# NATIONAL EDUCATIONAL ASSESMENT AND EXAMINATIONS AGENCY (NEAEA)
# ETHIOPIAN UNIVERSITY ENTRANCE EXAMINATION (EUEE)
# CHEMISTRY EXAMINTION 2006

*BOOKLET CODE: 00*
*NUMBER OF ITEMS:*

*SUBJECT CODE: 00*
*TIME ALLOWED: 00*

**Directions: Each of the following questions is followed by four possible alternatives. You may refer to the information given below when you work on some of the questions.**

**Physical constants**

**a. Gas constant, R= 8.314j $mol^{-1}$ $k^{-1}$ = 0.0821L atm $mol^{-1}$ $k^{-1}$**

**b. Avogadro's number = 6.023 x $10^{23}$ $mol^{-1}$**

**c. Plank's constant, h= 6.626 x$10^{-34}$ $Js^{-1}$**

**d. Speed of light, c= 2.9979 x $10^{8}ms^{-1}$**

**e. Faraday's constant(F) = 96500C/mol**

**f. Charge of 1 mole of electrons = 96500C**

**SI units and conversion factors**

**a. 1 ton = 907.185 kg**

**b. 1 metric ton = 1000kg**

**c. 1Å=$10^{-10}$ m**

**d. 1L-atm = 101.3J**

**e. Coulombs = amperes x seconds**

**f. $T_F = T_C\ 9^0\ F/5^0\ C + 32^0\ F$ ($T_F$ = temperature $0_F$; $T_C$ = temperature in $0_C$)**

**g. Vapour pressure of pure water ($25^0$C) = 23.8 torr**

**h. Vapour pressure of pure water ($35^0$C) = 100 torr**

**ATOMIC NUMBERS (Z) AND ATOMIC WEIGHTS (A)**

| Element | H | He | b | C | N | O | F | Na | Mg | Al | Si | P | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z | 1 | 2 | 5 | 6 | 7 | 8 | 9 | 11 | 12 | 13 | 14 | 15 | 16 |
| A | 1.0 | 4.0 | 10.8 | 12.0 | 14.0 | 16.0 | 19.0 | 22.98 | 24.30 | 26.98 | 28.08 | 30.97 | 32.1 |

**ATOMIC NUMBERS (Z) AND ATOMIC WEIGHTS (A)**

| Element | Cl | Ca | Cr | Mn | Fe | Ni | Cu | Zn | Ag | Cd | Xe | Pb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z | 17 | 24 | 24 | 25 | 26 | 28 | 29 | 30 | 47 | 48 | 54 | 82 |
| A | 35.5 | 40.1 | 52.0 | 54.9 | 55.9 | 58.7 | 63.5 | 65.4 | 107.9 | 112.4 | 131.3 | 207.2 |

**1. Which of the following is NOT a conjugate acid-base pair?**

- ○ A. $HNO_3/NO^-_3$
- ○ B. $H_2SO_4/HSO^-_4$

- C. $NH_3/NH^-_2$
- D. $H_3O^+/OH^-$

**2. Which of the following is correct?**

- A. $1L=1dm^3$
- B. $1L=10dm^3$
- C. $10L=1dm^3$
- D. $1L=1m^3$

**3. Commercially, liquid vegetable oils are converted to solid fats such as margarine by:**

- A. Hydrogenation
- B. Hydration
- C. Saponification
- D. Oxidation

**4. What is the chemical name for Aspirin?**

- A. Acetyl salicylic acid
- B. Salicylic acid
- C. Methyl salicylate
- D. Sodium salicylate

**5. Which of the following statement(s) is (are) true of an ideal liquid-liquid solution?**
**I. It obeys PV = nRT**
**II. It obeys Raoult's law**
**III. Solute-solute, solvent-solvent, and solute-solvent interactions are very similar.**
**IV. Solute-solute, solvent-solvent, and solute-solvent interactions are quite different.**

- A. I, II and III
- B. I, II and IV
- C. II and III
- D. II and IV

**6. The unit cell in a certain lattice consists of a cube formed by an anion at each corner, an anion in the center, and a cation at the center of each face. How many cations and how many anions does the unit cell have?**

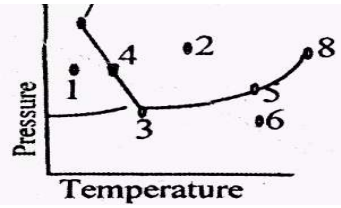
- A. 5 anions and 6 cations
- B. 5 anions and 3 cations
- C. 2 anions and 3 cations
- D. 3 anions and 4 cations

**7. In a reaction, A + B → product, the rate is doubled when the concentration of B is doubled, and the rate increases by a factor of 8 when the concentrations of both the reactants (A and B) are doubled, the rate law for the reaction can be written as:**

- A. Rate = K[A][B]
- B. Rate = $K[A][B]^2$

- C. Rate = $K[A]^2[B]$
- D. Rate = $K[A]^2[B]^2$

**8. Answer the following question using the phase diagram below. At which point can only the solid and liquid phases coexist?**




- A. 1
- B. 2
- C. 3
- D. 4

**9. Which electron transition in a hydrogen atom releases the largest energy?**

- A. n = 2 → ?n = 1
- B. n = 4 → n = 2
- C. n = 6 → n = 3
- D. n = 7 → n = 6

**10. The simplest formula for a compound containing $Mn^{4+}$ and $O^{2-}$ is**

- A. MnO
- B. $MnO_2$
- C. $Mn_2O_4$
- D. $Mn_4O_2$

**11. What is the ratio of the energy of a photon of 300 nm wavelength radiation to that of 600 nm radiation?**

- A. 1:2
- B. 1:1
- C. 2:1
- D. 3:1

**12. Which one of the following chemicals is used to disinfect water?**

- A. Fluorine
- B. Nitrogen
- C. Oxygen
- D. Chlorine

**13. During the titration of a known volume of a strong acid with a strong base, there is**

- A. A steady increase in PH
- B. A sharp increase in PH around the end point
- C. A steady decrease in PH

◯ D. A sharp decrease in PH around the end point

**14. A solution with a PH of 7.5 would be described as:**

◯ A. Very basic

◯ B. Slightly base

◯ C. Slightly acidic

◯ D. Very acidic

**15. The electrolysis of molten NaCl is an industrial process. What does the electrolysis produce?**

◯ A. Na and $Cl_2$

◯ B. $H_2$ and $O_2$

◯ C. $Na^+$ and $Cl^-$

◯ D. NaOH and $Cl_2$

**16. Butane burns in oxygen according to the equation below.**
**$2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O(l)$. If 11.6g of butane is burned in 11.6 g of oxygen, which is the limiting reagent?**

◯ A. Butane

◯ B. Oxygen

◯ C. Neither

◯ D. Both oxygen and butane

**17. A beaker filled to the 100mL mark with salt (the salt has a mass of 100g) and another beaker to the 100mL mark with water (the water has a mass of 100g) are mixed together in a bigger beaker until the salt is completely dissolved. What will be the mass of the solution?**

◯ A. It will be much more than 200g

◯ B. It will be much smaller than 200g

◯ C. It will be exactly 200g

◯ D. It will be slightly more than 200g

**18. Which one of the following is NOT an intensive property?**

◯ A. Mass

◯ B. Temperature

◯ C. Colour

◯ D. Density

**19. Which of the following is natural polymer?**

◯ A. Nylon

◯ B. PVC

◯ C. Cotton

◯ D. Dacron

**20. Which of the following metals forms a volatile compound during the extraction process?**

- A. Fe
- B. Co
- C. Ni
- D. Cu

**21. Which one of the following atoms in its ground state has the greatest number of unpaired electrons?**

- A. $_{13}Al$
- B. $_{14}Si$
- C. $_{15}P$
- D. $_{16}S$

**22. Which statement is true about chemical reactions at equilibrium?**

- A. A forward and backward reactions proceed at equal rates
- B.?The forward and backward reactions have stopped
- C.?The concentrations of the reactants and products are equal
- D.?The forward reaction is exothermic

**23. Which compound contains both covalent and ionic bonds?**

- A. Sodium carbonate, $Na_2CO_3$
- B. Magnesium bromide, $MgBr_2$
- C. Dichloromethane, $CH_2Cl_2$
- D. Ethanoic acid, $CH_3COOH$

**24. Which set of quantum numbers (n, l, $m_l$, $m_s$) is not possible?**

- A. 1, 0, 0, 1/2
- B. 1, 1, 0, 1/2
- C. 1, 0, 0, -1/2
- D. 2, 1, -1, 1/2

**25. Which of the following particles contains more electrons than neutrons?**
**I. $_1^1H$ II. $_{17}^{35}Cl^-$ III. $_{39}^{19}K^+$**

- A. I only
- B. II only
- C. I and II only
- D. II and III only

**26. Which molecule or ion does NOT have a tetrahedral shape?**

- A.?$XeF_4$
- B. $SiCl_4$
- C. $BF_4^-$
- D. $NH_4^+$

**27. Why are metals soft and malleable?**

- A. Because they are very shiny.
- B. Because they experience electrostatic repulsion
- C. Because of the presence of mobile electrons.
- D.?Because the metal cations can slip over each other fairly easily.

**28. In which region of the Periodic Table would the element with the electronic structure below be located?**
**$1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 4d^6 5s^2$**

- A. Group 6
- B. Noble gases
- C. S block
- D. D block

**29. Which factors will influence the rate of the reaction shown below?**
**$NO_2(g) + CO(g) \rightleftarrows NO(g) + CO_2(g)$**
**I. The number of collisions per second**
**II. The energy of the collisions**
**III. The geometry with which the molecules collide**

- A. I only
- B. II only
- C. I and II only
- D. I, II and III

**30. How many $\pi$ bonds are present in $CO_2$?**

- A. One
- B. two
- C. three
- D. four

**31. Which pair of monomers forms polyesters?**

- A. Difunctional alcohol, difunctional organic acid
- B.?Difunctional alcohol, difunctional amino acid
- C. Ethylene, ethylene
- D. Amino acid, amino acid

**32. Which changes will increase the amount of $SO_3(g)$ at equilibrium?**
**$2SO_2(g) + O_2(g) \rightleftarrows 2SO_3(g) \quad \Delta H^0 = -197kJ$**
**I. Increasing the temperature**
**II. Decreasing the volume**
**III. Adding a catalyst**

- A. I only
- B. II only

- C. I and II only
- D. I, II and III

**33. Which compound is a carboxylic acid?**

- A. $CH_3COOH$
- B. $(CH_3CO)_2O$
- C. $(CH_3)2CHOOCH_3$
- D.?$(CH_3)_2O$

**34. The mechanism of a reaction is shown below.**
**$HOOH + I^- \rightarrow HOI + OH^-$ (slow)**
**$HOI + I^- \rightarrow I_2 + OH^-$ (fast)**
**$2OH^- + 2H_3O^+ \rightarrow 4H_2O$ (fast)**
**What is the rate law based on this mechanism?**

- A.?Rate = $k[HOOH]\ [I^-]$
- B.?Rate = $k[HOOH]^2\ [I^-]$
- C.?Rate = $k[HOOH]\ [I^-]^2$
- D.?Rate = $k[HOOH]$

**35. What is the equilibrium constant expression for the following reaction?**
**$2Hg\ (g) + O_2\ (g) \rightleftarrows 2HgO\ (s)$**

- A.?K = $1/(Hg]^2/([O_2])$
- B.?K = $[Hg]^2[O_2]$
- C. K = $[HgO]^2/([Hg]^2[O_2])$
- D. K = $[2HgO]/([2Hg][O_2])$

**36. A triacylglycerol that is solid at room temperature is called:**

- A.?Lecithin
- B.?Fat
- C.?Wax
- D.?Oil

**37. Which compound is an ester?**

- A.?$CH_3COOH$
- B.?$CH_3OC_2H_5$
- C. $C_2H_5CHO$
- D.?$HCOOCH_3$

**38. If a solute dissolves in an endothermic process,**

- A. H bonds must exist between solvent and solute.
- B.?Strong ion-dipole forces must exist in the solution.
- C. The entropy of the solution must be greater than that of its pure components.

D.?The solute must be a gas.

**39. A solution is made by dissolving 250.0g of potassium chromate crystals ($K_2CrO_4$, molar mass, 194.2g) in 1.00kg of water. What will be the freezing point of the solution? ($K_f$ for water is $1.86^0cm^{-1}$).**

A.?-2.40$^0$C

B.?-7.18$^0$C

C. -5.73$^0$C

D.?-1.86$^0$C

**40. How many moles of sodium hydroxide are present in 2.5L of 0.5M aqueous solution?**

A. 0.2

B. 0.5

C. 1.25

D. 12.5

**41. Which species CANNOT act as a Lewis acid?**

A. $NH_3$

B. $BF_3$

C. $Fe^{2+}$

D. $AlCl_3$

**42. Which of the following statements is true?**

A.?A universal indicator is a mixture of indicators that will give a different colour for a different PH.

B. Phenolphthalein is a universal indicator.

C. A universal indicator can only be used in either strongly acidic or basic solution.

D.?The colour of a universal indicator is red in a weak acid.

**43. Three acids, HA, HB, HC have the following $K_a$ values.**
**$K_a(HA) = 1 \times 10^{-5}$ $K_a(HB) = 2 \times 10^{-5}$ $K_a(HC) = 1 \times 10^{-6}$ What is the correct order of increasing acid strength (weakest first)?**

A.?HA, HB, HC

B.?HC, HB, HA

C.?HC, HA, HB

D.?HB, HA, HC

**44. If the solute-solvent interactions are greater than the solute-solute and solvent-solvent interactions, what will be the total vapour pressure of the solution?**

A.?Greater than that calculated from Raoult's law

B.?Less than that calculated from Raoult's law

C.?The same as calculated from Raoult's law

D.?Raoult's law cannot be applied for such interactions.

**45. Which of the following procedures will produces will produce a buffered solution?**
**I. Equal volumes of 0.5M NaOH and 1M HCl solutions are mixed.**
**II. Equal volumes of 0.5M NaOH and 1M$CH_3COOH$ solutions are mixed.**
**III. Equal volumes of 1M $NaCH_3CO_2$ and 1M $CH_3COOH$ solutions are mixed.**
**IV. Equal volumes of 1.0M NaOH and 1M HCl solutions are mixed.**

- A. I
- B. III
- C. I and II
- D. II and III

**46. For which conversion is an oxidizing agent required?**

- A. $2H^+ (aq) \rightarrow H_2 (g)$
- B. $2Br^- (aq) \rightarrow Br_2 (aq)$
- C. $SO_3 (g) \rightarrow SO_4^{2-} (aq)$
- D. $MnO_2 (s) \rightarrow Mn^{2+} (aq)$

**47. What volume of 0.500M NaOH is required to neutralize 25.0 mL of 1.2 M$H_2SO_4$? (Assume complete ionization of the acid).**

- A. 60mL
- B. 90mL
- C. 100mL
- D. 120mL

**48. A gas is confined to a cylinder under constant atmospheric pressure. When the gas undergoes a particular chemical reaction, it releases 135kJ of heat to its surroundings and does 63kJ of P-V work on its surroundings. What are the values of ΔH and ΔE for the process?**

- A. ΔH = 135kJ, ΔE = 63kJ
- B. ΔH = -135kJ, ΔE = -63kJ
- C. ΔH = 135kJ, ΔE = 198kJ
- D. ΔH = -135kJ, ΔE = -198kJ

**49. The oxidation numbers of nitrogen in $NH_3$, $HNO_3$ and $NO_2$ are respectively.**

- A.?-3, -5, +4
- B. +3, +5, +4
- C. -3, +5, -4
- D. -3, +5, +4

**50. Which statement about the following reaction is correct?**
**$2FeS (s) + 3CO_2 (g) \rightarrow Fe_2O_3 (s) + 3CO (g)$ $\Delta H^0 = +26.6kJ$**

- A.?26.6kJ of energy are released for every mole of Fe reacted.
- B. 26.6kJ of energy are absorbed for every mole of Fe reacted.
- C.?53.2kJ of energy are released for every mole of Fe reacted.

D. 13.3kJ of energy are absorbed for every mole of Fe reacted.

**51. Which of the following metals is extracted by thermal reduction process?**

A. Cu

B. Fe

C. Al

D. Mg

**52. The two standard electrode potentials involved in the nickel cadmium rechargeable cell are given below. Calculate the ?G0 in kJ of the cells.**

**$NiO_2$ (s) + $2H_2S$ (l) + $2e^-$ → $Ni(OH)_2$ (s) + $2OH^-$ $E^0 = +0.49V$**

**$Cd(OH)_2$ (s) + $2e^-$ → Cd(s) + 2OH (aq) $E^0 = -0.76V$**

A. -184

B. -153

C. -241

D. -206

**53. Which of the following is a synthetic rubber produced from caprolactam (CPL)?**

A. Nylon 6, 10

B.?Terylene

C.?Teflon

D. Nylon6

**54. Which of the following reaction is NOT a redox reaction?**

A. $Ag^+$ (aq) + $Cl^-$ (aq) → AgCl (s)

B. 2Na (s) + $Cl_2$ (g) → 2NaCl (s)

C. Mg (s) + 2HCl (aq) → $MgCl_2$ (aq) + $H_2$ (g)

D. $Cu^{2+}$ (aq) + Zn (s) → Cu (s) + $Zn^{2+}$ (aq)

**55. The half-reaction for formation of magnesium metal upon electrolysis of molten $MgCl_2$ is:**

**$Mg^{2+}$ + $2e^-$ → Mg**

**What is the mass of magnesium formed upon passage of a current of 60.0A for a period of 2.00 x $10^3$S?**

A. 5.0g

B. 10.0g

C. 15.1g

D. 30.2g

**56. An aqueous solution is 70% nitric acid ($HNO_3$) by mass. What is the concentration of $HNO_3$ expressed in molality?**

A. 0.559m

B. 8.62m

C. 11.1m

D. 37.0m

**57. Which of the following is a natural polymer?**

- A.?Polythene
- B. Polysaccharides
- C.?Nylon
- D. Terylene

**58. What is the ionization energy of an iron atom if it requires a radiation of 276nm to completely remove its outer most electron in the gaseous state?**
**(Plank's constant, h=6.626 x $10^{-34}$Js, speed of light, c = 3 x $10^{8}$$ms^{-1}$)**

- A. 7.21 x $10^{-19}$J
- B. 7.21 x $10^{-19}$kJ
- C. 7.21 x $10^{19}$J
- D. 7.21 x $10^{19}$kJ

**59. Which of the electron configurations describes the ground state electron configuration of $Cl^-$?**

- A. $1s^2 2s^2 2p^6 3s^2 3p^6$
- B.?$1s^2 2s^2 2p^6 3s^1$
- C. $1s^2 2s^2 2p^6 3p^1$
- D. $1s^2 2s^2 2p^6 3s^2 3px^2 3py^1$

**60. When 0.68 is divided by 14.364, the actual answer is 0.0473405. What will be the correct answer?**

- A. 0.05
- B. 0.047
- C. 0.0473
- D. 0.04734

**61. What is the correct molecular electronic configuration for the molecular ion, $B_2^+$?**

- 
- 
- 
- 

**62. Which of the following molecules or ions will exhibit delocalized bonding? $NO_2^-$, $NH_4^+$, $N_3^-$**

- A. $NH_4^+$ and $N_3^-$
- B. $NH_4^+$ and $N_3^-$
- C. $NO_2^-$

○ D. $NO_2^-$ and $NH_4^+$

**63. Based on molecular orbital theory, the bond orders of $H_2$, $H_2^+$ and $H_2^-$ are , respectively.**

○ A. 1, 0, and 0
○ B. 1, 1/2, and 0
○ C. 1, 0, and 1/2
○ D. 1, 1/2, and 1/2

**64. How many 3d electrons are present in the ground state of chromium atom?**

○ A. 4
○ B. 5
○ C. 6
○ D. 10

**65. When the following substances are arranged in order of increasing melting point (lowest melting point first), the correct order is:**

○ A. $CH_3CH_2CH_3$, $CH_3COCH_{33}CH_2CH_2OH$
○ B. $CH_3CH_2CH_3$, $CH_3CH_2CH_2OH$, $CH_3COCH_3$
○ C. $CH_3COCH_3$, $CH_3CH_2CH_2OH$, $CH_3CH_2CH_3$
○ D. $CH_3CH_2CH_2OH$, $CH_3CH_2CH_3$, $CH_3COCH_3$

**66. The half-life for the first order decomposition of nitromethane, $CH_3NO_2$, at 500k is 650 seconds. If the initial concentration of $CH_3NO_2$ is 0.500M, what will its concentration be (M) after 1300 seconds have elapsed?**

○ A. 0.125
○ B. 0.140
○ C. 0.250
○ D. 0.425

**67. In a zero-order reaction for every $10^0$ rise of temperature, the rate is doubled. If the temperature is increased from $10^0$C to $100^0$C, the rate of the reaction will become**

○ A. 64 times
○ B. 128 times
○ C. 256 times
○ D. 512 times

**68. Which of the following mathematical relationships between K, $K_1$ and $K_2$ is correct?**
**$CO_2$ (g) + $H_2$ (g) ⇄ CO (g) + $H_2O$ (g) K**
**Fe (s) + $CO_2$ (g) ⇄ FeO (s) + CO (g) $K_1$**
**Fe (s) + $H_2O$ (g) ⇄ FeO (s) + $H_2$ (g) $K_2$**

○ A. $K = K_1 + K_2$
○ B. $K = K_1 \times K_2$
○ C. $K = K_1 / K_2$

D. $K = K_2 / K_1$

**69. Which of the following gives the correct order of decreasing acidity of carboxylic acids?**

A. $Cl_3CCOOH$, $Cl_2CHCOOH$, $FCH_2COOH$, $CH_3COOH$

B. $FCH_2COOH$, $CH_3COOH$, $Cl_2CHCOOH$, $Cl_3CCOOH$

C. $CH_3COOH$, $FCH_2COOH$, $Cl_2CHCOOH$, $Cl_3CCOOH$

D. $Cl_2CHCOOH$, $CH_3COOH$,$FCH_2COOH$, $Cl_3CCOOH$

**70. The value of $K_c$ for the following equilibrium reaction is 4.0 at a temperature of 373k.**
**$CH_3COOH + C_2H_5OH \rightleftharpoons CH_3COOC_2H_5 + H_2O$**
**What mass of ethyl ester ($CH_3COOC_2H_5$) would be present in the equilibrium mixture if 15g of acetic acid and 11.5 g of ethanol were mixed and equilibrium was established at this temperature?**

A. 5.2g

B. 10.1g

C. 12.6g

D. 22g

**71. Which one of the following is true about an open system?**

A. A system that exchanges both energy and matter with its surroundings.

B. A system that cannot exchange both matter and energy with its surroundings.

C. A system that only exchanges matter with its surroundings

D. A system that only exchanges energy with its surroundings

**72. Which of the following statements is true about the percent ionization of a weak acid?**

A. It decreases with increasing concentration

B. It increases with decreasing concentration

C. It increases with increasing concentration

D. It decreases with decreasing concentration

**73. What is the value of $\Delta H$ for the reaction $S(s) \rightarrow S(g)$?**
**$S(s) + O_2(g) \rightarrow SO_2(f)$ $\Delta H = -395kJ$**
**$S(g) + O_2(g) \rightarrow SO_2(g)$ $\Delta H = -6185kJ$**

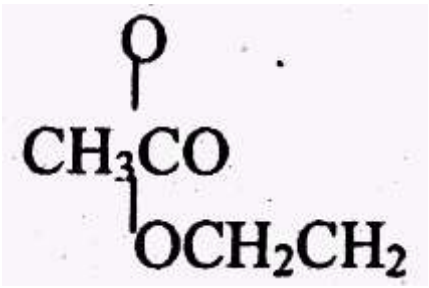
A. -1013kJ

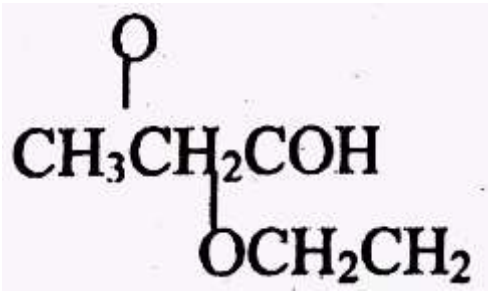
B. -223kJ

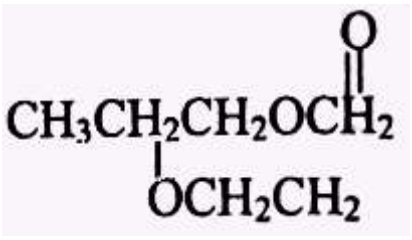
C. +223kJ

D. +1013kJ

**74. Which of these compounds is the ester formed from the reaction of acetic acid and 1-Propanol?**

A. 

B. 

C. 

D. 

**75. A lab instructor is preparing 5.0 liters of a 0.10M $Pb(NO_3)_2$ (molecular mass 331) solution. What is the mass required?**

- A.?165.5g of $Pb(NO_3)_2$ and add 5.0kg of $H_2O$
- B. 165.5g of $Pb(NO_3)_2$ and add $H_2O$ until the solution has a volume of 5.0 liters.
- C.?33.1g of $Pb(NO_3)_2$ and add $H_2O$ until the solution has a volume of 5.0 liters.
- D. 33.1g of $Pb(NO_3)_2$ and add 5.0 liters of $H_2O$.

**76. Which of the following is NOT a characteristic of the electrolytic cell containing aqueous solution of NaCl used in the manufacture of sodium hydroxide?**

- A. The sodium hydroxide solution is produced in the electrolytic cell.
- B.?The electrolyte must be a dilute solution of NaCl
- C. Hydrogen is produced at the cathode.
- D. The production of chlorine gas occurs at the anode

**77. The kinetic data are for the reaction:**

**$A + B \rightarrow C$**

**From these data what are the orders of the reaction with respect to A and B?**

| [A] | [B] | initial rate ($moldm^{-3}$ $sec^{-1}$) |
|---|---|---|
| 0.1 | 0.1 | $1x10^{-5}$ |
| 0.1 | 0.2 | $4x10^{-5}$ |
| 0.2 | 0.1 | $1x10^{-5}$ |

- A. Order of A = 1 order of B = 0
- B.?Order of A = 0 order of B = 2
- C. Order of A = 0 order of B = 4
- D. Order of A = 1 order of B = 2

**78. Which of the following metals has the highest electrical and thermal conductivities of any metal?**

- A. Ag
- B. Cu
- C. Ni
- D. Co

**79. Which of the following is a linear polymer?**

- A.?High density polyethene (HDPE)
- B.?Low density polyethene (LDPE)
- C. Bakelite
- D. Vulcanized rubber

**80. Which of the following is the most important source for the extraction of iron?**

- A. Hematite
- B. Bauxite
- C. Chalcopyrite
- D.?Sphalerite

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