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Paper — CC 12 electronics II

Unit - 4, Topic- Demultiplexer

Demultiplexer :

The demultiplexer performs the reverse operation of a multiplexer. It accepts a single input and distributes it over several outputs. It is done with the help of control line. A circuit for one line-to-two line demultiplexer is shown in fig (1). The unselected outputs are to remain at logic 0. If C represents the control line, X the input,

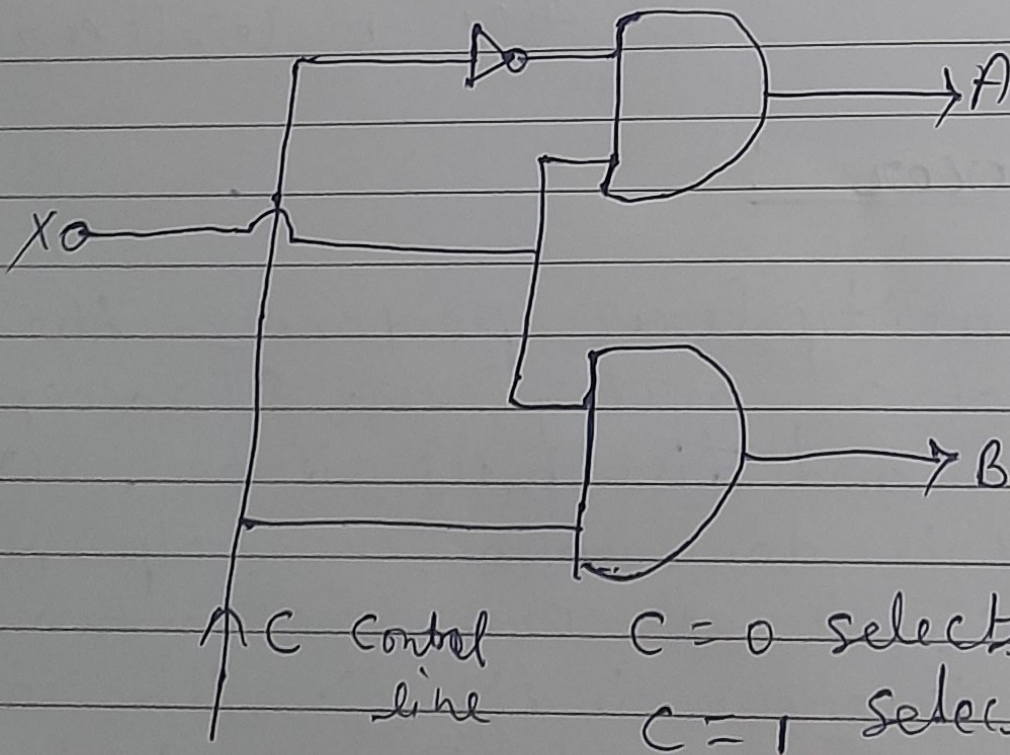
and A and B the outputs, two eqn's can be written to describe the desired operation:

$$A = \bar{C}X \quad \left[\begin{array}{l} \rightarrow \text{if } C=0 \left\{ \begin{array}{l} B=0 \\ A=X \text{ i.e. signal goes to} \\ \text{A line} \end{array} \right. \end{array} \right.$$

$$\text{and } B = CX \quad \left[\begin{array}{l} \rightarrow \text{if } C=1 \left\{ \begin{array}{l} B=X, \text{ i.e. signal goes to} \\ \text{B line} \\ A=0 \end{array} \right. \end{array} \right.$$

This only one output is selected at a time. At no time will both or neither outputs be selected simultaneously. The logic circuit is shown in fig (1).

A 1:4 demultiplexer is shown in fig (2) with its truth table.



$C=0$ selects A line
 $C=1$ selects B line

fig (1)

Truth table

DATE ___/___/___

C_1	C_0	A	B	C	D
0	0	0	0	0	X
0	1	0	0	X	0
1	0	0	X	0	0
1	1	X	0	0	0

