Beni-Suef University
Academic year (2018-219)

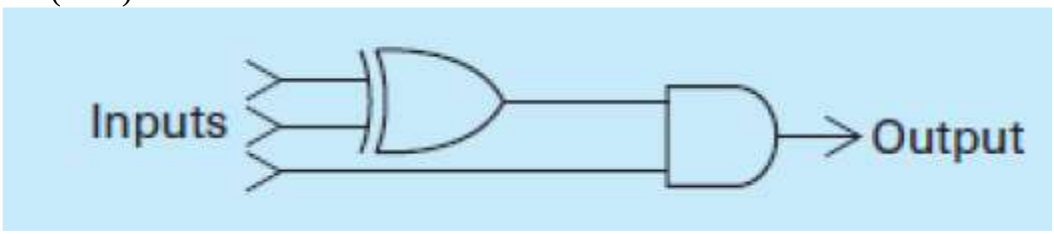
Faculty of Computers and Information

Sheet 4: Logic Gates and Data Manipulation

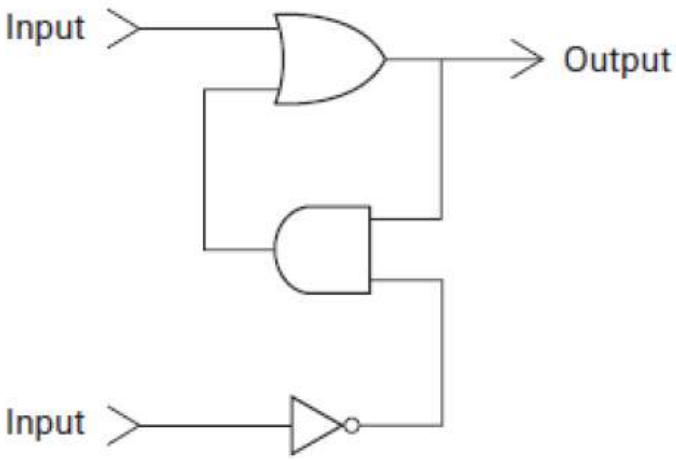
- **The submitted solutions should be handwritten and NOT typed/printed.**
- **The students will lose 3 marks if this homework not delivered on time**

1. Perform the indicated operations:
   a. 01111001 AND 01010001 (LAB)
   b. 01111001 OR 01010001
   c. 01111001 XOR 01010001
   d. 11111011 NAND 01110011 (LAB)
   e. 11111011 NOR 01110011
   f. 11111011 XNOR 01110011

2. What input bit patterns will cause the following circuit to produce an output of 1? (LAB)

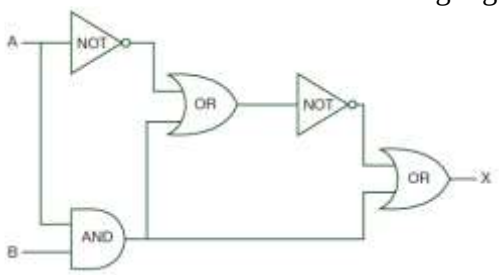


3. In the text, we claimed that placing a 1 on the lower input of the flip-flop in following circuit (while holding the upper input at 0) will force the flip-flop's output to be 0. Describe the sequence of events that occurs within the flip-flop in this case.

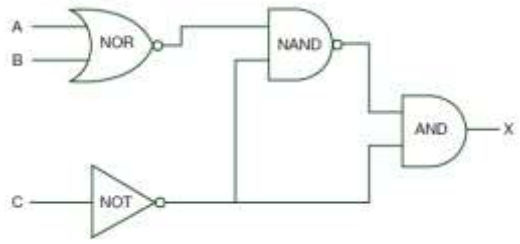


4. Produce a truth table from the following logic circuit

a)



b)



5. What sequence of events do you think would be required to move the contents of one memory cell in a computer to another memory cell? (LAB)
6. What information must the CPU supply to the main memory circuitry to write a value into a memory cell?
7. The following are instructions written in the machine language described in Appendix C. Rewrite them in English.
   a. 368A (LAB) b. BADE c. 803C d. 40F4
8. Here are some instructions in English. Translate each of them into the machine language of Appendix C.
   a. LOAD register number 3 with the hexadecimal value 56.
   b. ROTATE register number 5 three bits to the right. (LAB)
   c. AND the contents of register A with the contents of register 5 and leave the result in register 0.

With my best wishes;
Dr. Heba Hamdy