

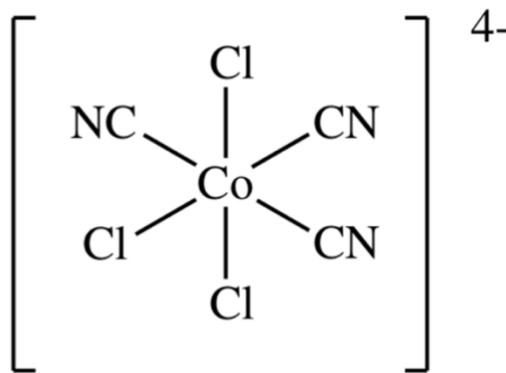
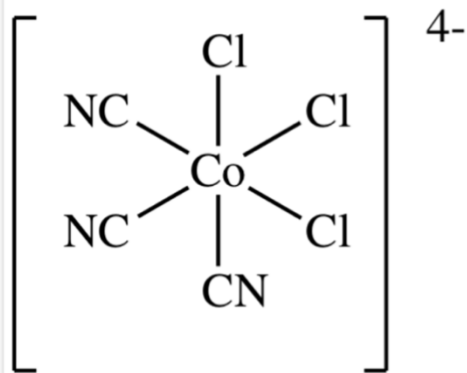
Have all supplementary information easily accessible: equations, constants, data tables, periodic table, etc...

1. Name the following compound:



2. What is the formula for the pentaquahydroxoiron(III) ion?

3. The two compounds are _____ isomers.



4.

What is the resulting pH of a solution made by mixing 10.0 mL of an HCl(aq) solution having a pH of 1.00 with 10 mL of an HCl(aq) solution having a pH of 5.00?

5. Identify each of the following aqueous salt solutions as acidic, basic, or neutral.

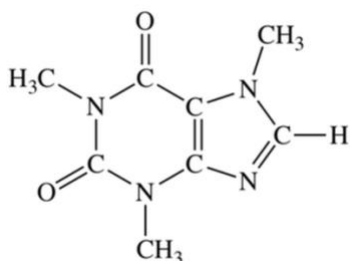
KBr

LiHCOO

CH₃NH₃Cl

If acidic or basic, write out the corresponding hydrolysis reaction with water.

6. Consider the following compound.



a) Is the compound a Bronsted-Lowry acid or a base?

- b) How many pi bonds are there?
- c) What is the molecular geometry around the top left nitrogen atom?
- d) What is the molecular geometry around the bottom right nitrogen atom?
- e) Describe how the C=N double bond is formed. Short sentences will suffice (no sketch needed!). Hybridize both C and N.

7. Draw the Lewis structure of the $[\text{CNO}]^{1-}$ ion, where the following formal charges are observed: C (-2), N (+1), O (0)

8.

An infant acetaminophen suspension contains 80 mg/0.80 mL suspension. The recommended dose is 15 mg/kg body weight. How many mL of this suspension should be given to an infant weighing 14 lbs?

9.

A combustion analysis of a 0.44g sample of an unknown compound yields 0.88 g CO_2 and 0.36 g H_2O . If the sample has a molar mass of 132 g/mol, what is the molecular formula of the sample?

10.

Calculate the wavelength (in meters) of a 143 g baseball thrown at a speed of 95 miles per hour.

11. List all 4th period elements that are diamagnetic.

12. Arrange the following elements by atomic size, with the largest listed first from left to right.
Rb Ca Ge Si S F

13. Find the velocity (in m/s) of an electron emitted by a metal whose threshold frequency is $2.25 \times 10^{14} \text{ s}^{-1}$ when it is exposed to visible light of wavelength $5.00 \times 10^{-7} \text{ m}$.

14. What is the atomic number of the yet undiscovered element where the 8s and 8p electron energy levels completely fill?