1) Predict whether the pH of each of the following salts placed into water is acidic (<7), basic (>7), or neutral. If you answer acidic or basic, justify your answer by writing a chemical reaction.

a. NaOCl

pH > 7 (basic)

ClO^- (aq) + H_2O (l) ⇌ HClO (aq) + OH^- (aq)

b. KCN

pH > 7 (basic)

CN^- (aq) + H_2O (l) ⇌ HCN (aq) + OH^- (aq)

c. NH_4NO_3

pH < 7 (acidic)

NH_4^+ (aq) + H_2O (l) ⇌ NH_3 (aq) + H_3O^+ (aq)

2) (a) Write the name/formula of the following coordination compounds. (b) What is its coordination number? (c) What is its shape? (d) Is it a chelate? If so, identify the chelating ligands.

a. $[Ni(NH_3)_3O]Br_2$

Triammineoxonickel (IV) bromide

Coordination number = 4

Tetrahedral or square planar are acceptable

Not a chelate

b. Dihydroxooxalatocobaltate (III) ion

$[Co(OH)_2(ox)]^-$ or $[Co(OH)_2(C_2O_4)]^-$

Coordination number = 4

Tetrahedral or square planar are acceptable

Chelate; oxalate is the chelating ligand

c. $K[Cu(en)_2(CN)_2]$

Potassium dicyanobis(ethylenediamine)cuprate (I) or

Potassium dicyanobis(en)cuprate (I)

Coordination number = 6

Octahedral

Chelate; en is the chelating ligand