Instruction:

Complete all questions in **2 hour.**

Group: A

1. Unit of computer capable of performing arithmetic, logical and data manipulation operation on binary numbers is called
   - CU
   - √ ALU
   - I/O units
   - Processing Unit

2. Arithmetic logic unit
   - √ perform arithmetic operations
   - store data
   - perform comparison
   - communicate with input devices

   From above Correct one is.
   - I only
   - II only
   - I and II only
   - √ I and III only

3. Which of the following is component of ALU?
   - Functional Unit
   - Multiplexor
   - Instruction Decoder
   - √ All of the Above

4. Operations of Computer Arithmetic and logic unit is directed by
   - ALU itself
   - Program
   - √ Control Unit
   - Memory Unit

5. An arithmetic logic unit (ALU) is a _____ digital electronic circuit.
   - √ Combinational
   - Sequential
   - Both
   - None of above

6. Engineering design of arithmetic logic unit determines the
   - Type and number of storing operations
   - Type and number of logical operations
   - Type and number of control operations
   - √ Type and number of logical and arithmetic operations

7. Which is the function of Decoder?
   - Perform logic and arithmetic operation
   - √ Selects the output we want from ALU
   - Send output choice made through the decoder
   - None of the above

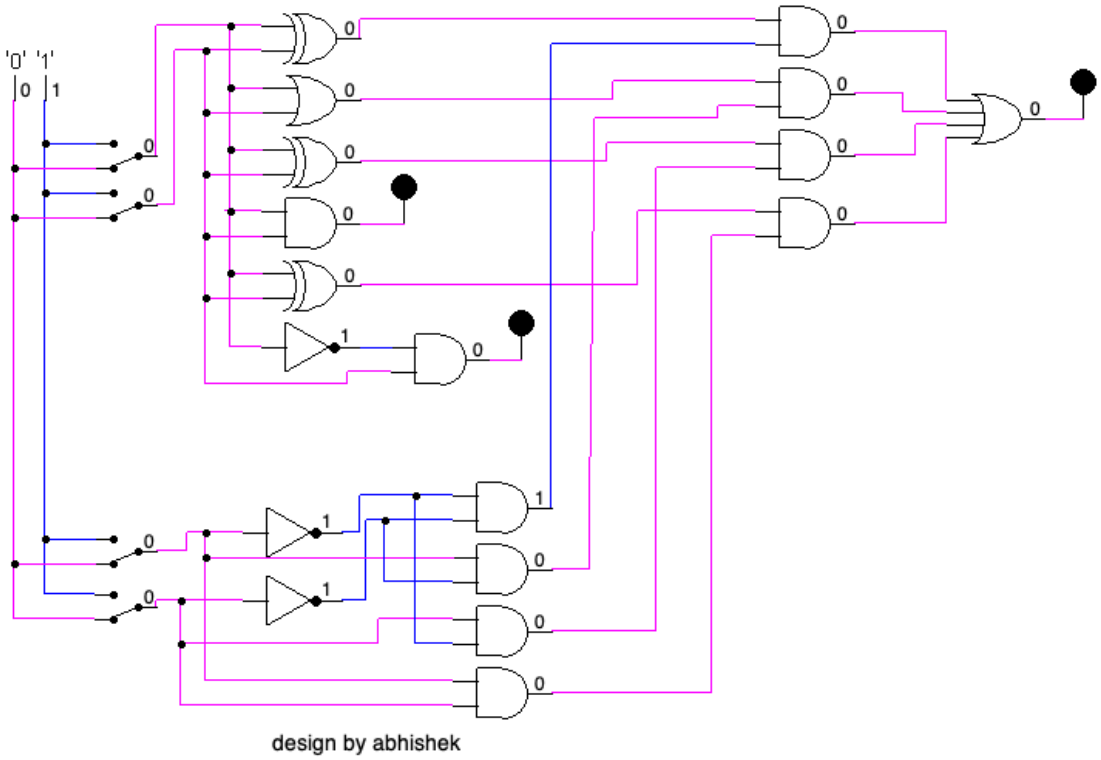
8. Which of the following is the function of Multiplexor?
   - Perform logic and arithmetic operation
   - Selects the output we want from ALU
   - √ Send output choice made through the decoder
   - None of the above

9. Both addition and subtraction can be performed by a single circuit using _____
   - Multiplexor
   - √ Controlled Inversion
   - Half Adder
   - Fuller Adder

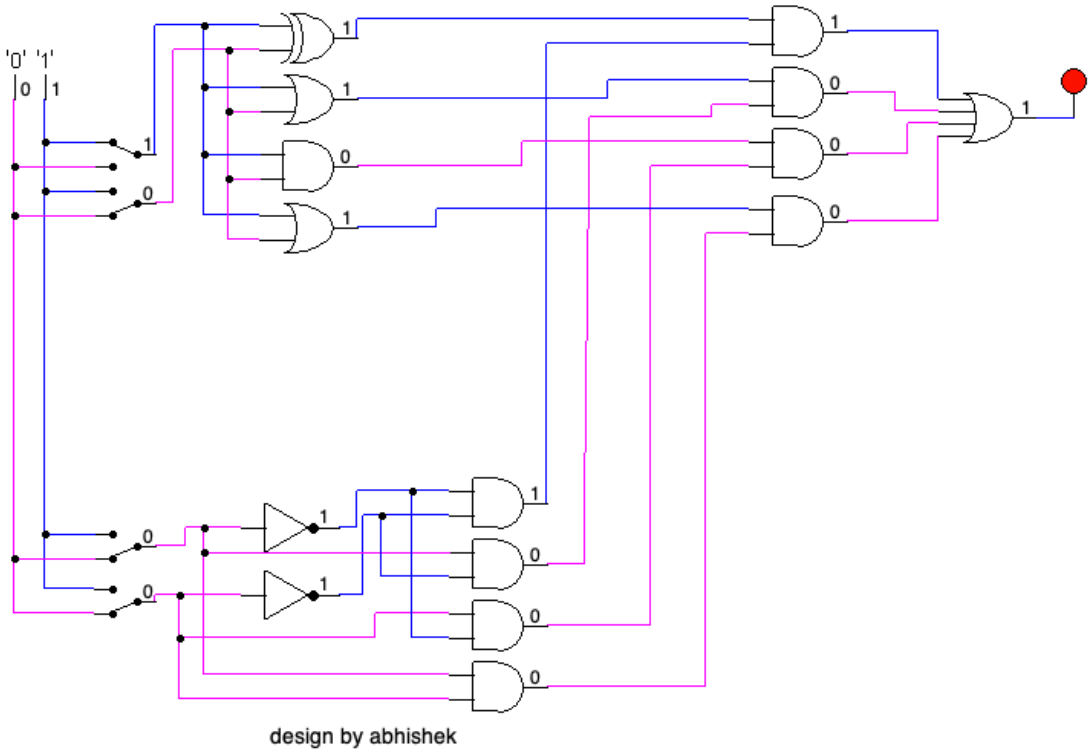
Group B

10. Design a combinational Logic circuit that selects and generates any of the following logic and arithmetic functions listed below.

A XOR B
A NOR B
A + B
A – B



11. Design a digital circuit that performs the four logical operations of exclusive-OR, NOR, NAND and OR. Use two selection variables. Show the logic diagram of one typical stage. Discuss the working mechanism of the circuit that you have constructed.



12. Following diagram shows a 4-bit adder/subtractor. Design the circuit diagram using Logsim. Discuss how the circuit performs addition and subtraction.