

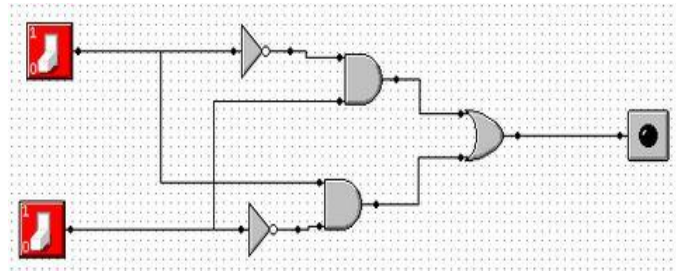
### Worksheet 5

#### Objectives:

- (1) Understand the behavior of Adder circuits.
- (2) Understand the design of combinational circuits for different real-world scenarios.

1) Design the following circuit and write the truth tables for them.

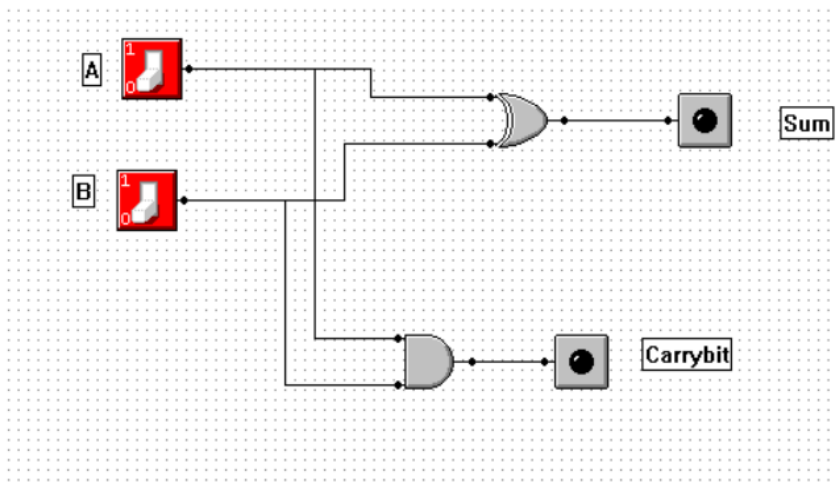
(i)



- a) Draw the circuit for A XOR B and write the truth table for them. Identify the similarity between XOR circuit and circuit (i)

(ii)

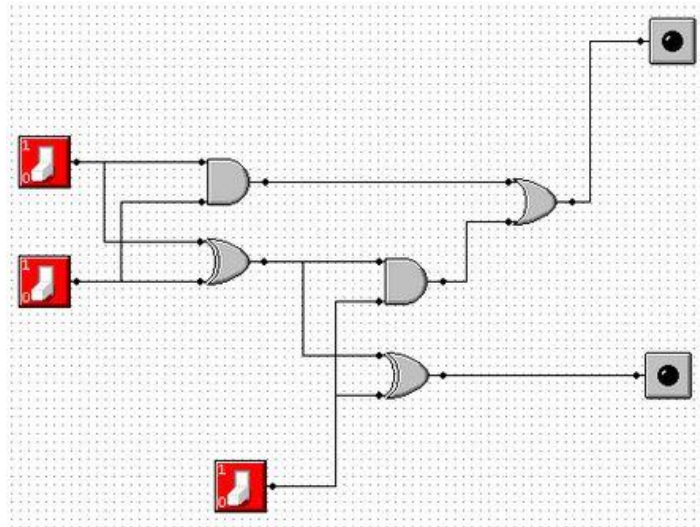
#### Half Adder



### Worksheet 5

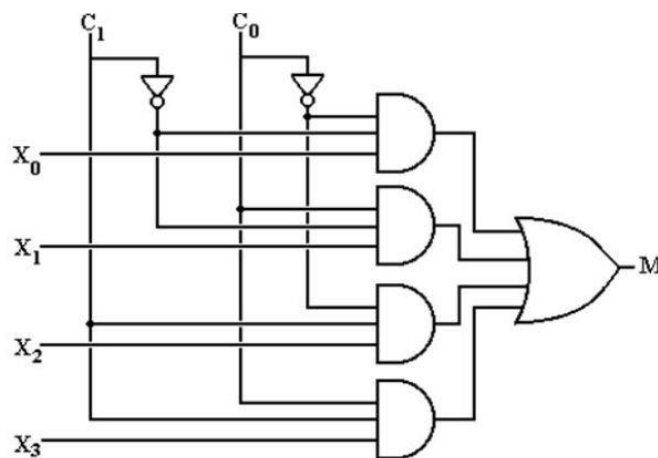
(iii)

#### Full Adder



- 2) **Multiplexer:** A multiplexer (or mux) is a device that combines several analog or digital input signals and forwards them into a single output line. A multiplexer of  $2^n$  inputs has  $n$  select lines, which are used to select which input line to send to the output.

Implement the following mux circuit in MM Logic and observe its behavior.



- 3) Use 4 to 1 mux and 2 to 4 De-mux available in MM Logic and draw truth tables to recognize their behavior.

**Worksheet 5**

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