ETHIO EXAMS CHANNEL

CHEMISTRY MODEL EXAM FOR GRADE 12

TIME ALLOWED: 1:30 HOURS

GENERAL DIRECTION

IN This Model EXAMINATION, THERE ARE A TOTAL OF 81 MULTIPLE CHOICE QUESTIONS. CAREFULLY SELECT THE CORRECT ANSWER AND BLACKEN ONLY THE LETTER OF YOUR CHOICE ON THE SEPARATE ANSWER SHEET PROVIDED. USE ONLY PENCIL TO MARK YOUR ANSWERS.

PHYSICAL CONSTANTS

a. Gas constant, R= 8.314Jmol^{-1}K^{-1} = 0.0821 L - 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 108 ms-1

e. Ryderberg constant (Ry)=2.18×10^{8}m/s

f. $K_f(H_2O)$=1.86^{o}C/m

Use the following atomic number or atomic mass of an element if it is necessary

Element	**H**	**Be**	**B**	**C**	**N**	**O**	**Mg**	**Ca**	**Cl**	**Si**	**Ni**
Atomic Mass (A)	4	9	10	12	14	16	24	40	35.5	28	52
Atomic Number (Z)	1	4	5	6	7	8	12	20	17	14	24
Element	**k**	**Li**	**Cu**	**Na**	**F**	**Fe**	**P**	**Al**	**S**	**Br**	**I**

Atomic Mass (A)	39	7	64	23	18	56	31	27	32	80	127
Atomic Number (Z)	19	3	29	11	9	26	15	13	16	35	53

CHOOSE THE BEST ANSWER FROM THE FOLLOWING ALTERNATIVE AND WRITE ON THE SEPARATED ANSWER SHEET PAPER

1. A reaction follows the rate law: Rate = $k\,[A]^2$, Which of the following plots will give a straight line?

   A .1/[*A*] versus 1/time C. 1/[*A*] versus time

   B. $[A]^2$ versus time D. [*A*] versus time

2. Given that: - $E^o_{red}\ Cr^{3+}/Cr$ = -0.72 V and $E^o_{red}\ Fe^{3+}/Fe$ = -0.42 V. The potential for the cell $Cr/Cr^{3+}(0.1M)//\ Fe^{3+}(0.01M)/Fe$ is

   A.-0.26 V B. 0.30 V C. 0.339 V D. -0.339 V

3. According to the second law of thermodynamics states that:

   A. The entropy of a perfect crystal is zero at 0 K.

   B. The entropy of the universe is constant in any naturally occurring process

   C. The energy of the universe is increasing in any naturally occurring process.

   D. The entropy of the universe is increasing in any naturally occurring process.

4. In an electrolytic cell, how many grams of Cu could be plated out of a $CuSO_4$ solution at a current of 5.00 A for 2.00 min? (F = 96500 C/mol). Molar mass of Cu = 64 g/mol

   A. 318 g B. 0.395 g C. 0.329 x 10^{-3} g D. 0.198 g

5. For the reaction:$2\ Al_{(s)} + 3Co^{2+}_{(aq)} \rightarrow 2Al^{3+}_{(aq)} + 3Co_{(s)}$, $\Delta G°$ is -799 kJ.

   What is $E°_{cell}$ for a standard cell based on this reaction?

   A. + 1.38 V. B. + 2.76 V. C. + 4.14 V. D. + 8.28

6. Consider the galvanic cell shown in this animation. $Zn_{(s)} + Cu^{2+}_{(aq)} \rightarrow Cu_{(s)} + Zn^{2+}_{(aq)}$ When the cell is running spontaneously, which choice has only **true** statements?

   A. The copper electrode loses mass and the zinc electrode is the cathode

   B. The copper electrode gains mass and the copper electrode is the cathode

   C. The zinc electrode gains mass and the zinc electrode is the anode

   D. The zinc electrode loses mass and the zinc electrode is the cathode.

7. Two cells are connected in series. One contains $Zn(NO_3)_2$ aqueous solution and the other contains CuSO4 aqueous solution. If 3.25 g of Zn is deposited in the cell

containing $Zn(NO_3)_2$.How much Cu is deposited in the other cell ? At Mass Zn =65, Cu = 64

A. 32.5 g B. 32.0 g C. 3.2 g D. 23.3 g

8. In which of the following does Cr have an oxidation number of +3?

A. $Cr_2O_8^{-2}$ B. CrO_2^{-2} C. $Cr_2O_4^{-2}$ D. $CrSO_4$

9. The standard potential for the following galvanic cell is +0.90 V:

$$3Cu^{2+}_{(aq)} + 2\ Ga_{(s)} \rightarrow 3\ Cu_{(s)} + 2\ Ga^{3+}_{(aq)}$$

Given that the standard reduction potential for the Cu^{2+}/Cu half-cell is +0.34 V, what is the standard reduction potential for the Ga^{3+}/Ga half-cell?

A. -1.34 V. B. -0.56 V C. + 0.56 V. D. + 1.36 V.

10. The initial rate of the reaction $PCl_5 \rightarrow PCl_3 + Cl_2$ is increased a factor of four when the concentration of PCl_5 is doubled. Therefore, the rate

A. Depends on the concentrations of PCl_3 and Cl_2.

B. Is first order with respect to PCl_5.

C. Is second order with respect to PCl_5.

D. Is first order with respect to PCl_3.

11. In which of the following substances would hydrogen bonding to be expected to occur?

I. CH_4 ***II. CH_3OH*** ***III. H_2S***

A) II only B) I and III only C) I and II only D) I , II and III

12. Given the following two half reactions,

$Cd^{2+}(aq) + 2e^- \rightarrow Cd(s)$ $E^o = -0.40$ V

$Zr^{4+}(aq) + 4e^- \rightarrow Zr(s)$ $E^o = -1.53$ V

Determine E^0_{cell} and the spontaneity of the following reaction;

$$2Cd^{2+}(aq) + Zr(s) \rightarrow 2\ Cd(s) + Zr^{4+}(aq)$$

A) +1.13 V and non spontaneous (C) +1.13 V and spontaneous

B) -1.13 V and non spontaneous (D) -1.13 V and spontaneous

13. The rate constant for the first order reaction A → B + C, is $k = 3.3 \times 10^{-2}\ min^{-1}$ at 57 K.What is the half-life for this reaction at 57 K?

A. 61 min B. 9.1 min C. 21 min D. 1200 min.

14. Consider an electrochemical cell where the following reaction takes place:

$$2\ Au^{3+}(aq) + 3Zn(s) \rightarrow 2\ Au(s) + 3Zn^{2+}(aq)$$

Which of the following is the correct cell notation for this cell?

A). $Au \mid Au^{3+} \parallel Zn^{2+} \mid Zn$ C). $Au^{3+} \mid Au \parallel Zn \mid Zn^{2+}$

B). $Zn \mid Zn^{2+} \parallel Au^{3+} \mid Au$ D). $Zn \mid Au^{3+} \parallel Au \mid Zn^{2+}$

15. Calculate the reaction enthalpy for; $CH_4(g) + 4S(s) \text{ ----> } CS_2(l) + 2\ H_2S(g)$ from the data:

    $C(s) + 2\ H_2(g) \text{ ----> } CH4(g);$ --------- $\Delta H° = -74.8$ kJ

    $C(s) + 2\ S(s) \text{ ----> } CS_2(l);$ ---------- $\Delta H° = +87.9$ kJ

    $S(s) + H_2(g) \text{ ----> } H_2S(g);$ ----------$\Delta H° = -20.6$ kJ

    A.) +142.1 KJ B) +121.5 KJ C) -7.5 kJ D) +203.9 Kj

16. If the equilibrium constant for the reaction;

    $$Cu(s) + 2\ Ag^{+} \text{ ---> } Cu^{2+} + 2\ Ag(s)$$

    Is above is 3.7×10^{15}, which of the following correctly describes the standard voltage, E°, and the standard free energy change, G°, for this reaction?

    A) E° is positive and ΔG° is negative. C) E° is negative and ΔG° is positive.

    B) E° and ΔG° are both positive. D) E° and ΔG° are both negative.

17. For the reaction, A + B $\longrightarrow$ C, ΔH^{o} = +30 kJ; ΔS^{o} = +50 J/K. Therefore the reaction is:

    A. Spontaneous at all temperatures.

    B. Non spontaneous at all temperatures.

    C. Spontaneous at temperatures less than 600 K.

    D. Spontaneous at temperatures greater than 600 K.

18. Which of the following is an oxidation-reduction reaction?

    A) $Cu(s) + 2AgNO_3(aq) \rightarrow 2Ag(s) + Cu(NO_3)_2(aq)$

    B) $HCl(aq) + NaOH(aq) \rightarrow H_2O(l) + NaCl(aq)$

    C) $AgNO_3(aq) + HCl(aq) \rightarrow AgCl(s) + HNO_3(aq)$

    D) $Ba(C_2H_3O_2)_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaC_2H_3O_2(aq)$

19. Consider the following rate law expression: Rate = $k[A]^2[B]$. Which of the following is **NOT TRUE** about the reaction having this expression?

    A. The reaction is overall third order.

    B. The reaction is first order in B.

    C. Doubling the concentration of A, doubles the rate.

    D. The reaction is second order in A.

20. The short- lived combination of reacting atoms, molecules, ions, that is intermediate between the reactants and products is:

    A. Transition state C. Collision theory

    B. Activated complex D. A and B

21. From the initial rate information below, determine the rate-law expression for the reaction $A + 2B \rightarrow C + D$

Exp't #	Initial Rate (M/s)	$[A]_o$	$[B]_o$
1	1.4×10^{-6}	0.300	0.400
2	2.8×10^{-6}	0.300	0.800
3	2.8×10^{-6}	0.600	0.400

A. Rate = $k[A][B]$ C. Rate = $k[A][B]^2$

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

22. Potassium (K) reacts with element X to form an ionic compound with the formula, K_3X,Mg will react with X to form _____.

A) $Mg X_2$ B) Mg X C) $Mg_2 X_3$ D) $Mg_3 X_2$

23. In which of the following compounds would inter- molecular hydrogen bonding occur?

A. $CH_3 OH$ C. PH_3

B. HCHO D. $COCl_2$

24. One of the following molecule, does **NOT** show resonance structure?

A. NO_3^- B. HNO_3 C. SF_6 D. NO_2^-

25. According to the valence bond theory, the Silicon in silicon dioxide (SiO_2) is

A. sp hybridized, with 180° bond angles

B. sp^2 hybridized, with 120°bond angles

C. sp^3 hybridized, with 109°bond angles

D. sp^3d hybridized, with 90°& 120°bond angles

26. Use VSEPR theory to predict the electron pair geometry and the molecular geometry of SO_2.

A. e- pair geometry = trigonal planar, molecular geometry = bent

B. e- pair geometry = trigonal planar, molecular geometry = linear

C. e- pair geometry = tetrahedral, molecular geometry = bent

D. e- pair geometry = tetrahedral, molecular geometry = trigonal planar

27. The boiling points of the elements helium, neon, argon, krypton, and xenon increase in that order. Which of the following statements accounts for this increase?

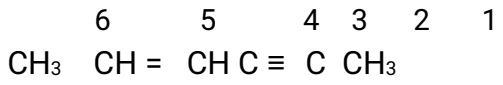
A) The London (dispersion) forces increase.

B) The hydrogen bonding increases.

C) The dipole-dipole forces increase.

D) The chemical reactivity increases.

28. State the type of hybridization the molecule given below with respect to at carbon number 3, 5 and 6 for respectively.



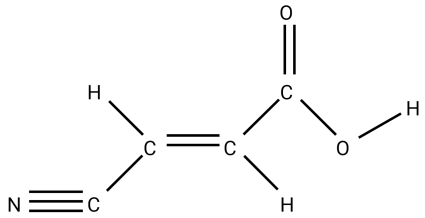
A. SP, SP^2 and SP^3

B. SP^3, SP^2 and SP

C. SP^3d, SP^3 and SP

D. SP, SP^3 and SP^2

29. How many sigma (σ) bonds and pi (π) bonds are in the following molecule?



A. five σ and two π

B. nine σ and three π

C. five σ and four π

D. nine σ and four π

30. According to MOT, which of the following is the correct electron configuration for C_2?

A. $\sigma 1s^2 \sigma 2s^2 \pi 2py^2 \sigma^* 1s^2 \sigma^* 2s^2 \pi^* 2py^2$

B. $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \pi 2py^2 \pi 2pz^2$

C. $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \pi 2py^2 \pi^* 2pz^1 \sigma 2p^1$

D. $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \pi 2py^1 \pi 2pz^1$

31. Which one of the following represents exact number? The

A. annual temperature of Addis Ababa

B. dozen of tennis balls

C. weight of a student in Neway challenge Academy

D. height of a manual

32. Which set of quantum numbers (n, ℓ, m ℓ, ms) is NOT permitted by the rules of quantum mechanics?

A. 2,0,0 $^{1}/_{2}$

B. 2,1,-1, $-^{1}/_{2}$

C. 4,4,1, $^{-1}/_{2}$

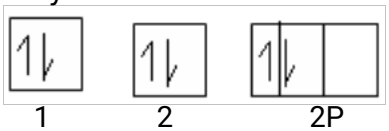
D. 4,3,2, $^{1}/_{2}$

33. The electron configuration for iron (II) ion ($26Fe^{2+}$)is:

A. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^4$ C. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^1\ 3d^5$

B. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^1\ 3d^5$ D. $1s^2\ 2s^2\ 2p^6\ 35^2\ 3p^6\ 45^2\ 3d^6$

34. What can you conclude from the figure given below?



A. Hund's rule is violated

B. The pauliexclusion principle is violated

C. The Aufbau principle is violated

D. This is a valid orbital diagram

35. The molecule containing the most polar covalent bond is:

A. OF_2 B. ClF C. SF_4 D. NF_3

36. Which one of the following forms of electromagnetic radiation has the smallest energy?

A. Gamma rays C. X – rays

B. TV waves D. Ultraviolet rays

37. In Bohr's model of hydrogen atom, which transition of an electron would emit the highest energy?

A. n = 5⟶ n = 1 C. n = 5⟶ n= 4

B. n = 3⟶ n=2 D. n = 2 ⟶ n=1

38. A salt that undergoes hydrolysis to form a basic solution is:

A. NH_4Cl B.KNO_3 C. NaCN D.$Al_2(SO_4)_3$

39. Which one of the following compounds could be expected to have the highest melting point?

A. $CaCl_2$ B. CaF_2 C. CaI_2 D. $CaBr_2$

40. Aqueous solution of which salt has a pOH value greater than 7?

A. NaCl C. NH_4Cl

B. Na_2CO_3 D. CH_3COOK

41. Which one of the following is an acid – base reaction according to the Lewis concept but not according to Bronsted – Lowry theory?

A. $CH_3COOH + NH_3 \rightleftharpoons CH_3COO^- + NH_4^+$

B. $NH_4^+ + H_2O \rightleftharpoons NH_3 + H_3O^+$

C. $Be(OH)_2 + 2OH^- \rightleftharpoons Be(OH)_4^{2-}$

D. $CH_3COOH + OH^- \rightleftharpoons CH_3COOH + H_2O$

42. The p^{Ka} values of four different acids, labeled A,B, C and D are 2.89, 3.76, 5.2 and 4.43 respectively. A0.5M solution of which acids has the smallest pH value?

A. D B. A C. B D. C

43. Which one of the following is not a conjugate acid – base pair?

A. $H_2PO_4^-/HPO_4^{2-}$ C. HS^-/S^{2-}

B. H_2CO_3/HCO_3^- D. H_2SO_3/SO_3^{2-}

44. The percent ionizations of CH_3COOH,H_2CO_3, HCN and H_2S are 1.3%, 0.17%, 0.007% and 0.01% respectively. The conjugate base of which acid is the strongest base? (Assume the concentration of all acids is the same)

A. HCN B. CH_3COOH C. H_2S D. H_2CO_3

45. What happens to the pH value of a 0.25M CH_3COOH solution, if equal volume of a 0.1M CH_3COOk solution is added to it?

A. The pH remains unchanged C. The pH decreases

B. The pH increases D. Cannot be determined

46. The volume of a 0.5M HNO_3 required to neutralize completely 100mL of 3.2M $Ba(OH)_2$ solution is:

A. 8L B. 640mL C. 6.40L D. 1250mL

47. An indicator, HIn has a dissociation constant equal to 1.0×10^{-11}. The molecular form of the indicator, HIn is yellow and the In^- ion is blue. What would the color of this indicator be in a solution whose pH is 9?

A. Green B. Yellow C. Blue D. Orange

48. In which one of the following reactions does water behave as a Lewis base?

A. $H^- + H_2O \rightleftharpoons 2OH^-$

B. $NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$

C. $K^+ + 6H_2O \rightleftharpoons [K(H_2O)_6]^+$

D. $H_2O + HS^- \rightleftharpoons OH^- + H_2S$

49. When equivalent quantities of a strong base and weak acid are mixed, the pH value of the final solution is greater than 7 . This is due to :

A. hydrolysis of cation of the base C. hydrolysis of anion of the acid

B. hydrolysis of cation of the acid D. hydrolysis of anion of the base

50. Which one of the following is ***always true*** about an acid –base titration at the equivalence point?

A. pH = pOH

B. The number of moles of the acid and base reacted is equal

C. The solution at the equivalence point becomes neutral

D. The number of equivalents of the acid and base reacted is equal

51. Which one of the following is not formed by addition polymerization?

A. Polyethylene C. Teflon

B. Polyvinylchloride D. Dacron

52. The rate constant of a reaction depends on

A. Initial concentration of the reactants C. Time of reaction

B. Temperature D. Extent of reaction.

53. The half-life period of a first order reaction is 10 minutes. The time required for the concentration of the reactants to change from 0.08 to 0.02 M is

A. 10 min B. 20 min C. 30 min D. 40 min

54. Which reaction produces a decrease in the entropy of the system?

A. $2H_2O(g) \rightarrow 2H_2(g) + O_2(g)$

B. $NaCl(aq) \rightarrow Na^+(aq) + Cl^-(aq)$

C. $C_6H_{12}O_6(s) \rightarrow 6C(s) + 6H_2(g) + 3O_2(g)$

D. $Mg(NO_3)_2(aq) + 2NaOH(aq) \rightarrow Mg(OH)_2(s) + 2NaNO_3(aq)$

55. Consider the reaction: $CaCl_2(s) + 2H_2O(g) \rightleftharpoons CaCl_2.2H_2O(s)$

The equilibrium constant expression for the reaction as written is

A. $K = \frac{[CaCl_2 \bullet 2H_2O]}{[H_2O]^2}$ C. $K = \frac{[CaCl_2 \bullet 2H_2O]}{[CaCl_2][H_2O]^2}$

B. $K = \frac{1}{2[H_2O]}$ D. $K = \frac{1}{[H_2O]^2}$

56. Given the following reaction: $2HCl(aq) + K_2C_2O_4(S) \rightarrow H_2C_2O_4(aq) + 2KCl(aq)$, what is the equivalent weight of $K_2C_2O_4$? (Molar mas; K = 39, Cl = 35.5 , C= 12, O = 16, H = 1 g/mol)

A. 166.2 g/eqB. 332.4 g/eq C) 88.0 g/eq D) 83.1 g/eq

57. The rate determining step of a multi-step reaction is

A. slowest step C. fastest step

B. molecularity of the steps D. order of different steps

58. Predict the signs of ΔH°, ΔS°, and ΔG° for the vaporization of liquid water at 150°C.

A. $\Delta H° > 0, \Delta S° > 0, \Delta G° > 0$ C. $\Delta H° < 0, \Delta S° < 0, \Delta G° < 0$

B. $\Delta H° > 0, \Delta S° < 0, \Delta G° > 0$ D. $\Delta H° > 0, \Delta S° > 0, \Delta G° < 0$

59. Sodium can be extracted from its ore by the process called

A. Hall process B. Haber process C. Down cell process D. Ostwald process

60. Which change will shift the position of equilibrium to the right in this reaction?

$$N_{2(g)} + 3H_{2\,(g)} \rightleftharpoons 2NH_{3\,(g)} \qquad \Delta H = -92\ kJ/mol$$

A. Increasing the temperature

B. Adding a catalyst

C. Decreasing the pressure

D. Removing ammonia from the equilibrium mixture

61. Which statements are correct for a reaction at equilibrium?

I the forward and reverse reactions both continue.

II. the rates of the forward and reverse reactions are equal.

III. the concentrations of reactants and products are equal.

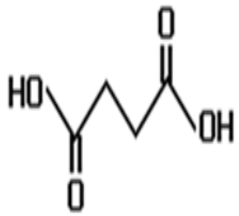
A. I and II only C. I and III only

B. II and III only D. I, II and III

62. What is the IUPAC name of the following structure?

A. ethanedioic acid B. butanedioic acid

C. propanedioic acid D. carboxypropanoic acid



63. Which one is not the property of thermoplastics polymer?

A. They are long chain linear polymers.

B. They can be recycled.

C. They are weak, soft and less brittle.

D. They are hard, strong and brittle

64. A type of polymerization that involves the combination of monomer molecules with the elimination of simple molecules is called

A. Addition polymerization B. Condensation polymerization

C. Self-polymerization D. A and C

65. Phenol and formaldehyde are monomers of

A. Bakellite B.Nylon C. Dacron D. Polystyrene

66. What is the molality of a solution of 10 g NaOH in 500 g water?

A. 1.2m B. 3.5m C. 0.5m D. 5.6m

67. Suppose 9.8 grams of H_2SO_4 (MW = 98 g/mol) are dissolved in 250.0 mL of aqueous solution. What is the Normality of H_2SO_4 in the solution?

A. 19.6 N B. 0.40 N C) 0.20 N D) 0.80 N

68. Calculate the concentrations of H_3O^+ and OH^- ions in a 0.050 M $Ba(OH)_2$(aq) solution.

A. $[H_3O^+]$ = 0.050 M; $[OH^-]$ = 0.050 M

B. $[H_3O^+] = 2.0 \times 10^{-13}$ M; $[OH^-]$ = 0.050 M

C. $[H_3O+] = 1.0 \times 10^{-7}$ M; $[OH^-]$ = 0.100 M

D. $[H_3O^+] = 1.0 \times 10^{-13}$ M; $[OH^-]$ = 0.100 M

69. For the reaction,

$H_{2\,(g)} + Br_{2\,(g)} \leftrightarrow 2\,HBr_{(g)}$, $K = 4.0 \times 10^{-2}$.

For the reaction, $2\,HBr_{(g)} \leftrightarrow H_{2\,(g)} + Br_{2\,(g)}$ K =?

A. 4.0×10^{-2} B. 5 C. 25 D. 2.0×10^{-1}

70. Which of the following is not a suspension mixture?

A. Smoke C. Flour and water

B. Chalk and water D. $Mg(OH)_2$ in water

71. Lattice energy of crystal increases with

A. increasing charge and decreasing ionic radii

B. decreasing charge and increasing ionic radii

C. increasing charge and increasing ionic radii

D. decreasing charge and decreasing ionic radii

72. Which one is not conserved during a chemical reaction?

A. Mass of reactants and products C. The number of molecules

B. The number of atoms D. The number of charge present

73. If we put a paddlewheel in front of cathode rays, the paddle wheel rotates; this is because cathode rays:

A. travel in straight line. C. have Electric charge.

B. posses mass energy. D. are deflect by magnetic field.

74. How many photons of light having a wavelength of 400nm are necessary to provide one joule of energy?

A. 4.97×10^{-19}photons C. 2.01×10^{18} photons

B. 2.00photons D. 497photons

75. If solution shows positive deviation from Raoult's law, which one is not true?

A. The dissolution process is exothermic.

B. The dissolution process is endothermic.

C. The evaporation is more from the solution than from the pure liquid.

D. Total pressure of the real solution is greater than the total pressure of the ideal solution.

76. Using the following information, calculate the enthalpy of formation of KI in KJ/mol:

A. $K_{(S)} + \frac{1}{2}I_2 \rightarrow K_{(g)} + I_{(g)}$ $\Delta H^{\circ} = +197KJ/mol$

B. $K_{(g)} + I_{(g)} \rightarrow K^{+}_{(g)} + I_{(g)}$ $\Delta H^{\circ} = +123KJ/mol$

C. $K^{+}_{(s)} + I^{-}_{(g)} \rightarrow KI_{(s)}$ $IE = -632KJ/mol$

D. $K_{(s)} + \frac{1}{2}I_{2(g)} \rightarrow KI_{(s)}$ $\Delta H^{\circ} = ?$

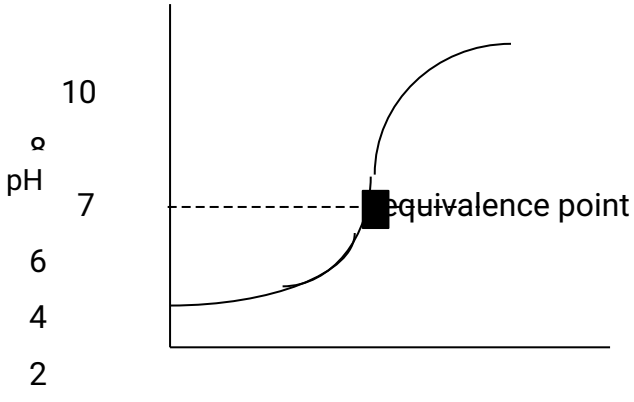
77. Triglycerides are used in the manufacture of :

A. Synthetic detergents. C. Soap.

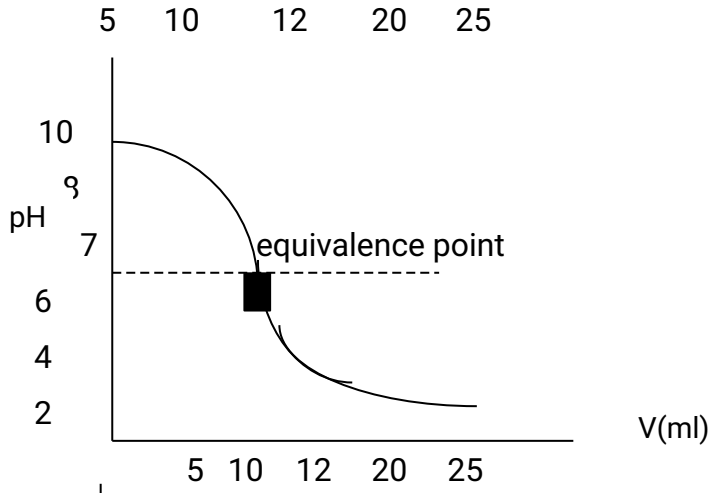
B. Vitamins. D. Enzymes.

78. Which of the following curves can represent the titration curve for the titration of a strong acid with a strong base?

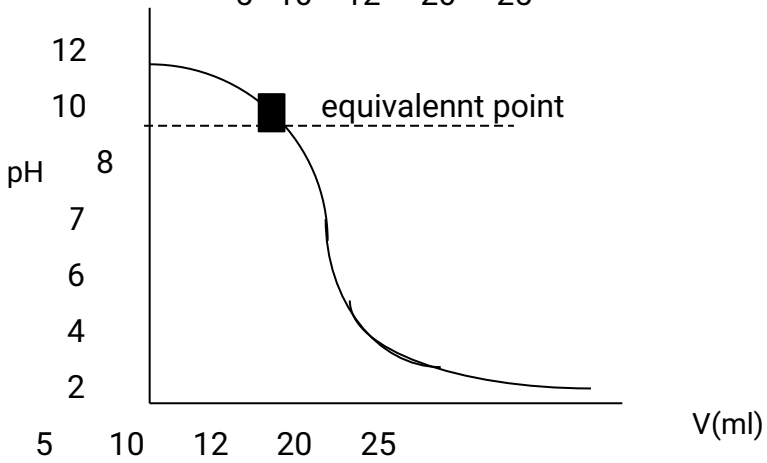
A.



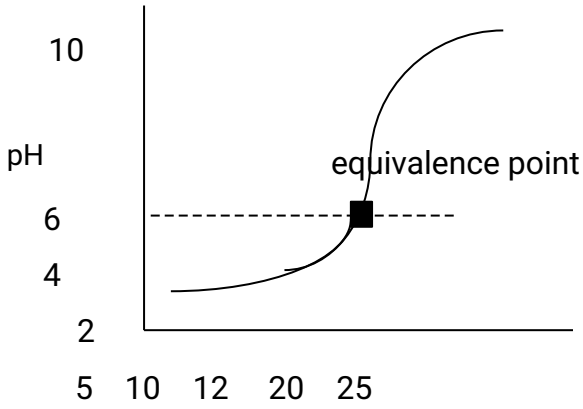
B.



C.



D.



79. What makes the phosphorous cycle different from nitrogen and carbon cycles?
    A. The phosphorous cycle is very slow.
    B. Phosphorous cannot be found in the atmosphere in the gaseous state.
    C. It is not an essential element.
    D. A and B
80. Colligative properties of the solution depends on:
    A. nature of solute.
    B. nature of solvent.
    C. number of solute particles present in the solution.

D. number of moles of solvent only.

81. Which of the following is not characteristic of transition elements?

A. they form colored salt

B. they from complex compound

C. they are non-conductor of heat and electricity

D. they posses variable oxidation state