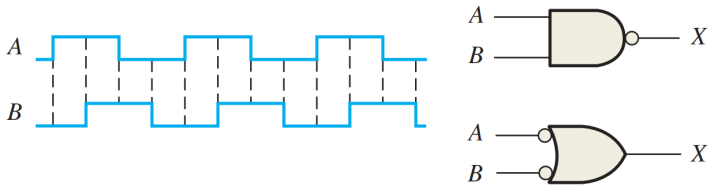
Problem Solving Assignment # 3 Due Date: 7th March, 21

[CLO 1 & 2]

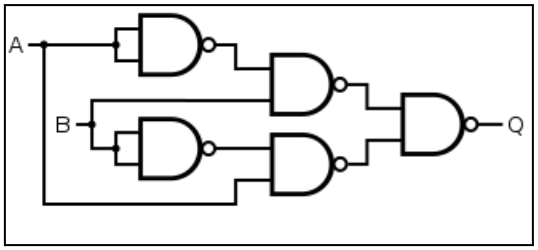
a. A locker has been rented in the bank. The locker gate (L) can be opened (high/1) by using one key (C) which is with the client and the other key which is with the bank (B). When both the keys are used the locker the door opens. Express the process of opening the locker in terms of digital operation. [3]

b. As you have learned, the two logic symbols shown in the attached figure represent equivalent operations. The difference between the two is strictly from a functional viewpoint. For the NAND symbol, look for two HIGHs on the inputs to give a LOW output. For the negativeOR, look for at least one LOW on the inputs to give a HIGH on the output. Using these two functional viewpoints, show that each gate will produce the same output for the given inputs. [2]

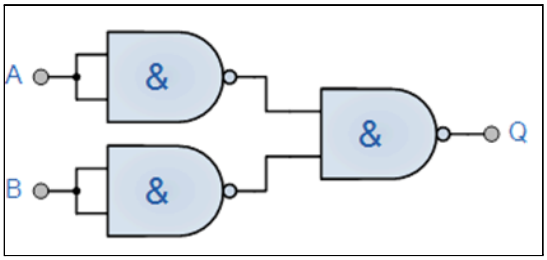


c. Generate the truth table (carefully) for the following multi-gate circuits and identify the equivalent reduced simplest circuit/gate possible. [8]

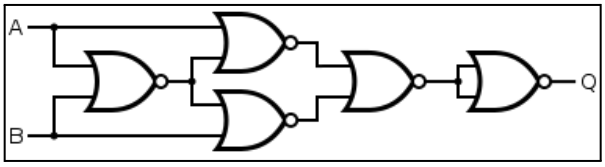
i.



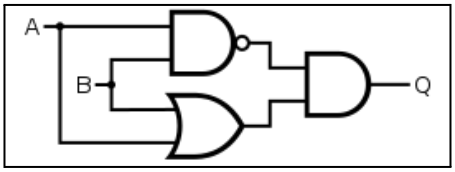
ii.



iii.



iv.



d. Determine the faulty gates in the attached figure by analyzing the timing diagrams and draw correct waveform: [4]