

Name _____ Student ID _____ Colleges & Schools _____ Department _____

Quiz Unit 2 Solutions

1. Draw a circuit to realize the function:

$$F = ABC + A'BC + AB'C + ABC'$$

using one OR gate and three AND gates. The AND gates should have two inputs. (*Hint:* To simplify the function F , apply uniting theorem and elimination theorem.)

Sol.) $F = (A+A')BC + AB'C + ABC' \leftarrow (\text{Uniting Theorem})$

$$= BC + AB'C + ABC' = C(B+B'A) + ABC' \leftarrow (\text{Elimination Theorem})$$

$$= C(B+A) + ABC' = BC + AC + ABC' = BC + A(C+C'B) \leftarrow (\text{Elimination Theorem})$$

$$= BC + A(C+B) = BC + AC + AB$$

