Assignment 1

* 1. A ⊆ B (Given), A ∩ B = A

(A ∩ C) ∩ (B ∩ C) = ((A ∩ B) ∩ C) ∩ (B ∩ C) A = (A ∩ B)

= (A ∩ (B ∩ C)) ∩ (B ∩ C) Associative Law

= A ∩ ((B ∩ C) ∩ (B ∩ C) Associative Law

= A ∩ (B ∩ C)

= (A ∩ B) ∩ C Associative Law

= A ∩ C (A ∩ B) = A

Since (A ∩ C) ∩ (B ∩ C) = A ∩ C,

(A ∩ C) ⊆ (B ∩ C)

* 1. L.H.S = (AC U B)C ∩ AC

= AC ∩ (AC U B)C Commutative Law

= AC ∩ ((Ac )C ∩ BC De Morgan’s Law

= AC ∩ (A ∩ BC ) Involution Law

= (AC ∩ A) ∩ BC Associative Law

= Ø∩ BC Complement Law

= Ø Since Ø is a subset of

= R.H.S every other set.

Therefore, (AC U B)C ∩ AC = Ø

* 1. L.H.S = BC - (BC - A)

= BC - (BC ∩ AC ) B – A = B ∩ AC

= BC ∩ ( BC ∩ AC )C B – A = B ∩ AC

= BC ∩ (B U A) De Morgan’s Law

= (BC ∩ B) U (BC ∩ A) Distributive Law

= Ø U (BC ∩ A) Innovation Law

= BC ∩ A Ø is a subset of

= R.H.S

Therefore, BC - (BC - A) = BC ∩ A