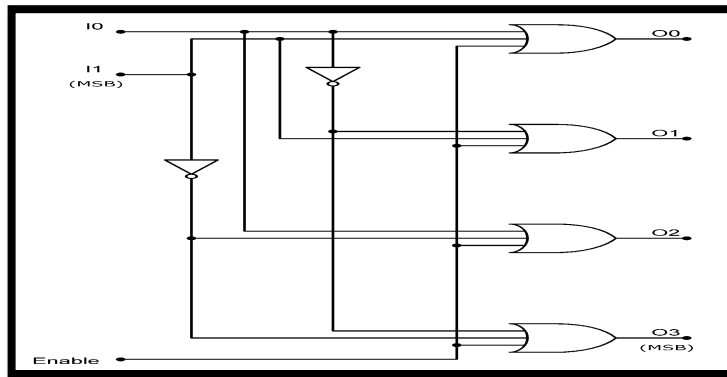
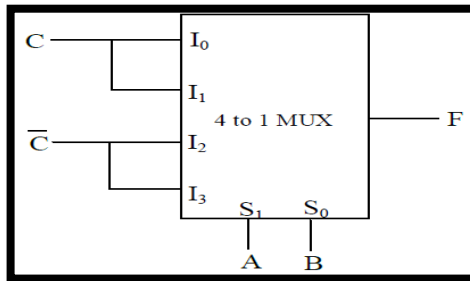


5) The following circuit is a _____.



- a) 2-4 decoder with active low enable and active low outputs
- b) 2-4 decoder with active low enable and active high outputs
- c) 2-4 decoder with active high enable and active low outputs
- d) 2-4 decoder with active high enable and active high outputs

6) The logic realized by the circuit shown in figure is



- a) $F = B \oplus C$
- b) $F = \overline{B \oplus C}$
- c) $F = A \oplus C$
- d) $F = \overline{A \oplus C}$

Question 2

(5 marks)

a) Draw a diagram of an 8-bit adder/subtractor.

(2.5 marks)

Solution

b) Explain the function of an **encoder. Implement an encoder using **gates**.**

(2.5 marks)

Solution

Question 3

(6 marks)

(3 marks)

a) A combinational circuit has **3** outputs **F1, F2** and **F3**

$$F1 = \bar{x}\bar{y}\bar{z} + xz$$

$$F2 = x\bar{y}\bar{z} + \bar{x}y$$

$$F3 = \bar{x}\bar{y}z + xy$$

Design the circuit with a **decoder** and **external gates**.

Solution

b) Design a **4-to-16** line **decoder** with **Enable** input using **five 2-to-4** line decoders with **Enable** inputs.

(3 marks)

Solution

Question 4

(3 marks)

Implement the following Boolean function with an **8-to-1 multiplexer** and a **single inverter** with **variable B** as an input.

$$f(A, B, C, D) = \Sigma m(2, 4, 6, 9, 10, 11, 15)$$

Solution

GOOD LUCK