

Last Name	First Name	MI
Student ID Number:		Total Score          <b>/ 30</b>
Circle the name of your TA: SUSAN HEATHER LINH		
Discussion Section – Day:	Time:	

## Chem 30A Spring 2005

### QUIZ #1A (15 Min)

Weds April 13th

***INTERPRETATION OF THE QUESTIONS IS PART  
OF THE EXAM – DO NOT ASK FOR THE  
QUESTIONS TO BE EXPLAINED TO YOU***

***ONLY ANSWERS WRITTEN IN THE BOXES  
PROVIDED WILL BE GRADED***

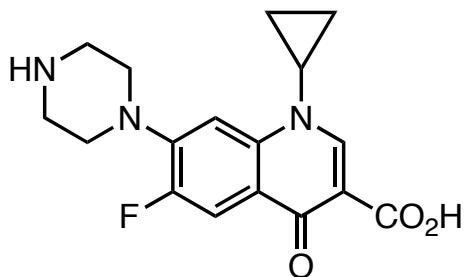
***\*\*\*DO NOT OPEN THIS EXAM UNTIL INSTRUCTED TO DO SO\*\*\****

Q	1	2	3	Total
				

*Shall in these confines, with a monarch's voice,  
Cry 'Havoc!' and let slip the dogs of war;  
That this foul deed shall smell above the earth  
With carrion men, groaning for burial.*

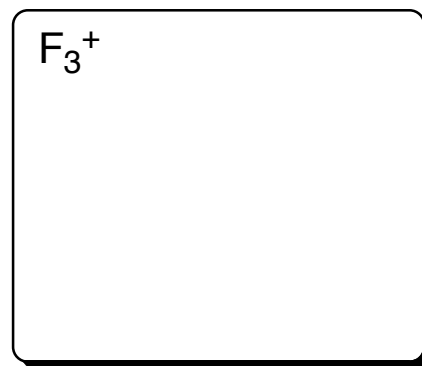
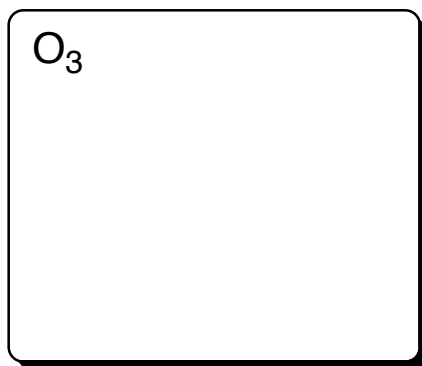
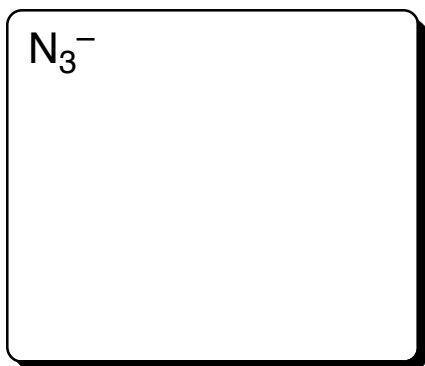
- William Shakespeare

1. The chemical structure of Ciprofloxacin is shown below – what is its molecular formula? (5 pts)

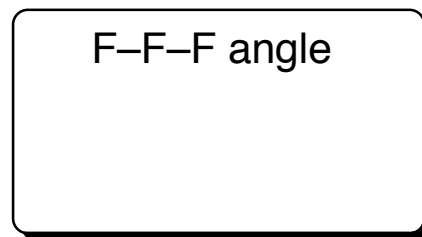
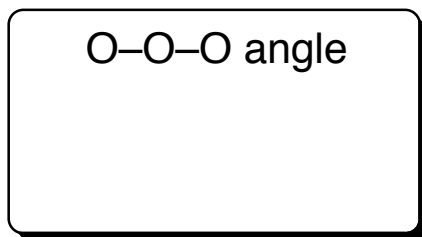
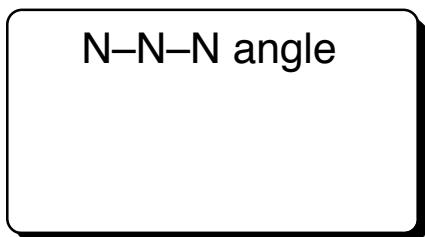


Ciprofloxacin (Cipro)

2. (a) In the boxes below, draw the structural formulae for the homotriatomic species derived from the elements nitrogen, oxygen and fluorine; in each case, the atom connectivity is X—X—X, i.e., there are no cyclic structures. Include all necessary bonds, lone pairs of electrons (or single unshared electrons if appropriate), and non-zero formal charges. *Hint: in each species, each atom has a full octet.* (4 pts each)



(b) Predict the X—X—X bond angle in each case. (1 pt each)



(c) One of the homotriatomic species discussed in this question does not actually exist (the other two do). Suggest which of the three species this is, and why it does not exist? (3 points)

3. There are numerous different molecules with the molecular formula  $C_8H_8$ , but there are only 17 constitutional isomers of  $C_8H_8$  in which each carbon atom is bonded to ONE hydrogen atom (13 of these compounds have actually been made). Draw (**using line formulae**) three different molecules with the formula  $C_8H_8$  in which each carbon is bonded to ONE hydrogen atom, and in which every carbon atom has a full octet. (4 pts each)

1

2

3

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## Chem 30A Spring 2005

### QUIZ #1B (15 Min)

Weds April 13th

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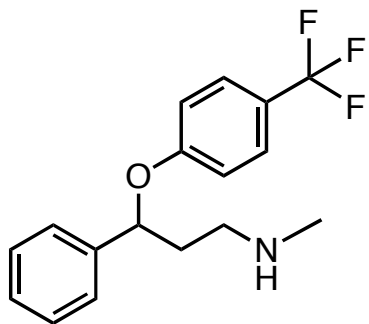
**\*\*\*DO NOT OPEN THIS EXAM UNTIL INSTRUCTED TO DO SO\*\*\***

Q	1	2	3	Total
X				

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That this foul deed shall smell above the earth  
With carrion men, groaning for burial.*

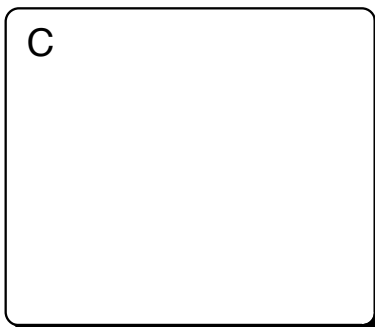
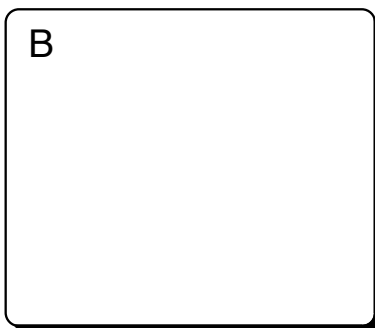
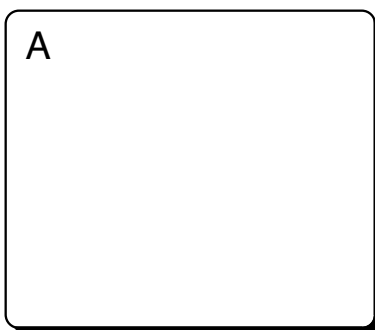
- William Shakespeare

1. The chemical structure of Fluoxetine is shown below – what is its molecular formula? (5 pts)

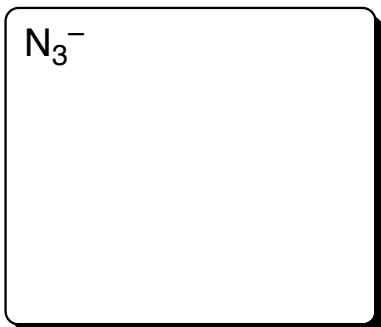


Fluoxetine (Prozac)

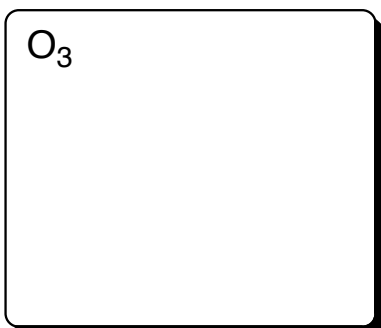
2. There are numerous different molecules with the molecular formula  $C_8H_8$ , but there are only 17 constitutional isomers of  $C_8H_8$  in which each carbon atom is bonded to ONE hydrogen atom (13 of these compounds have actually been made). Draw (**using line formulae**) three different molecules with the formula  $C_8H_8$  in which each carbon is bonded to ONE hydrogen atom, and in which every carbon atom has a full octet. (4 pts each)



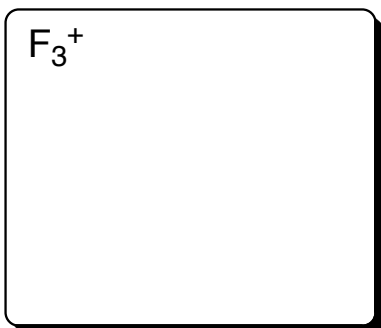
3. (a) In the boxes below, draw the structural formulae for the homotriatomic species derived from the elements nitrogen, oxygen and fluorine; in each case, the atom connectivity is X—X—X, i.e., there are no cyclic structures. Include all necessary bonds, lone pairs of electrons (or single unshared electrons if appropriate), and non-zero formal charges. *Hint: in each species, each atom has a full octet.* (4 pts each). Furthermore, in each case, predict the X—X—X bond angle. (1 pt each)



N—N—N angle



O—O—O angle



F—F—F angle

(b) One of the homotriatomic species discussed in this question does not actually exist (the other two do). Suggest which of the three species this is, and why it does not exist? (3 points)