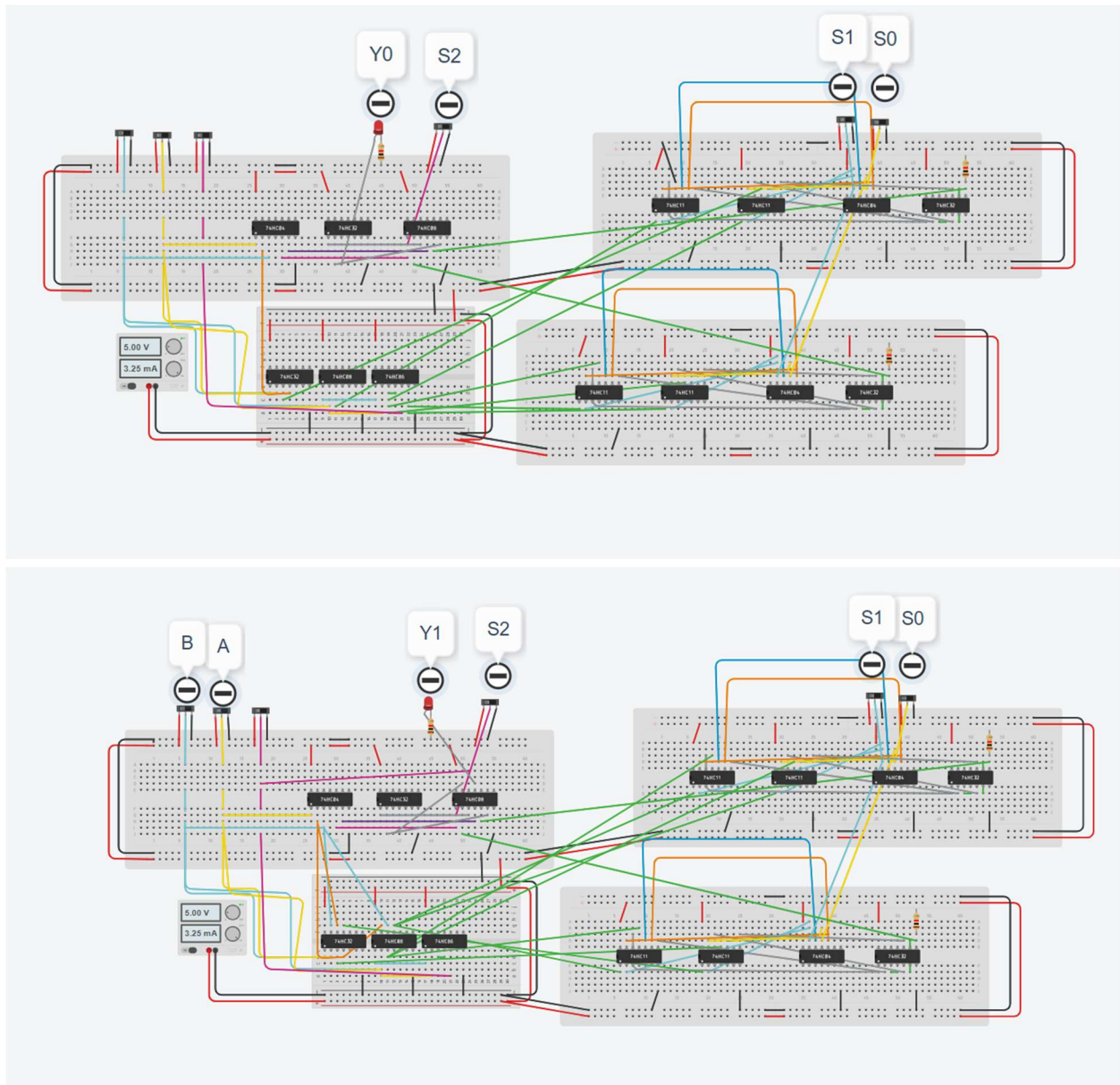Assembling and testing an Arithmetic and Logic Unit.

Electronic components used:

1. Digital Test Kit
2. Connecting Wires
3. Two 8-input Mux ICs (74LS151), One Quad input Mux ICs (74LS157), Quad input XOR ICs (74LS86)

Reference circuit:

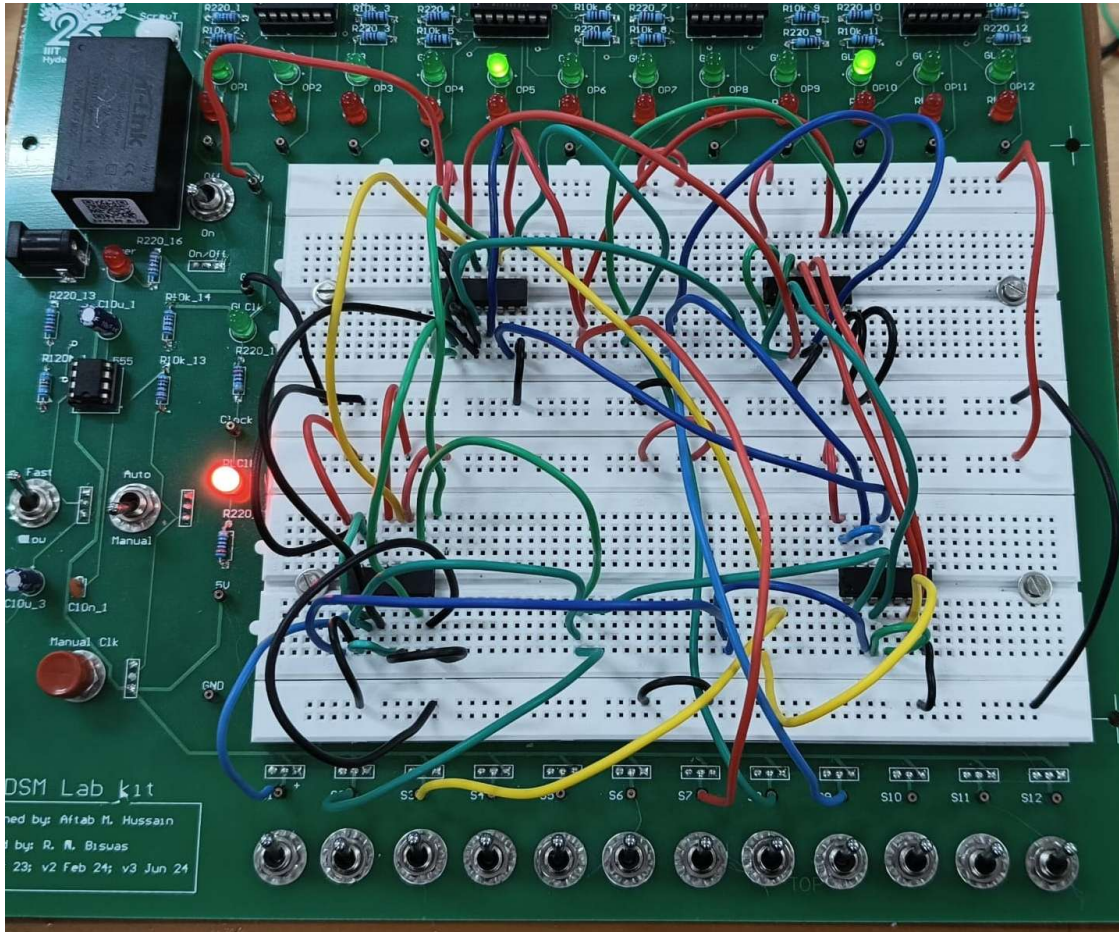# Tinkercad Reference circuit:

Procedure:

1. Switch on the VCC supply and check if all the input pins and LEDs are working properly: Red LED glows when switched on (1) and green LED when switched off (0).
2. Connect the VCC (14) and GND (7) pins of the ICs to the VCC and GND lines of the Digital Test Kit respectively.

3. Connect the components as shown and note the observations.

Observation:

Conclusion:

F2F1F0	ALU Function	Y1	Y0
000	0	-	0
001	A OR B	-	A+B
010	A AND B	-	A.B
011	A XOR B	-	A^B
100	A PLUS B	Carry	Sum
101	A MINUS B	Borrow	Difference
110	A PLUS B PLUS C	Carry	Sum
111	A MINUS B MINUS C	Borrow	Difference

Link to TinkerCAD simulation:

https://www.tinkercad.com/things/9llCgVzxXoH-alulab5?sharecode=u-mnysinRGsB_qGx63S6DUu_rh3VG4Qf5J1N69plfSo