



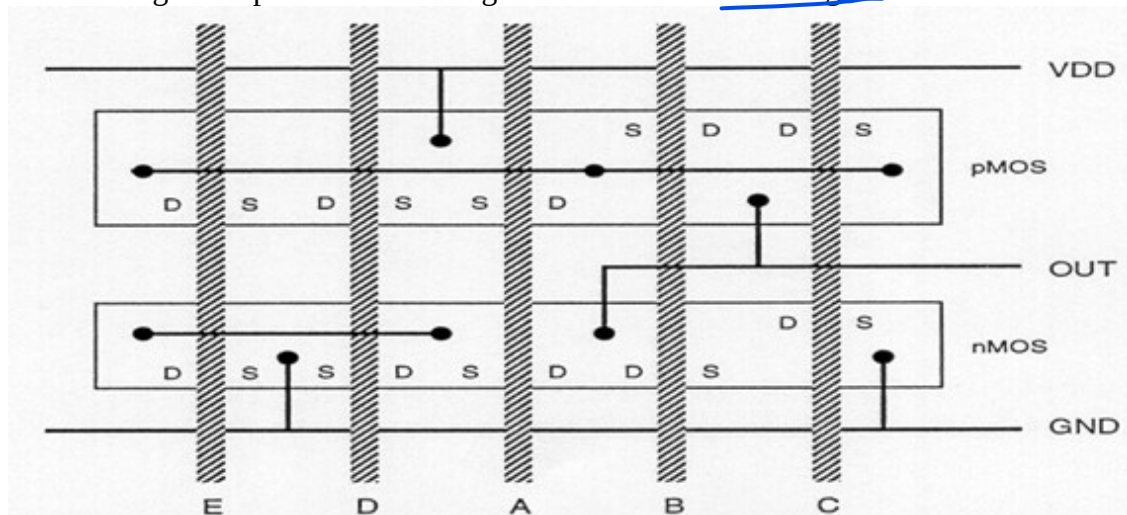
Problem #1

Design CMOS logic functions & Layout for the following gates with min. number of transistors:

- a. $Z = (AB+BC) \cdot D$
- b. $Z = (!A+B+!C) \cdot !D$
- c. $Z = ((A+B).C)+D$
- d. $Z = !((A.B) + C.(A+B))$

Problem #2

State the logical expression for the signal Out from the stick diagram:



$$!Z = A(E+D) + BC$$