Kingdom of Saudi Arabia
Ministry of Education
Shaqra University
CCIT

CSC 211 – Digital Logic Design
First Term – 1439/1440
Assignment #2
Due: **Wednesday, November 21, 2018**

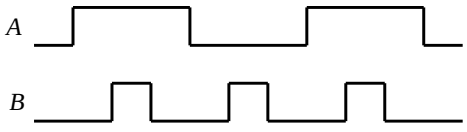
1. Simplify the following expressions using Boolean algebra:
   a. $(B + \bar{C})(\bar{B} + C) + \overline{\bar{A} + B + \bar{C}}$
   b. $(\bar{A} + B + \bar{C})(A + B + \bar{C})(\bar{A} + B + C)\overline{(BC + \bar{A}\bar{B}\bar{C})}$

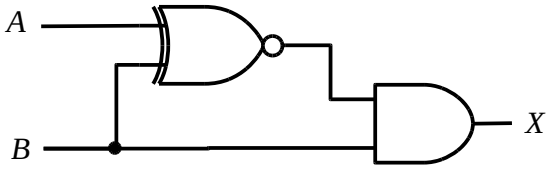
2. Suppose a Boolean variable Z is described by the following Karnaugh map:

AB \ CD	00	01	11	10
00	X	X	X	0
01	0	X	1	1
11	0	1	1	X
10	0	X	X	0

   a. Construct a minimum SOP expression for Z.
   b. Construct a minimum POS expression for Z.
   c. Implement Z using NAND gates.
   d. Implement Z using NOR gates.

3. For the following logic circuit, draw the output waveform in proper relationship to the inputs.





4. Design a logic circuit whose output Z is HIGH only when a majority of its inputs A, B, and C are LOW.