

## 1002\_3rd Exam\_1010523

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) 3.53 L of 0.362 M  $\text{CuCl}_2(\text{aq})$  solution are electrolyzed for 55.6 minutes with a current of 14.0-amperes. What is  $[\text{CuCl}_2]$  when the electrolysis ends? ( $\text{Cu} = 63.55$ ,  $\text{Cl} = 35.45$ )

A) 0.120 M      B) 0.328 M      C) 0.293 M      D) 0.361 M      E) 0.171 M

Answer: C

- 2) Which of the following forms a colorless aqueous solution?

A)  $\text{NiCl}_2$       B)  $\text{FeCl}_3$       C)  $\text{CoSO}_4$       D)  $\text{CuClO}_4$

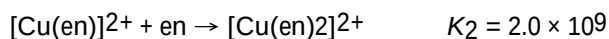
Answer: D

- 3) Choose the INCORRECT formula/name combination for ligands.

A)  $\text{SCN}^-$  bonded to S thiocyanato-S-  
 B)  $\text{CH}_3\text{NH}_2$  ammino  
 C)  $\text{NCS}^-$  bonded to N thiocyanato-N-  
 D)  $\text{S}_2\text{O}_3^{2-}$  thiosulfato  
 E)  $-\text{O}_2\text{C}-\text{CO}_2^-$  oxalato (ox)

Answer: B

- 4) Using the stepwise formation constants given, calculate the net formation constant for the  $[\text{Cu}(\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2)_2]^{2+}$  complex.



A)  $2.5 \times 10^9$       B)  $7.9 \times 10^{19}$       C)  $5.4 \times 10^{10}$       D)  $2.6 \times 10^1$       E)  $1.0 \times 10^{20}$

Answer: E

- 5) Choose the INCORRECT statement.

A) Most transition element bonding involves  $p$  orbitals.  
 B) Most representative elements are single oxidation states.  
 C) Metallurgy is the study of metals.  
 D) Most transition elements are multiple oxidation states.  
 E) Most representative element bonding involves  $s$  and  $p$  orbitals.

Answer: A

- 6)  $[\text{Fe}(\text{CN})_6]^{4-}$  has how many unpaired electrons?

A) 4      B) 0      C) 2      D) 1      E) 3

Answer: B

- 7) In a galvanic cell, oxidation occurs at the:

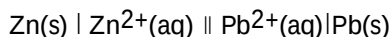
A) anode  
 B) electrolyte  
 C) cathode  
 D) in cathodic space  
 E) salt bridge

Answer: A

- 8) Isomers such as the two forms of the ion  $[\text{Co}(\text{NH}_3)_2\text{Cl}_4]^-$  that differ only in the way the atoms are oriented in space are called, in general \_\_\_\_\_.
- A) hybridization isomers
  - B) cis-trans isomers
  - C) optical isomers
  - D) crystal field isomers
  - E) ionization isomers

Answer: B

- 9) Write the net redox reaction that occurs in the galvanic cell.



- A)  $\text{Pb}^{2+}(\text{s}) + \text{Zn}^{2+}(\text{s}) \rightarrow \text{Pb(s)} + \text{Zn(s)} + 4 \text{e}^-$
- B)  $\text{Pb(s)} + \text{Zn(s)} + 4 \text{e}^- \rightarrow \text{Pb}^{2+}(\text{aq}) + \text{Zn}^{2+}(\text{aq})$
- C)  $\text{Pb(s)} + \text{Zn(s)} \rightarrow \text{Pb}^{2+}(\text{aq}) + \text{Zn}^{2+}(\text{aq}) + 4 \text{e}^-$
- D)  $\text{Pb}^{2+}(\text{aq}) + \text{Zn(s)} \rightarrow \text{Zn}^{2+}(\text{aq}) + \text{Pb(s)}$
- E)  $\text{Pb(s)} + \text{Zn}^{2+}(\text{aq}) \rightarrow \text{Pb}^{2+}(\text{aq}) + \text{Zn(s)}$

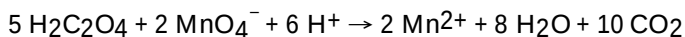
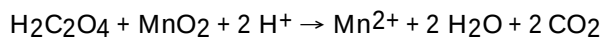
Answer: D

- 10) List the following in order of increasing atomic radius: V, Sc, Fe, Ti

- A)  $\text{V} < \text{Fe} < \text{Sc} < \text{Ti}$
- B)  $\text{Sc} < \text{Ti} < \text{V} < \text{Fe}$
- C)  $\text{Fe} < \text{V} < \text{Ti} < \text{Sc}$
- D)  $\text{Ti} < \text{V} < \text{Fe} < \text{Sc}$
- E)  $\text{Fe} < \text{Sc} < \text{Ti} < \text{V}$

Answer: C

- 11) A 0.535 g sample of pyrolusite ore (impure  $\text{MnO}_2$ ) is treated with 1.42 g oxalic acid ( $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ ) in an acidic medium. Following this reaction, the excess oxalic acid is titrated with 0.1000 M  $\text{KMnO}_4$ , 36.6 mL being required. What is the %  $\text{MnO}_2$  in the ore? The reactions are:



- A) 2.33%
- B) 34.4%
- C) 1.22%
- D) 38.9%
- E) 61.1%

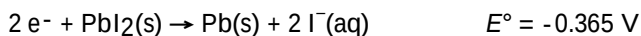
Answer: B

- 12) Which of the following metals form compounds with the highest oxidation states?

- A) Sc
- B) Y
- C) Ti
- D) Mn
- E) V

Answer: D

- 13) Calculate the  $K_{\text{sp}}$  of lead iodide from the following standard electrode potentials, at 25°C:



- A)  $2 \times 10^{-17}$
- B)  $6 \times 10^{-5}$
- C)  $9 \times 10^{-5}$
- D)  $8 \times 10^{-9}$
- E)  $5 \times 10^{-13}$

Answer: D

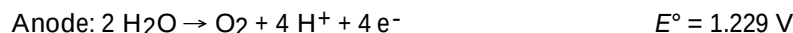
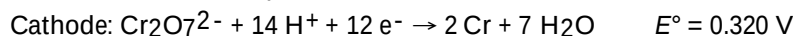
14) Which two of the following half-reactions will combine to give the galvanic cell with the highest cell potential?

- 1)  $2\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g})$   $E^\circ = 0$
- 2)  $\text{Pb}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Pb}(\text{s})$   $E^\circ = -0.125\text{ V}$
- 3)  $\text{I}_2(\text{s}) + 2\text{e}^- \rightarrow 2\text{I}^-(\text{aq})$   $E^\circ = +0.535\text{ V}$
- 4)  $\text{Zn}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Zn}(\text{s})$   $E^\circ = -0.763\text{ V}$

- A) 1 and 3                      B) 2 and 3                      C) 3 and 4                      D) 1 and 4                      E) 2 and 4

Answer: C

15) An iron plate of  $0.559\text{ m}^2$  surface area is to be chrome plated using a chromic acid-sulfuric acid plating bath. The anode and cathode half-equations are:



Determine the minimum energy needed to produce a plating  $0.115\text{ mm}$  thick on the iron plate. The density of chromium is  $7.19\text{ g/cm}^3$ .

- A)  $780\text{ kJ}$                       B)  $4.68 \times 10^3\text{ kJ}$                       C)  $1.05 \times 10^3\text{ kJ}$                       D)  $526\text{ kJ}$                       E)  $9.36 \times 10^3\text{ kJ}$

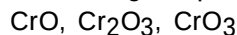
Answer: B

16) How long would it take to deposit  $15.0\text{ g}$  copper metal at the cathode of an electrolysis cell running with a current of  $150\text{ mA}$ ? ( $\text{Cu} = 63.55$ )

- A)  $12.7\text{ h}$                       B)  $4.22\text{ h}$                       C)  $42.2\text{ h}$                       D)  $84.4\text{ h}$                       E)  $19.0\text{ h}$

Answer: D

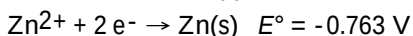
17) Order the following compounds from acidic to basic, with the most acidic on the left.



- A)  $\text{CrO}_3 > \text{CrO} > \text{Cr}_2\text{O}_3$                       B)  $\text{CrO}_3 > \text{Cr}_2\text{O}_3 > \text{CrO}$   
C)  $\text{CrO} > \text{Cr}_2\text{O}_3 > \text{CrO}_3$                       D)  $\text{Cr}_2\text{O}_3 > \text{CrO}_3 > \text{CrO}$

Answer: B

18) What is the concentration of  $\text{Cu}^{2+}$  in the following cell at  $25^\circ\text{C}$  if the cell voltage is  $1.253\text{ V}$ ?



- A)  $0.6\text{ M}$                       B)  $1 \times 10^{-6}\text{ M}$                       C)  $1 \times 10^{-2}\text{ M}$                       D)  $9 \times 10^{-4}\text{ M}$                       E)  $4 \times 10^{-4}\text{ M}$

Answer: B

19) What is the cell diagram for the spontaneous cell involving the  $\text{Fe}^{3+} | \text{Fe}^{2+}$  ( $0.771\text{ V}$ ) half cell and the  $\text{Zn}^{2+} | \text{Zn}$  ( $-0.763\text{ V}$ ) half cell?

- A)  $\text{Fe}^{2+}(\text{aq}) | \text{Fe}^{3+}(\text{aq}) || \text{Zn}^{2+}(\text{aq}) | \text{Zn}(\text{s})$   
B)  $\text{Zn}(\text{s}) | \text{Zn}^{2+}(\text{aq}) || \text{Fe}^{3+}(\text{aq}) | \text{Fe}^{2+}(\text{aq}) | \text{Pt}(\text{s})$   
C)  $\text{Pt}(\text{s}) | \text{Fe}^{2+}(\text{aq}), \text{Fe}^{3+}(\text{aq}) || \text{Zn}^{2+}(\text{aq}) | \text{Zn}(\text{s})$   
D)  $\text{Zn}(\text{s}) | \text{Zn}^{2+}(\text{aq}) || \text{Fe}^{3+}(\text{aq}) | \text{Fe}^{2+}(\text{aq})$   
E)  $\text{Zn}(\text{s}) | \text{Zn}^{2+}(\text{aq}) || \text{Fe}^{3+}(\text{aq}) | \text{Fe}^{2+}(\text{aq}) | \text{Zn}(\text{s})$

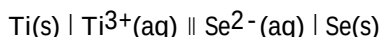
Answer: B

20) What mass of silver can be deposited by the passage of a constant current of 5.00 A through a  $\text{AgNO}_3$  solution for 2.00 hours? ( $\text{Ag} = 107.87$ ,  $\text{N} = 14.01$ ,  $\text{O} = 16.00$ )

- A) 10.06 g                      B) 0.671 g                      C) 0.373 g                      D) 40.3 g                      E) 0.0112 g

Answer: D

21) Write the net redox reaction that occurs in the following galvanic cell.



- A)  $2 \text{Ti(s)} + 3 \text{Se(s)} \rightarrow 2 \text{Ti}^{3+}(\text{aq}) + 3 \text{Se}^{2-}(\text{aq})$   
B)  $\text{Ti(s)} + \text{Se(s)} \rightarrow \text{Ti}^{3+}(\text{aq}) + \text{Se}^{2-}(\text{aq}) + 1 \text{e}^-$   
C)  $\text{Ti(s)} + \text{Se}^{2-}(\text{aq}) + 1 \text{e}^- \rightarrow \text{Ti}^{3+}(\text{aq}) + \text{Se(s)}$   
D)  $2 \text{Ti}^{3+}(\text{aq}) + 3 \text{Se(s)} + 1 \text{e}^- \rightarrow 2 \text{Ti(s)} + 3 \text{Se}^{2-}(\text{aq})$   
E)  $2 \text{Ti}^{3+}(\text{aq}) + 3 \text{Se(s)} \rightarrow 2 \text{Ti(s)} + 3 \text{Se}^{2-}(\text{aq})$

Answer: A

22) List the following in order of increasing number of unpaired electrons: Fe, V, Sc, Mn

- A)  $\text{Mn} < \text{Fe} < \text{V} < \text{Sc}$   
B)  $\text{V} < \text{Sc} < \text{Mn} < \text{Fe}$   
C)  $\text{Fe} < \text{V} < \text{Sc} < \text{Mn}$   
D)  $\text{Sc} < \text{Mn} < \text{Fe} < \text{V}$   
E)  $\text{Sc} < \text{V} < \text{Fe} < \text{Mn}$

Answer: E

23) In the cation  $[\text{CrCl}_2(\text{H}_2\text{O})_4]^+$ , the oxidation state of chromium and its coordination number, respectively, are \_\_\_\_\_.

- A) +3 and six                      B) -4 and six                      C) +2 and six                      D) 0 and four                      E) -3 and two

Answer: A

24) Choose the INCORRECT statement about the electron configuration of transition elements.

- A) Zn:  $[\text{Ar}]3d^{10}4s^2$   
B) Cr:  $[\text{Ar}]3d^44s^2$   
C) Fe:  $[\text{Ar}]3d^64s^2$   
D) V:  $[\text{Ar}]3d^34s^2$   
E) Cu:  $[\text{Ar}]3d^{10}4s^1$

Answer: B

25) Choose the INCORRECT statement about transition elements.

- A) Coordination compounds are formed by coordinate covalent bonds.  
B) Colored compounds and solutions occur because of electronic transitions that occur within partially filled  $d$  orbitals.  
C) Paramagnetism is due to paired electrons.  
D) The metal ions provide empty  $d$  orbitals in coordination compounds.  
E) The ligand supplies one or more pairs of electrons that form coordinate bonds in coordination compounds.

Answer: C

26) Choose the INCORRECT completion of the following sentence:

"The transition elements are characterized by....

- A) ...high melting points."
- B) ...poor electrical conductivity."
- C) ...their ability to exist in several different oxidation states."
- D) ...moderate to extreme hardness."
- E) ...the formation of mostly colored compounds."

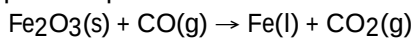
Answer: B

27) Why is an aqueous solution of  $\text{Fe}^{3+}$  acidic?

- A) Iron ions force the dissociation of water.
- B) Iron ions attract hydroxide ions from water leaving hydrogen ions.
- C) Iron ions react with water to produce hydrogen ions.
- D) Iron ions attract water molecules to form a complex.
- E) Iron ions form a complex with water then lose hydrogen ions from its water ligands.

Answer: E

28) The simplified equation for the reduction of iron ore is:



When it is balanced, the coefficients are \_\_\_\_\_.

- A) 2, 6, 3, 3
- B) 1, 3, 1, 3
- C) 1, 1, 2, 1
- D) 1, 3, 2, 3
- E) 1, 1, 1, 2

Answer: D

29) Which of the following represents a disproportionation reaction?

- A)  $2 \text{CrO}_4^{2-}(\text{aq}) + 2 \text{H}^+(\text{aq}) \rightarrow \text{Cr}_2\text{O}_7^{2-}$
- B)  $\text{TiCl}_4(\text{l}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{TiO}_2(\text{s}) + \text{HCl}(\text{g})$
- C)  $2 \text{Cu}^+(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{Cu}(\text{s}) + \text{CuO}(\text{s}) + 2 \text{H}^+(\text{aq})$
- D)  $\text{MnO}_4^-(\text{aq}) + 5 \text{VO}^{2+}(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{Mn}^{2+}(\text{aq}) + \text{VO}_2^+(\text{aq}) + 2 \text{H}^+(\text{aq})$
- E)  $3 \text{MnO}_2 + 6 \text{KOH} + \text{KClO}_3 \xrightarrow{\Delta} 3 \text{K}_2\text{MnO}_4 + \text{KCl} + 3 \text{H}_2\text{O}$

Answer: C

30) Which of the following complexes has no geometric isomers?

- A)  $[\text{Co}(\text{NH}_3)_2\text{F}_4]^-$
- B)  $[\text{Pt}(\text{NH}_3)\text{F}_5]^{3-}$
- C)  $[\text{Co}(\text{NH}_3)_4\text{F}_2]^+$
- D)  $[\text{Co}(\text{NH}_3)_3\text{F}_3]$
- E)  $[\text{Pt}(\text{NH}_3)_4\text{F}_2]$

Answer: B

31) Based on concepts from both crystal field theory and valence bond theory, the most likely combination of molecular orbital, magnetic and geometric descriptions for the  $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$  ion is \_\_\_\_\_.

- A)  $sp^2d$ /paramagnetic/tetrahedral
- B)  $sp^2d$ /paramagnetic/square planar
- C)  $sp^2d$ /diamagnetic/square planar
- D)  $sp^3d^2$ /diamagnetic/octahedral
- E)  $sp^3d^2$ /paramagnetic/octahedral

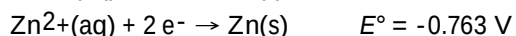
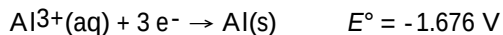
Answer: E

32) Choose the INCORRECT statement.

- A) Iron's main uses is in steel.
- B) Iron only exists in +1 and +2 oxidation states.
- C) The ferromagnetic metals are Fe, Co, Ni.
- D) Fe, Co, and Ni can all exist in the +2 oxidation state.
- E)  $\text{Fe}(\text{H}_2\text{O})_6^{2+}$  is more stable than  $\text{Fe}(\text{H}_2\text{O})_6^{3+}$  because it has a half-filled  $d$  subshell.

Answer: B

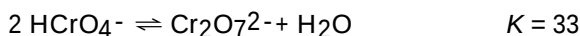
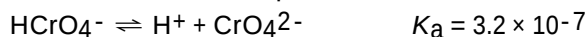
33) Determine  $E^\circ_{\text{cell}}$  for the reaction:  $2 \text{Al} + 3 \text{Zn}^{2+} \rightarrow 2 \text{Al}^{3+} + 3 \text{Zn}$ . The half reactions are:



- A) 0.913 V      B) 2.439 V      C) -0.913 V      D) -1.063 V      E) -2.439 V

Answer: A

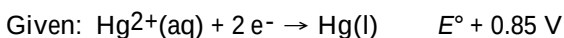
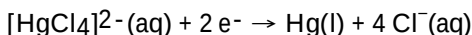
34) If a solution is prepared by dissolving 1.6 mol  $\text{Na}_2\text{CrO}_4$  in 1.0 L of a buffer at pH 8.24, what will be  $[\text{Cr}_2\text{O}_7^{2-}]$  in the solution? The resultant equilibria are:



- A)  $8.6 \times 10^2 \text{ M}$
- B)  $9.9 \times 10^{-5} \text{ M}$
- C)  $8.9 \times 10^{-9} \text{ M}$
- D)  $2.9 \times 10^{-28} \text{ M}$
- E)  $2.8 \times 10^{-2} \text{ M}$

Answer: E

35) The net formation constant for tetrachloromercurate(II) ion is  $1.2 \times 10^{15}$ . Calculate the approximate standard electrode potential for:



- A) +0.70 V      B) -0.39 V      C) -0.63 V      D) +0.41 V      E) zero

Answer: D

36) It is known that the sulfhydryl group,  $-\text{SH}$ , forms strong coordinate bonds to certain heavy metal ions. Which of the following do you expect to be the best chelating agent for heavy metal ions?

- A)  $\text{CH}_3-\text{SH}$
- B)  $\text{CH}_3-\text{S}-\text{S}-\text{CH}_3$
- C)  $\text{SO}_4^{2-}$
- D)  $\text{H}-\text{SH}$
- E)  $\text{HS}-\text{CH}_2-\text{CH}(\text{SH})-\text{CH}_2-\text{OH}$

Answer: E

37) Choose the correct shape, weak or strong field, and number of unpaired electrons for  $[\text{PtCl}_6]^{2-}$ .

- A) octahedral, weak, 4
- B) square planar, weak, 0
- C) square planar, strong, 4
- D) tetrahedral, weak, 0
- E) octahedral, weak, 1

Answer: A

38) What volume of carbon monoxide, measured at  $1200^\circ\text{C}$  and 720 torr, would be released when 5.0 kg of an ore containing 45% zinc oxide as the only reacting species is treated with excess carbon?  $[\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}]$

- A)  $1.2 \times 10^2 \text{ L}$
- B)  $1.5 \times 10^3 \text{ L}$
- C)  $7.0 \times 10^4 \text{ L}$
- D)  $7.8 \times 10^3 \text{ L}$
- E)  $3.5 \times 10^3 \text{ L}$

Answer: E

39) Choose the INCORRECT statement.

- A) A voltaic cell is a galvanic cell.
- B) Voltaic cells produce an electron flow.
- C) A double vertical line separates half cells in a cell diagram.
- D) Electrolytic cells are cells where electron flow is caused by spontaneous reactions.
- E) A single vertical line separates phases in a cell diagram.

Answer: D

40) For the cell reaction at  $25^\circ\text{C}$   $\text{Cu}^{2+}(\text{aq}) + \text{Zn}(\text{s}) \rightarrow \text{Cu}(\text{s}) + \text{Zn}^{2+}(\text{aq})$ ,  $E^\circ_{\text{cell}} = +1.100 \text{ V}$ . What is the equilibrium constant for this reaction?

- A)  $3 \times 10^{-19}$
- B)  $3 \times 10^{-18}$
- C)  $2 \times 10^{-37}$
- D)  $2 \times 10^{37}$
- E)  $3 \times 10^{18}$

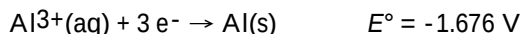
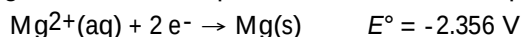
Answer: D

41) A constant current of 10.0 A is passed through an electrolytic cell for 90.0 min. How many Coulombs of charge are passed through the cell?

- A) 0.00933
- B) 0.00560
- C) 900
- D) 0.560
- E) 15

Answer: D

42) Will magnesium metal displace  $\text{Al}^{3+}$  ion from an aqueous solution?



- A) No, the system is at equilibrium.
- B) Yes, since  $E^\circ_{\text{cell}}$  is negative.
- C) No, since  $E^\circ_{\text{cell}}$  is negative.
- D) No, the reverse reaction is spontaneous.
- E) Yes, since  $E^\circ_{\text{cell}}$  is positive.

Answer: E

43) Choose the INCORRECT statement.

- A) When  $E_{\text{cell}} < 0$ , the reaction is spontaneous.
- B)  $\Delta G^\circ = -zFE^\circ_{\text{cell}}$
- C) When  $E_{\text{cell}} = 0$ , the reaction is at equilibrium.
- D) Reversing a cell reaction changes the sign of  $E_{\text{cell}}$ .
- E) The work available in a cell =  $-zFE_{\text{cell}}$ .

Answer: A

44) Choose the correct shape, weak or strong field, and number of unpaired electrons for  $[\text{Co}(\text{NH}_3)_4]^{2+}$ .

- A) square planar, strong, 1
- B) tetrahedral, weak, 1
- C) tetrahedral, strong, 1
- D) octahedral, strong, 3
- E) octahedral, weak, 3

Answer: A

45) Which element has the largest number of unpaired electrons?

- A)  $\text{Fe}^{3+}$
- B)  $\text{Cu}^{2+}$
- C)  $\text{V}^{3+}$
- D)  $\text{Ni}^{2+}$
- E)  $\text{Zn}^{2+}$

Answer: A

46) Which element has the lowest first ionization potential?

- A) Ti
- B) Mn
- C) Ni
- D) Co
- E) Fe

Answer: A

47) What is the concentration of  $\text{Ag}^+$  if 0.125 g of  $\text{AgC}_2\text{H}_3\text{O}_2$  is placed in 100.0 mL of 1.00 M  $\text{NH}_3$ ?  $K_f = 1.6 \times 10^7$  for  $[\text{Ag}(\text{NH}_3)_2]^+$

- A)  $5.6 \times 10^{-10}$  M
- B)  $8.0 \times 10^{-8}$  M
- C)  $4.8 \times 10^{-10}$  M
- D)  $7.5 \times 10^{-3}$  M
- E)  $8.3 \times 10^{-6}$  M

Answer: C

48) Which of the following ligands exerts the strongest field?

- A)  $\text{ONO}^-$
- B)  $\text{Br}^-$
- C)  $\text{H}_2\text{O}$
- D)  $\text{NH}_3$
- E)  $\text{I}^-$

Answer: D

49) How many coulombs would be needed to deposit all of the  $\text{Ag}^+$  ion from 600 mL of a solution 0.250 M in  $\text{Ag}^+$ ?

- A)  $1.45 \times 10^7$  C
- B)  $1.56 \times 10^4$  C
- C)  $2.41 \times 10^4$  C
- D)  $1.45 \times 10^4$  C
- E)  $1.56 \times 10^6$  C

Answer: D

50) When  $[\text{Ni}(\text{NH}_3)_4]^{2+}$  is treated with concentrated HCl, two compounds having the same formula,  $\text{Ni}(\text{NH}_3)_4\text{Cl}_2$ , designated I and II, are formed. Compound I can be converted to compound II by boiling it in dilute HCl. A solution of I reacts with oxalic acid,  $\text{H}_2\text{C}_2\text{O}_4$ , to form  $\text{Ni}(\text{NH}_3)_4(\text{C}_2\text{O}_4)$ . Compound II does not react with oxalic acid. Compound II is:

- A) the cis isomer
- B) tetrahedral in shape
- C) the trans isomer
- D) the same as compound I
- E) octahedral in shape

Answer: C