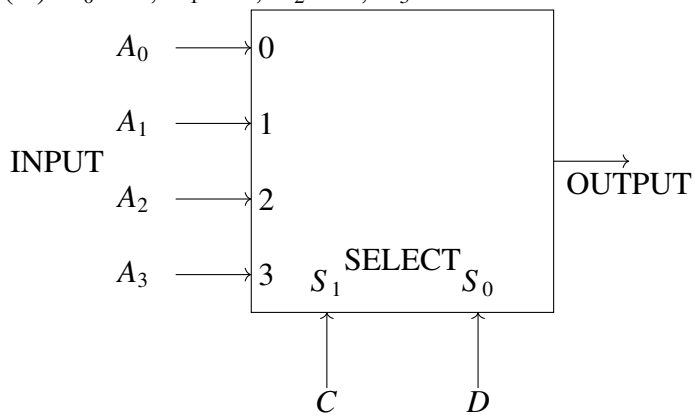


GATE:EC-19-2022

I. QUESTION

Consider the 2-bit multiplexer(MUX) shown in the figure. For OUTPUT to be the XOR of C and D , the values of A_0, A_1, A_2 and A_3 are:

- (A) $A_0 = 0, A_1 = 0, A_2 = 1, A_3 = 1$
- (B) $A_0 = 1, A_1 = 0, A_2 = 1, A_3 = 0$
- (C) $A_0 = 0, A_1 = 1, A_2 = 1, A_3 = 0$
- (D) $A_0 = 1, A_1 = 1, A_2 = 0, A_3 = 0$



II. SOLUTION

Let Output be denoted by Y , then:

$$Y = \overline{C}.\overline{D}.A_0 + \overline{C}.D.A_1 + C.\overline{D}.A_2 + C.D.A_3 \quad (1)$$

Given

$$y = C \oplus D \quad (2)$$

Then

$$A_0 = 0 \quad (3)$$

$$A_1 = 1 \quad (4)$$

$$A_2 = 1 \quad (5)$$

$$A_3 = 0 \quad (6)$$

Therefore Option (C) is true.

Code for implementation through assembly onto arduino-uno

<https://github.com/Gandubs/Digital-Design/blob/master/Assignments/ec'22-19/Codes/hello.asm>