Faculty of Engineering
Ain shams University
Mechatronics Engineering

Electronics circuit
3rd year Mechatronics
2013/2014
2nd Semester

Sheet (5): Digital CMOS logic circuits

1- Design a CMOS Inverter gate by CMOS transistors.

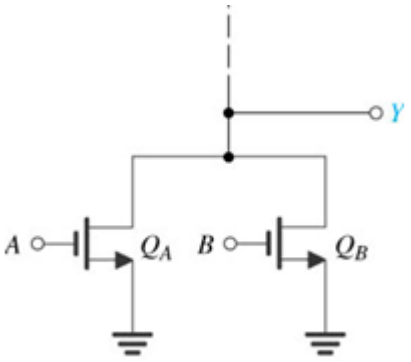
2- Design a 2- Inputs CMOS AND gate by CMOS transistors.

3- Design a 2- Inputs CMOS OR gate by CMOS transistors.

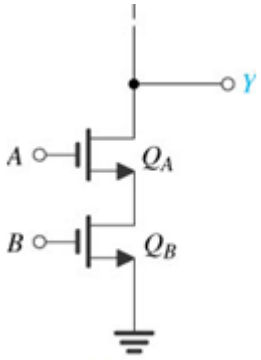
4- Design a 2- Inputs CMOS NAND gate by CMOS transistors.

5- Design a 2- Inputs CMOS NOR gate by CMOS transistors.

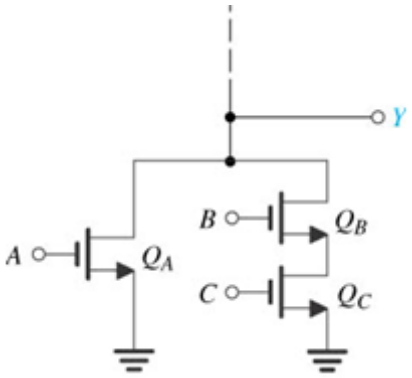
6- Write the algebraic functions for the following gates:



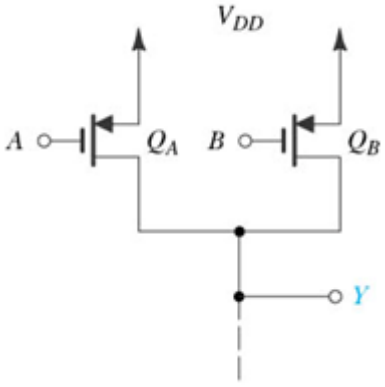
(a)



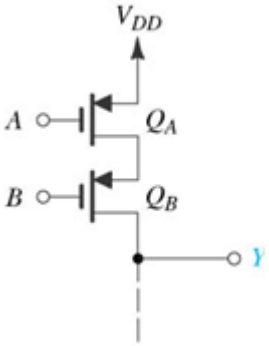
(b)



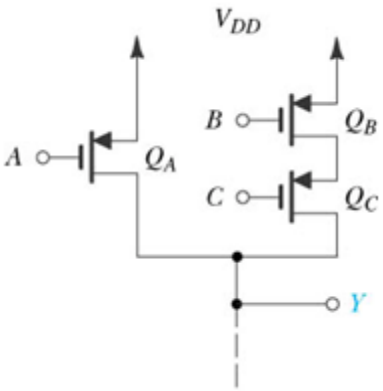
(c)



(d)



(e)



(f)

7- For the following algebraic functions write the truth table and Implement it by switches then by CMOS transistors:

a- y = AB + C

b- y = (A + B)C

c- y = $A^{\backslash}$ + B

d- y = AB + $(AB)^{\backslash}$

e- y = $(A + B + C)^{\backslash}$