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Ahmed Mohammed

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2012EC SECOND SEMESTER Chemistry*Model FOR GRADE 12*

1. Which one of the following factors does not influence the rate of the reaction

   A. Nature of the Reactant C. concentration of the reactants

   B. Molecularity of reaction D. temperature

2. In the reaction $N2(g)+3H2(g) \rightarrow 2NH3(g)$,the rate of formation of NH_3will be

   A. Same as the rate of disappearance of H_2

   B. Half the rate of disappearance of H_2

   C. Same as the rate of disappearance of N_2

   D. Twice the rate of disappearance of N_2

3. A first order reaction is 25% complete in 40minutes.The time required for the reaction to be 50%complete will be

   A. 100minutes C. 96.25minutes

   B. 80minutes D. 65minutes

4. Which of the following rate equations represents a second order reaction?

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

   B. Rate=K[2A] D.A&C

5. If the temperature of a reaction is increased from 25^0c to 75^0c

   A. The reaction rate decreases, but K remains the same

   B. Both the reaction rate and K decreases

   C. The reaction rate increases but K remains the same

   D. Both the reaction rate & Kincreases.

6. All of the following is valid expression for the rate of the reaction given below EXCEPT $4NH_3+7O_2 \rightarrow 4NO_2+6H_2O$

A.$-\frac{1}{7}\frac{\Delta[O_2]}{\Delta t}$ B.$\frac{1}{4}\frac{\Delta[NO_2]}{\Delta t}$ C.$-\frac{1}{6}\frac{\Delta[H_2O]}{\Delta t}$ D.$\frac{-1}{4}\frac{\Delta[NH_3]}{\Delta t}$

7. The reaction 2x+y → Z was studied and the following rate were obtained.

Excpt	[x]	[y]	Rate($mol.L^{-1}.S^{-1}$)
1	3.0	3.0	1.8
2	3.0	1.5	0.45
3	1.5	1.5	0.45

Based on the above data, what is the proper rate expression.

A. R=k[x] B.$R=k[x]^2$ C. $R=K[y]^2$ D.$R=K[X]^2[y]$

8. Which of the following rate law is third order overall?

A.$R=K[A][B]^3$ C. $R=K[A]^2[B]^2$

B.R=K[A][B]2 D.R=K[A][B]

9. For the reaction N2+3H2 → 2NH3,the rate of disappearance of HS2 is 0.01 $mol.L^{-1}.min^{-1}$. The rate of appearance of NH_3 would be.

A. $0.01M.min^{-1}$ B.0.02 $M.min^{-1}$ C.$0.007M.min^{-1}$ D.$0.002M.min^{-1}$

10. The integrated rate law equation for second order reaction A → product is

A. $[A]t=-kt+[A]_o$ C.$\ln[A]_t=-kt+\ln[A]_o$

B. $\frac{1}{[A\}_t}=kt+\frac{1}{[A]_0}$ D. $\ln\frac{1}{[A]t}=kt+\ln\frac{1}{[A]_0}$

11. If a catalyst is added to a Chemical reaction that is at equilibrium, then the catalyst increases the rate at which equilibrium is achieved

A. but it does not change the composition of the equilibrium

B. And it will change the composition of the equilibrium.

C. And it will change the equilibrium in the direction that produces heat.

D. And it will change the equilibrium in the direction that occupies a large volume.

12. Which of the following correctly relates the two equilibrium constant of the two reactions given below?

A+B → 2C,...K1

$4C \rightarrow 2A+2B, \ldots K_2$

A. $K_2=2K_1$ C. $K_2=\frac{1}{K_1}$ B. $K_2=K_1$ D. $K_2=\frac{1}{K_2^2}$

13. For the gas phase reaction $N_2+O_2 \rightleftarrows 2NO, \Delta H=+180kj.mol^{-1}$ the value of K changes with

    A. Change in pressure C. change in the concentration of N2

    B. Introduction of NO D. change in temperature.

14. In the reaction $2SO2+O_2 \rightleftarrows 2SO_3$,Keq=100 what will be the concentration of O2,If the concentration of SO_2 is the same as that of SO_3?

    A. $[O_2]=[SO_2]$ C.$[0_2]=100M$

    B. $[O_2]=0.01M$ D$[O_2]=0.1M$

15. The conventional equilibrium constant expression(Kc)for the system $2ICl(s) \rightleftarrows I2(s)+Cl_2(g)$ is

    A. $[I_2][Cl_2]/[ICi]^2$ C. $[Cl_2]$

    B. $[I_2][Cl_2]/2[ICl]$ D. $[ICl]^2$

16. Consider the hypothetical reaction below. In which of the following will the effect of concentration and temperature simultaneously cause an increase in the rate at which products are formed?$2A(g)+B(g) \rightleftarrows 3C(g)+Heat$

    A. Decrease[B] and Decrease temperature

    B. Increase[B] and decrease temperature

    C. Increase [B]and decrease temperature

    D. Liquefy A and decrease temperature

17. Which change will increase the amount of SO3(g) at equilibrium

    $2SO2(g)+O2(g) \rightleftarrows 2SO3(g), \Delta H=-197kj/mol$

    I. Increasing the temperature

    II. Decreasing volume

    III. Adding a catalyst

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

18. The hydrogen used in the Haber process is made by the following reactions.

$CH4(g)+H_2O(g) \rightleftarrows CO(g)+3H_2(g), \Delta H0=205kj$. Which of the following sets of conditions will favor the formation of H2?

A. Low pressure and High temperature

B. Low pressure and low temperature

C. High pressure and low temperature

D. High pressure and high temperature

19. For a reaction to shift towards the reactant direction which of the following condition holds TRUE?

A. Qc<Kc B. Qc>Kc C. Qc=Kc=O D. Qc=Kc

20. Which of the following statement is correct about the equilibrium constant?

A. Its value increases by increase in temperature

B. Its value decreases by decrease in temperature

C. Its value is unaffected by the change in temperature

D. Its value may increase or Decrease with the change in temperature.

21. Which of the following explains, why at room temperature, I_2 is solid,Br_2 is liquid and Cl_2 is a gas?

A. Ionic bonding C. Hydrogen bonding

B. Hybridization D. London Dispersion force

22. Which of the following molecule has the smallest H_____X_____ bond angle, where X is the central atom.

A. CH_4 B.H_2O C.BH_3 D.NH_3

23. What is the electron set geometry of IF_4^-

A. T-shaped B. Triangular bipyramidal C. Octahedral D. square planar

24. What is the bond order of O_2^-

A.1 B. 1.5 C.2 D.2.5

25. What is the hybridization scheme of the species indicated in (question,23) above

A. SP^3d^2 B.SP^3d C.SP^3 D.SP^2

26. Which of the following has the shortest bond length ?

A. O_2 B.N_2 C.H_2 D.F_2

27. Which molecule has Lewis structure that does not obey the octet rule?

A.CCl_4 B.PF_3 C.NO D.CS_2

28. All of the following are Isoelectronic except

A. K^+ B. Ar C. $Al3^+$ D.$S2^-$

29. Which of the following should have the largest atomic radius?

A. F^- B. Na^+ C. Mg^{2+} D.Al^{3+}

30. The number of electrons of an atom (Z=47)that enters to the 4d orbital's are

A.4 B.5 C. 9 D.10

31. The value of k for the reaction$H_2+I_2 \rightleftarrows 2HI$ is 49.The value of K for the reaction, $HI/\rightleftarrows$ will be

A.49 B.$\frac{1}{49}$ C.7 D.$\frac{1}{7}$

32. For the reaction ,$N2(g)+O2(g) \rightleftarrows 2NO(g)$,the production of NO will be favored by

A. High pressure C. presence of Catalyst

B. Low pressure D. High concentration of N2

33. According to Le catelier's principle, adding heat to a solid and liquid in equilibrium will cause the

A. Amount of solid to decrease

B. Amount of Liquid to decrease

C. Temperature to raise

D. Temperature to fall

34. The unit of equilibrium constant for the reaction $N_2+3H_2 \rightleftarrows 2NH_3$+Heat will be

A$mol^{-2}.L^2$ B.$mol.L^{-1}$ C.$mol^2.L^{-2}$ D.$mol^{-1}.L$

35. Which of the following statements is incorrect about the equilibrium state?

A. It is dynamic in nature

B. No change in properties with time

C. The free energy charge is zero

D. It can be attained from the side of reactants only

36. If the gas mixture for the following reaction $N_2O4 \rightleftarrows 2NO_2(g)$ is compressed, then

A. Products are favored

B. Reactants are favored

C. products concentration equals reactants concentration

D. No Change

37. Which of the following equilibrium will have the same value of Kp &Kc?

A. $N_2O_4(g) \rightleftarrows 2NO_2(g)$ C. $H_2(g)+Cl_2(g) \rightleftarrows 2HCl(g)$

B. $PCl_5(g) \rightleftarrows PCl3(g)+Cl(g)$ D. $N2(g)+3H_2(g) \rightleftarrows 2NH_3(g)$

38. Which of the following reactions is not affected by increase in pressure?

A. $2NH_3(g) \rightleftarrows N2(g)+3H_2(g)$ C. $N2(g)+O_2(g) \rightleftarrows 2NO(g)$

B. $2SO_2(g)+O_2(g) \rightleftarrows 2SO_3(g)$ D. $PCl_5(g) \rightleftarrows PCl_3(g) \rightleftarrows PCl_3(g)+Cl_2(g)$

39. When two reactants, A&B are mixed to give products C&D, the reaction quotient, Q at the initial stage of the reaction.

A. Is zero C. Is independent of time

B. Decrease with time D. Increase with time

40. An increase in temperature for a reaction at equilibrium will favor.

A. The forward direction C. the reverse direction

B. The exothermic direction D. the endothermic direction

41. The rate of a reaction is primarily determined by the slowest step. This step is called.

A. Activation step C. the rate determine

B. Elementary reaction D. the reaction mechanism

42. The dimensions of the rate constant of second order reaction involves

A. Concentration C. concentration and time

B. Time only D. Neither time nor concentration

43. Substances that slow down a reaction are called

A. Catalysts C. Inhibitors

B. Enzymes D. Positive Catalysts

44. The rate at a given specific time is

A. Integrated rate law C. instantaneous rate

B. Rate law D. Rate of reaction

45. What is the overall order for the rate expression Rate=$\frac{k[A][B]}{[C]^2}$

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

46. Which of the following reaction is exothermic?

A. $A+B \rightarrow C+D+Heat$ C.$A+B \rightarrow C+D-Heat$

B. $A+B+Heat \rightarrow C+D$ D. $A+B \rightarrow C+D, \Delta H=300KJ$

47. All of the following are preconditions for a reaction to occur according to collision theory EXCEPT

A. The particles of the reacting substance must collide

B. The particles of the reacting species must have proper orientation.

C. Ineffective collision results desired products

D. The particles of the reactants must collide with energy greater than or equal to the energy of activation.

48. Which of the following is not heterogeneous reaction?

A. $3Fe(s)+4H_2O(g) \rightarrow Fe_2O_3(5)+4H_2(g)$

B. $C(s)+O_2(g) \rightarrow CO2(g)$

C. $CaCO_3(5) \rightarrow CaO(5)+CO_2(g)$

D. $N_2(g)+3H_2(g) \rightarrow 2NH_3(g)$

49. Fore termolecular reaction, the order of the reaction is

A. 1 B.0 C.3 D.2

50. A Typical path way for a chemical reaction that includes several simple steps is

A. Elementary reaction C. an Intermediate reaction

B. Activation energy D. Reaction mechanism

51. Which one of the following is a thermosetting plastic

A. Polyethylene B.PVC D. Dacron D. Polyethylene

52. Which of the following disaccharides is prepared by two different monosaccharide units ?

A. Fructose B. cellulose C. maltose D. Fructose

53. Which of the following is a natural polymer?

A. Teflon B. Nylon C. Fructose D. Glucose

54. Which of the following Monosaccharide's is a ketohexose?

A. Galactose B. ribose C. Fructose D. Glucose

55. The first synthetic rubber is

A. Bakelite B.SBR C. Neoprene D. Isoprene

56. Which is commonly named as milk sugar?

A. Galactose B. glucose C. Lactose D. Fructose

57. Which is commonly named as Fruit sugar?

A. Fructose B. Lactose C. Galactose D. Glucose

58. Which is commonly named as grain sugar?

A. Fructose B. Lactose C. Glucose D. Galactose

59. A polysaccharide used as energy storage in plants is

A. starch B. cellulose C. Glycogen D. Glucose

60. Which of the following element is used to vulcanize Rubber?

A. Phosphorous B. Sulphur C. Carbon D. Nitrogen

61. Which polymer is commonly used for making Automobile tires?

A. Butyl rubber B.SBR C. Nature rubber D. Neoprene

62. What is the other name for PMMA

A. Teflon B. Dacron C. Perspex D. Bakelite

63. The monomer of polyvinyl chlorise (PVC) is

A. Chloroform C. Chloroethane

B. Chloromethane D. Ethylene dichloride

64. Which one of the following is not a natural polymer

A. Bakelite C. Proteins

B. Nucleic acids D. Carbohydrates

65. Which one of the following polymers is synthesized by condensation polymerization.

A. Nylon-66 B. Teflon C.PMMA D.PVC

66. _____are polyhydroxy^{l} keTones or Aldehydes or substance that yield such substance up on hydrolysis.

A. Proteins B. nucleic Acids C. Carbohydrates D. Fats & oils

67. Which polymer is made from the monomers :1,3-butadlene and styrene?

A. Butyl rubber B neoprene C. Teflon D. SBR

68. The monomers Adipic acid & hex methylene demine unit together by condensation polymerization to yielded which polymer.

A. Natural rubber C.SBR

B. Nylon-66 D. Teflon

69. 2-methyl-1,3-butadiene or Isoprene is the monomer of

A. Natural rubber C.SBR

B. Nylon-66 D. Teflon

70. Which polymer is made from the monmomers:2-methylpropene and isoprene

A. Butly Rubber C. Teflon

B. Neoprene D.SBR

71. What kind of energy is converted in galvanic cell? chemical energy

A. Is converted in to Electrical energy

B. Is converted in to Heat energy

C. Is obtained in to Heat

D. Is obtained in to Electrical energy

72. A solution in an electrolytic cell contains

$Cu^{2+}, E^0red=0.34V$

$Ag^+, E^0red=0.80V$

$Zn^{2+}, E^0red=-0.76V$

If the voltage in initially very low and slowly increased, is which order will the metals be plated out on to the cathode?

A. $Zn^{2+} > Cu^{2+} > Ag^+$ C. $Ag^+ > Zn^{2+} > Cu^{2+}$

B. $Cu^{2+} > Zn^{2+} > Ag^+$ D. $Ag^+ > Cu^{2+} > Zn^{2+}$

73. Electrolysis of dilute aqueous solution was carried out by passing 10milliamperel current. The time required to liberate 0.01 mole of H_2 gas at the cathode is

A. 9.65×10^4s C.28.95×10^4s

B. 19.3×10^4s D. 38.6×10^4s

74. Standard electrode potential for Sn4+/Sn2+ couple is +0.15v and that for the Cr3+/Cr couple is -0.74V.These two couples in their standard state are connected to make a spontaneous electrochemical Reaction. The cell potential will be.

A+1.83V B+1.19v C+0.89v D+0.18

75. What is the balanced equation for the cell notation of the following galvanic cell? $Pb(s)/Pb_2+(aq)$

A. $Pb(5)2Cl^-(aq) \longrightarrow pb^{2+}(aq)+Cl_2(g)$

B. $Pb(5)+Cl_2(g) \rightarrow Pb^{2+}(aq)+2Cl\text{-}(aq)$

C. $Pb^{2+}(aq)+2Cl\text{-}(aq) \rightarrow Pb(s)+Cl_2(g)$

D. $Pb^{2+}(aq)+2Cl^-(aq) \rightarrow PbCl_2(5)$

76. What mass of Aluminum is produced in one hour by the electrolysis of molten AgCl3 with a current of 10A?

A. 1.16g B.2.26g C.3.36g D.4.46g

77. Which substance is reduced in the reaction.

$C(s)+2N_2O(g) \rightarrow CO_2(g)+2N2(g)$

A. C B.N_2O C.CO_2 D.N_2

78. In the reaction $H_2S(aq)+I_2(aq) \rightleftarrows S(s)+2H+(aq)+2I(aq)$ the reducing agent is

A.$H_25(aq)$ B.$I_2(aq)$ C.S(s) D.I-(aq)

79. The standard reduction potential of Zn2+/Zn is -0.76V and that of Cu2+/Cu is +0.34V.Whatwould be the emf of the cell constructed between these two electrodes?

A.0.42V B. 1.1V C.-1.1V D.1.42V

80. What voltage is produced under standard conditions by combining the half-relations with these standard electrode potentials?

$Al3+(aq)+3e- \rightarrow Al(s), E^0red=-1.66v$

$Cu2+(aq)+2e- \rightarrow Cu(s), E^0red=+0.34$

81. Which of the following metals has the highest electrical and thermal conductivity.

A. Ag B. Al C. Cu D. NI

82. Which of the following metals is NOT obtained by commercial electrolytic process.

A. Ag B. Al C. Au D. Na

83. Which of the following element is the second most abundant element in the earth's crust.

A. Aluminum B. Iron C. Oxygen D. silicon

84. Which of the following ions is the most abundant in sea water?

A. Na^+ B.Ca^{2+} C. Ct^- D. $HClO_3^-$

85. Which of the following element has the highest melting point

A. Iodine B. Tungsten c. Mercury D. Iron

86. Which metal can be found as the free element?

A. Cr B. Fe C. Mn D. Pt

87. If a mineral is denser than its gangue, the appropriate method of Separation is

A. Magnetic Separation C. Leaching

B. Forth floatation D. Gravity separation

88. Gold dissolves in Aquilegia. The composition of Aquilegia is

A. H_3PO_4/H_2SO_4 C.$H_3PO_4+3H_2PO_4$

B. $3HNO_3+HCl$ D. HNO_3+3HCl

89. Which of following(Element-Ore)Combination is correct?

A. lead Galena C. Zinic-Cassiterite

B. chromium-Hematite D. Calcium -Borax

90. Which of the following plant Nutrient will be produced as a re suit of Nitrogen fixation?

A. Carbohydrates C. Mineral

B. Cellulose D. Protein

91. The formula of Gypsum salt is

A. $CaSo_4.2H_2O$ C.$MgSO_4.2H_2O$

B. $(CaSO_4)2,H_2O$ D.$(MgSo_4)2.H_2O$

92. A substance which must be kept under water is

A. Sodium metal C. Red Phosphorous

B. white Phosphorous D. Cesium metal

93. A substance which must be kept under a liquid hydrocarbon kerosene is

A. Sodium metal C. Red Phosphorus

B. White Phosphorous D. Cesium metal

94. Which of the following metals is commonly used in photo-chemical cells?

A. Lithium B. Rubidium C. Cesium D. Francium

95. Which of the following compounds is most soluble in water?

A. $MgSO_4$ B.$SrSO_4$ C.$CaSO_4$ D.$BaSO_4$

96. In Down's process for the manufacture of sodium metal, $CaCl_2$ is added to NaCl in order to

A. Increase the Ionization of Na metal

B. Increase the melting point of Nacl

C. Increases the conductivity of the electrolyte

D. Decrease the melting point of NaCl.

97. Three oxides of the same element have different colors, where the lower oxide is yellow, the higher oxide is red, and the intermediate oxide is Dark-brown. The yellow oxide would be

A. N_2O B. PBO C. Cao D.Pb_3O_4

98. Which among the others has a different method of extraction from its ore?

A. Calcium B. Magnesium C. Aluminum D. Lead

99. Carnal lite is an ore of

A. Magnesium C. Potassium

B. Sodium D. Aluminum

100. Dolomite is a mineral of

A. Aluminum C. Potassium

B. Magnesium D. Barium