VLSI Design

Question 2

What is a Muller C-element? Show its truth table and a circuit diagram using CMOS transistors. [10 marks]

Show how it can be used:

    (a) to control the flow of data through micro-pipeline using bundled data, [5 marks]
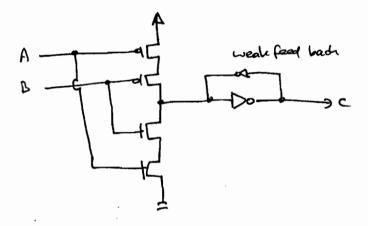
    (b) to detect completion after a pipeline stage using dual-rail encoding. [5 marks]
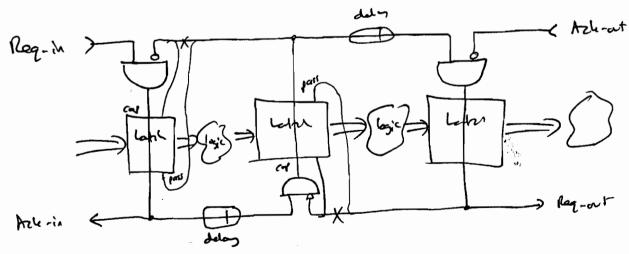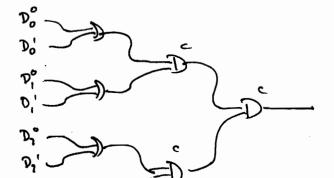
Answer

The Muller C-element is like a three-input majority gate with its previous value fed back into one input:

A	B	C
0	0	0
0	1	C
1	0	C
1	1	1