### Ex16 - Lewis/Resonance

# **Question One**

For each of the following, add the requisite non-bonding electrons.

# **Question Two**

Work out the Lewis structures for all of the following using the connectivity information given.

i) 
$$C(NH_2)_3^+$$

# ii) HCOOH

iii) the propargyl cation,  $C_3H_3+...$ 

iv) Carbamic acid

$$H_2N$$
 $C$ 
 $OH$ 

#### **Question Three**

Where possible, evaluate the resonance structures in your answers to Questio Two, determine which are degenerate, and which are major/minor contributors.

### **Question Four**

In each of the following cases, add formal charges and identify which resonance structures we would not include and why. All non-bonding electrons are shown.