

NATIONAL EDUCATIONAL ASSESMENT AND EXAMINATIONS AGENCY (NEAEA)  
ETHIOPIAN UNIVERSITY ENTRANCE EXAMINATION (EUEE)  
CHEMISTRY EXAMINATION 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,  $R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1} = 0.0821 \text{ L atm mol}^{-1} \text{ K}^{-1}$

b. Avogadro's number =  $6.023 \times 10^{23} \text{ mol}^{-1}$

c. Plank's constant,  $h = 6.626 \times 10^{-34} \text{ Js}^{-1}$

d. Speed of light,  $c = 2.9979 \times 10^8 \text{ ms}^{-1}$

e. Faraday's constant (F) =  $96500 \text{ C/mol}$

f. Charge of 1 mole of electrons =  $96500 \text{ C}$

**SI units and conversion factors**

a. 1 ton = 907.185 kg

b. 1 metric ton = 1000kg

c.  $1 \text{ \AA} = 10^{-10} \text{ m}$

d. 1L-atm = 101.3J

e. Coulombs = amperes x seconds

f.  $T_F = T_C \cdot \frac{9}{5} + 32$  (  $T_F$  = temperature in  $^{\circ}\text{F}$ ;  $T_C$  = temperature in  $^{\circ}\text{C}$  )

g. Vapour pressure of pure water ( $25^{\circ}\text{C}$ ) = 23.8 torr

h. Vapour pressure of pure water ( $35^{\circ}\text{C}$ ) = 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? Not Answered

- A.  $\text{HNO}_3/\text{NO}_3^-$
- B.  $\text{H}_2\text{SO}_4/\text{HSO}_4^-$
- C.  $\text{NH}_3/\text{NH}_2^-$

D.  $\text{H}_3\text{O}^+/\text{OH}^-$  ✓

2. Which of the following is correct? Not Answered

A.  $1\text{L}=1\text{dm}^3$  ✓

B.  $1\text{L}=10\text{dm}^3$

C.  $10\text{L}=1\text{dm}^3$

D.  $1\text{L}=1\text{m}^3$

3. Commercially, liquid vegetable oils are converted to solid fats such as margarine by: Not Answered

A. Hydrogenation ✓

B. Hydration

C. Saponification

D. Oxidation

4. What is the chemical name for Aspirin? Not Answered

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.

Not Answered

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?

Not Answered

A. 5 anions and 6 cations ✓

B. 5 anions and 3 cations

C. 2 anions and 3 cations

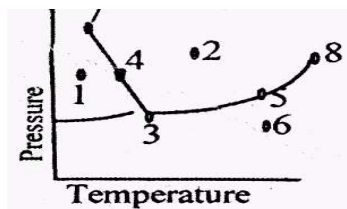
D. 3 anions and 4 cations

7. In a reaction,  $A + B \rightarrow \text{product}$ , 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: Not Answered

A.  $\text{Rate} = K[\text{A}][\text{B}]$

- 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? Not Answered



- A. 1
- B. 2
- C. 3
- D. 4 ✓

9. Which electron transition in a hydrogen atom releases the largest energy? Not Answered

- A.  $n = 2 \rightarrow n = 1$  ✓
- B.  $n = 4 \rightarrow n = 2$
- C.  $n = 6 \rightarrow n = 3$
- D.  $n = 7 \rightarrow n = 6$

10. The simplest formula for a compound containing  $Mn^{4+}$  and  $O^{2-}$  is Not Answered

- 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?

Not Answered

- A. 1:2
- B. 1:1
- C. 2:1 ✓
- D. 3:1

12. Which one of the following chemicals is used to disinfect water? Not Answered

- 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 Not Answered

- 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<sub>2</sub>
- B. H<sub>2</sub> and O<sub>2</sub>
- C. Na<sup>+</sup> and Cl<sup>-</sup>
- D. NaOH and Cl<sub>2</sub>

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? Not Answered

- 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?

Not Answered

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

22. Which statement is true about chemical reactions at equilibrium? Not Answered

- 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? Not Answered

- A. Sodium carbonate,  $\text{Na}_2\text{CO}_3$  ✓
- B. Magnesium bromide,  $\text{MgBr}_2$
- C. Dichloromethane,  $\text{CH}_2\text{Cl}_2$
- D. Ethanoic acid,  $\text{CH}_3\text{COOH}$

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

- 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.  $^1_1\text{H}$    II.  $^{35}_{17}\text{Cl}^-$    III.  $^{39}_{19}\text{K}^+$  Not Answered

- 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? Not Answered

- A. XeF<sub>4</sub> ✓
- B. SiCl<sub>4</sub>
- C. BF<sub>4</sub><sup>-</sup>
- D. NH<sub>4</sub><sup>+</sup>

27. Why are metals soft and malleable? Not Answered

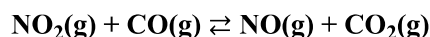
- A. Because they are very shiny.
- B. Because they experience electrostatic repulsion
- C. Because of the presence of mobile electrons.
- D. Because the metal cations can slip over each other fairly easily. ✓

28. In which region of the Periodic Table would the element with the electronic structure below be located?

1s<sup>2</sup>2s<sup>2</sup>2p<sup>6</sup>3s<sup>2</sup>3p<sup>6</sup>3d<sup>10</sup>4s<sup>2</sup>4p<sup>6</sup>4d<sup>6</sup>5s<sup>2</sup> Not Answered

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

29. Which factors will influence the rate of the reaction shown below?



I. The number of collisions per second

II. The energy of the collisions

III. The geometry with which the molecules collide

Not Answered

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

30. How many π bonds are present in CO<sub>2</sub>? Not Answered

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

31. Which pair of monomers forms polyesters? Not Answered

- 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  $\text{SO}_3(\text{g})$  at equilibrium?



I. Increasing the temperature

II. Decreasing the volume

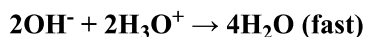
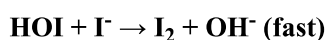
III. Adding a catalyst Not Answered

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

33. Which compound is a carboxylic acid? Not Answered

- A.  $\text{CH}_3\text{COOH}$  ✓
- B.  $(\text{CH}_3\text{CO})_2\text{O}$
- C.  $(\text{CH}_3)_2\text{CHOOCH}_3$
- D.  $(\text{CH}_3)_2\text{O}$

34. The mechanism of a reaction is shown below.



What is the rate law based on this mechanism? Not Answered

- A.  $\text{Rate} = k[\text{HOOH}][\text{I}^-]$  ✓
- B.  $\text{Rate} = k[\text{HOOH}]^2[\text{I}^-]$
- C.  $\text{Rate} = k[\text{HOOH}][\text{I}^-]^2$
- D.  $\text{Rate} = k[\text{HOOH}]$

35. What is the equilibrium constant expression for the following reaction?



- A.  $K = 1/(\text{Hg})^2/([\text{O}_2])$  ✓
- B.  $K = [\text{Hg}]^2[\text{O}_2]$
- C.  $K = [\text{HgO}]^2/([\text{Hg}]^2[\text{O}_2])$
- D.  $K = [2\text{HgO}]/([2\text{Hg}][\text{O}_2])$

36. A triacylglycerol that is solid at room temperature is called: Not Answered

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

37. Which compound is an ester? Not Answered

- A.  $\text{CH}_3\text{COOH}$
- B.  $\text{CH}_3\text{OC}_2\text{H}_5$

- C.  $C_2H_5CHO$
- D.  $HCOOCH_3$  ✓

38. If a solute dissolves in an endothermic process, Not Answered

- 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  $1.86^\circ C \cdot m^{-1}$ ). Not Answered

- A.  $-2.40^\circ C$  ✓
- B.  $-7.18^\circ C$
- C.  $-5.73^\circ C$
- D.  $-1.86^\circ C$

40. How many moles of sodium hydroxide are present in 2.5L of 0.5M aqueous solution? Not Answered

- A. 0.2
- B. 0.5
- C. 1.25 ✓
- D. 12.5

41. Which species CANNOT act as a Lewis acid? Not Answered

- A.  $NH_3$  ✓
- B.  $BF_3$
- C.  $Fe^{2+}$
- D.  $AlCl_3$

42. Which of the following statements is true? Not Answered

- 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)? Not Answered

- 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? Not Answered

- 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 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<sub>3</sub>COOH solutions are mixed.

III. Equal volumes of 1M NaCH<sub>3</sub>CO<sub>2</sub> and 1M CH<sub>3</sub>COOH solutions are mixed.

IV. Equal volumes of 1.0M NaOH and 1M HCl solutions are mixed.

Not Answered

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

46. For which conversion is an oxidizing agent required? Not Answered

- A.  $2\text{H}^+(\text{aq}) \rightarrow \text{H}_2(\text{g})$
- B.  $2\text{Br}^-(\text{aq}) \rightarrow \text{Br}_2(\text{aq})$  ✓
- C.  $\text{SO}_3(\text{g}) \rightarrow \text{SO}_4^{2-}(\text{aq})$
- D.  $\text{MnO}_2(\text{s}) \rightarrow \text{Mn}^{2+}(\text{aq})$

47. What volume of 0.500M NaOH is required to neutralize 25.0 mL of 1.2 M H<sub>2</sub>SO<sub>4</sub>? (Assume complete ionization of the acid). Not Answered

- 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  $\Delta H$  and  $\Delta E$  for the process? Not Answered

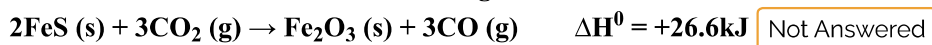
- A.  $\Delta H = 135\text{kJ}, \Delta E = 63\text{kJ}$
- B.  $\Delta H = -135\text{kJ}, \Delta E = -63\text{kJ}$
- C.  $\Delta H = 135\text{kJ}, \Delta E = 198\text{kJ}$
- D.  $\Delta H = -135\text{kJ}, \Delta E = -198\text{kJ}$  ✓

49. The oxidation numbers of nitrogen in NH<sub>3</sub>, HNO<sub>3</sub> and NO<sub>2</sub> are respectively. Not Answered

- 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?



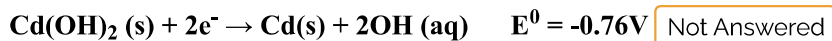
Not Answered

- 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? Not Answered

- 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  $\Delta G^0$  in kJ of the cells.



Not Answered

- A. -184
- B. -153
- C. -241 ✓
- D. -206

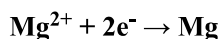
53. Which of the following is a synthetic rubber produced from caprolactam (CPL)? Not Answered

- A. Nylon 6, 10
- B. Terylene
- C. Teflon
- D. Nylon6 ✓

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

- A.  $\text{Ag}^+ \text{ (aq)} + \text{Cl}^- \text{ (aq)} \rightarrow \text{AgCl (s)}$  ✓
- B.  $2\text{Na (s)} + \text{Cl}_2 \text{ (g)} \rightarrow 2\text{NaCl (s)}$
- C.  $\text{Mg (s)} + 2\text{HCl (aq)} \rightarrow \text{MgCl}_2 \text{ (aq)} + \text{H}_2 \text{ (g)}$
- D.  $\text{Cu}^{2+} \text{ (aq)} + \text{Zn (s)} \rightarrow \text{Cu (s)} + \text{Zn}^{2+} \text{ (aq)}$

55. The half-reaction for formation of magnesium metal upon electrolysis of molten  $\text{MgCl}_2$  is:



What is the mass of magnesium formed upon passage of a current of 60.0A for a period of  $2.00 \times 10^3\text{S}$ ?

Not Answered

- A. 5.0g

- B. 10.0g  
 C. 15.1g ✓  
 D. 30.2g

56. An aqueous solution is 70% nitric acid (HNO<sub>3</sub>) by mass. What is the concentration of HNO<sub>3</sub> expressed in molality? Not Answered

- A. 0.559m  
 B. 8.62m  
 C. 11.1m  
 D. 37.0m ✓

57. Which of the following is a natural polymer? Not Answered

- 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,  $h=6.626 \times 10^{-34}$ J.s, speed of light,  $c = 3 \times 10^8$ ms<sup>-1</sup>) Not Answered

- A.  $7.21 \times 10^{-19}$ J ✓  
 B.  $7.21 \times 10^{-19}$ kJ  
 C.  $7.21 \times 10^{19}$ J  
 D.  $7.21 \times 10^{19}$ kJ

59. Which of the electron configurations describes the ground state electron configuration of Cl<sup>-</sup>?

Not Answered

- 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.  $1s^2 2s^2 2p^6 3s^2 3p_x^2 3p_y^1$

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

Not Answered

- 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<sub>2</sub><sup>+</sup>? Not Answered

- 

- 
-  ✓
- 

62. Which of the following molecules or ions will exhibit delocalized bonding?  $\text{NO}_2^-$ ,  $\text{NH}_4^+$ ,  $\text{N}_3^-$  Not Answered

- A.  $\text{NH}_4^+$  and  $\text{N}_3^-$  ✓
- B.  $\text{NH}_4^+$  and  $\text{N}_3^-$
- C.  $\text{NO}_2^-$
- D.  $\text{NO}_2^-$  and  $\text{NH}_4^+$

63. Based on molecular orbital theory, the bond orders of  $\text{H}_2$ ,  $\text{H}_2^+$  and  $\text{H}_2^-$  are , respectively. Not Answered

- 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? Not Answered

- 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: Not Answered

- A.  $\text{CH}_3\text{CH}_2\text{CH}_3$ ,  $\text{CH}_3\text{COCH}_3$ ,  $\text{CH}_2\text{CH}_2\text{OH}$  ✓
- B.  $\text{CH}_3\text{CH}_2\text{CH}_3$ ,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ ,  $\text{CH}_3\text{COCH}_3$
- C.  $\text{CH}_3\text{COCH}_3$ ,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ ,  $\text{CH}_3\text{CH}_2\text{CH}_3$
- D.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ ,  $\text{CH}_3\text{CH}_2\text{CH}_3$ ,  $\text{CH}_3\text{COCH}_3$

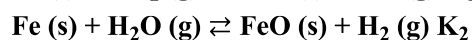
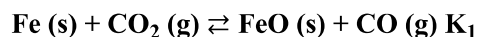
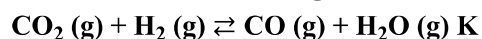
66. The half-life for the first order decomposition of nitromethane,  $\text{CH}_3\text{NO}_2$ , at 500k is 650 seconds. If the initial concentration of  $\text{CH}_3\text{NO}_2$  is 0.500M, what will its concentration be (M) after 1300 seconds have elapsed? Not Answered

- 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  $10^0\text{C}$  to  $100^0\text{C}$ , the rate of the reaction will become Not Answered

- 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?



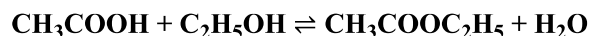
Not Answered

- 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? Not Answered

- A.  $\text{Cl}_3\text{CCOOH}$ ,  $\text{Cl}_2\text{CHCOOH}$ ,  $\text{FCH}_2\text{COOH}$ ,  $\text{CH}_3\text{COOH}$
- B.  $\text{FCH}_2\text{COOH}$ ,  $\text{CH}_3\text{COOH}$ ,  $\text{Cl}_2\text{CHCOOH}$ ,  $\text{Cl}_3\text{CCOOH}$  ✓
- C.  $\text{CH}_3\text{COOH}$ ,  $\text{FCH}_2\text{COOH}$ ,  $\text{Cl}_2\text{CHCOOH}$ ,  $\text{Cl}_3\text{CCOOH}$
- D.  $\text{Cl}_2\text{CHCOOH}$ ,  $\text{CH}_3\text{COOH}$ ,  $\text{FCH}_2\text{COOH}$ ,  $\text{Cl}_3\text{CCOOH}$

70. The value of  $K_c$  for the following equilibrium reaction is 4.0 at a temperature of 373k.



What mass of ethyl ester ( $\text{CH}_3\text{COOC}_2\text{H}_5$ ) 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? Not Answered

- A. 5.2g
- B. 10.1g
- C. 12.6g
- D. 22g ✓

71. Which one of the following is true about an open system? Not Answered

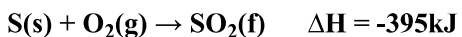
- A. A system that exchanges both energy and matter with its surroundings. ✓
- B. A system that cannot exchange both matter and energy with its surroundings.
- C. A system that only exchanges matter with its surroundings
- D. A system that only exchanges energy with its surroundings

72. Which of the following statements is true about the percent ionization of a weak acid? Not Answered

- 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  $S(s) \rightarrow S(g)$ ?

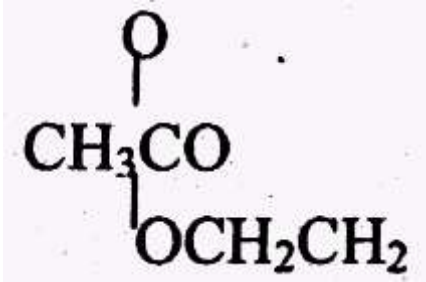
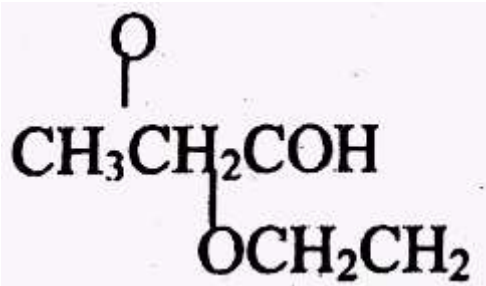
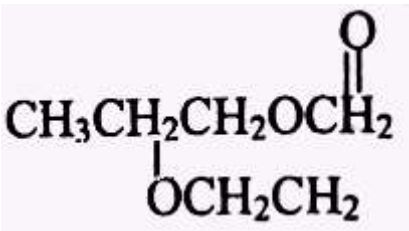
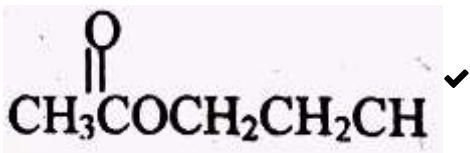


Not Answered

- 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?

Not Answered

- 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? Not Answered

- 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? Not Answered

- 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:



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

[A]	[B]	initial rate ( $\text{mol dm}^{-3} \text{ sec}^{-1}$ )
0.1	0.1	$1 \times 10^{-5}$
0.1	0.2	$4 \times 10^{-5}$
0.2	0.1	$1 \times 10^{-5}$

Not Answered

- 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?

Not Answered

- A. Ag ✓
- B. Cu
- C. Ni
- D. Co

79. Which of the following is a linear polymer? Not Answered

- 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? Not Answered

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

## Your Answers

you have scored 0 out of 0

## Answer Key

1.D	11.C	21.C	31.A	41.A	51.A	61.C	71.A
2.A	12.D	22.A	32.B	42.A	52.C	62.A	72.B
3.A	13.B	23.A	33.A	43.C	53.D	63.D	73.C
4.A	14.B	24.B	34.A	44.B	54.A	64.B	74.D
5.C	15.A	25.A	35.A	45.B	55.C	65.A	75.B
6.A	16.B	26.A	36.B	46.B	56.D	66.A	76.B
7.C	17.C	27.D	37.D	47.D	57.B	67.D	77.B
8.D	18.A	28.D	38.B	48.D	58.A	68.C	78.A
9.A	19.C	29.D	39.A	49.D	59.A	69.B	79.B
10.B	20.C	30.B	40.C	50.D	60.B	70.D	80.A

[Retake Exam \(exam.php?subject=Chemistry&year=2006\)](#)