

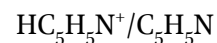
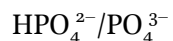
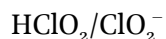
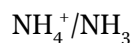
## Quiz 14.5 – Buffer Solutions

Name: \_\_\_\_\_

**Question 1**

Each acid/base conjugate pair can act as a buffer.

Give the  $pH$  range over which each pair below works (Consult Appendix A.3 for  $K_a$  values):

**Question 2**

1.5 g of  $\text{MgF}_2(\text{s})$  are dissolved in a 100.0 ml solution of 0.5 M HF. Find the  $pH$  of the solution

**Question 3**

Find the  $pH$  if 25.0 ml of 0.75 M HCl are added to the buffer solution prepared in Question 2

**Question 4**

You want to make a buffer solution with  $pH = 9.750$  using a  $\text{HCN}/\text{CN}^-$  buffer. You have one solution with  $[\text{HCN}] = 0.100\text{ M}$  and another with  $[\text{CN}^-] = 0.200\text{ M}$  which you can mix together to make the buffer. If you start with 125 ml of the HCN solution, How many ml of  $\text{CN}^-$  solution should you use?

**Question 5**

Find the buffer capacity of the solution prepared in Question 4 (The easy way: how many moles of strong acid and strong base could be added before all buffer reactants are consumed?)

## *My Voice*

By Rafael Campo

To cure myself of wanting Cuban songs,  
I wrote a Cuban song about the need  
For people to suppress their fantasies,  
Especially unhealthy ones. The song  
Began by making reference to the sea,  
Because the sea is like a need so great  
And deep it never can be swallowed. Then  
The song explores some common myths  
About the Cuban people and their folklore:  
The story of a little Carib boy  
Mistakenly abandoned to the sea;  
The legend of a bird who wanted song  
So desperately he gave up flight; a queen  
Whose strength was greater than a rival king's.  
The song goes on about morality,  
And then there is a line about the sea,  
How deep it is, how many creatures need  
Its nourishment, how beautiful it is  
To need. The song is ending now, because  
I cannot bear to hear it any longer.  
I call this song of needful love my voice.