2. Analyze the circuit shown in fig. 1 to produce Boolean algebraic expression for the circuit outputs.

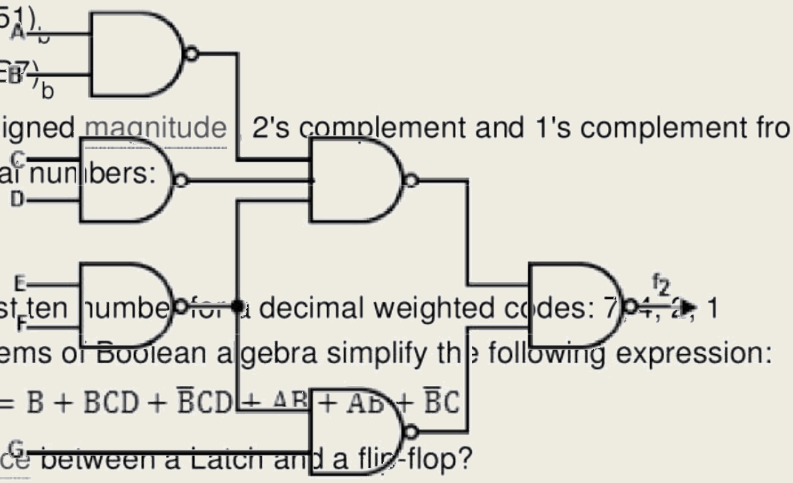

Fig. 1

Attempt any **two** parts of the following:

3. Implement the following function using only NOR gates having a maximum fan-in of three:

$$f = (\overline{A} + B)(C + D)(B + \overline{C})(A + D)(\overline{A} + C)$$

empt any **two** parts of the following:

3. Develop a 3-to-8-line decoder using NOR gates only, and draw its logic diagram.

empt any **four** parts of the following:

1. Differentiate between the working of static and dynamic memory. Also discuss the difference between SRAM and DRAM.

3. Design a hazard-free D-type flip-flop using asynchronous circuit design techniques. NAND gates may be assumed that the output will take on the value of the input on the trailing edge of a clock pulse.