Birzeit University
Department of Electrical and Computer Engineering
Faculty of Engineering and Technology
ENCS 3340:Artiticial Intelligence,   Quiz#3 – Logic Section1

Student Name:_____Sample Solution_____   Student Number_

x,y,z are variables,

Q1- Given the following KB:

{1- Door1Open ^ Door2Open => Room2Reachable

 2- ¬ Weekend => Door2Open

3- ¬ Weekend ^ Door1Open } =3.1 ¬ Weekend and 3.2 Door1Open

 and the **Query**: Room2Reachable

Use **Forward Chaining** to Show that the Query is entailed (if so).

3.1+2= Door2Open 4; 1+3.2+4➜ Room2Reachable

Q2. Prove G by refutational Resolution. KB=

A1. (Dog(D))

A2. (Owns(Jack,D))

B. (¬Dog(y) v ¬Owns(x, y) v AnimalLover(x))

C. (¬AnimalLover(a) v ¬Animal(b) v ¬Kills(a,b))

D. (Kills(Jack,Tuna) v Kills(Curiosity,Tuna))

E. Cat(Tuna)

F. ¬Cat(z) v Animal(z)

G: Kills(Curiosity, Tuna): Goal Negation: ¬ Kills(Curiosity, Tuna) G'

E+F=Animal(Tuna)   H; A1+A2+B=AnimalLover(Jack) I

C+H+I= ¬Kills(Jack,Tuna) J; J+D= Kills(Curiosity,Tuna) K, K+G1=Empty Clause (refutation).

Q3. Translate from English to FOL:

1- Every occupation is evil.

Forall x Occupationx)➜Evil(x)

2- There are some Nice Dry Foods.

ThereExists x DryFood(x) ^ Nics(x)

3- BZU Students must Attend all classes for which they registered.

Forall x,y BZUStudent(x)^Course(y)^Registered(x,y)➜ MustAttend(x,y)

4- Ali has exactly 2 siblings

Forall x,y,z Sibling(Ali,y)^ Sibling(Ali,y) ^Sibling(Ali,z) ^x=/y➜z=x v z=y.

5- An Uncle is a parent's Brother

Forall x,y,z (Parent(x,y)^Brother(y,z)➜Uncle(x,z)

Q4. The sentence (A v B) ^ (C v D) has how many interpretations?: 2^4=16.