TEAM ANUOLUWA

...making a distinct difference.

08160860820

CHM 101 QUESTIONS AND ANSWERS

1. The variability in errors in a set of measurement, which is usually estimated by least square method is called

A. Personal error

B. Indeterminate error

C. Operative error

D. Relative error

Answer: B

2. Which of the types of errors is best described as the reproducibility of measurements?

A. Relative accuracy

B. Probable error

C. Precision

D. Average deviation

Answer: C

3. If $Z = G/Y$, the maximum error in Z is best expressed as

A. $E_z = \left(\frac{E_G}{G} + \frac{E_Y}{Y}\right)$

B. $E_z = Z\left(\frac{E_A}{A} + \frac{E_B}{B}\right)$

C. $E_z = Z\left(\frac{E_A}{A} - \frac{E_B}{B}\right)$

D. $E_z = Z\left(\frac{E_G}{G} + \frac{E_Y}{Y}\right)$

Answer: D

4. Given the summation Y = 1.05(±0.02) + 4.10(±0.03) - 1.97(± 0.05), the absolute error and percentage relative error in the measurement is

A. 0.06 and 1.89%

B. 0.05 and 1.87%

C. 0.06 and 1.87%

D. 0.05 and 1.89%

Answer: A

5. A solution of 0.5moldm-3 NaOH was titrated against 0.2moldm-3

H_2SO_4 in the burette using phenolphthalein as indicator. The results obtained are:

Initial Burette reading = 2.98 $\pm 0.05 cm^3$

Final Burette reading = 38.75 $\pm 0.05 cm^3$ where ±0.05 is the maximum errors

Determine the absolute error and relative error in ppt. of the measurements.

A. ±0.20, 2.8‰

B. ±0.20, 3.8‰

C. ±0.10, 4.8‰

D. ±0.10, 2.8‰

Answer: D

6. Which of the following is/are true? I. Numbers 1-9 are significant II. 0 digit is most times III. Zeros before figures are not significant IV. Zeros after decimal are significant

A. I, II, III

B. I, III, IV

C. I, IV

D. III, IV

Answer: B

7. Evaluate $V = \frac{22.1dm^3 \text{ x } 751.2mmHg}{760mmHg}$

A. $76.20dm^3$

B. $76.2dm^3$

C. $76dm^3$

D. $76.2072dm^3$

Answer: B

8. The relationship between the substances undergoing chemical reactions is known as

A. Chemical Formula

B. Molecular formula

C. Stoichiometry

D. Mass Spectrometry

Answer: C

9. The general formula for balancing organic chemical reactions is written as:

A. $C_xH_y + yO_2 \rightarrow xCO_2 + \frac{y}{2}H_2O$

B. $C_xH_y + \left(\frac{x+y}{4}\right)O_2 \rightarrow xCO_2 + \frac{y}{2}H_2O$

C. $C_xH_y + \left(x+\frac{y}{4}\right)O_2 \rightarrow xCO_2 + \frac{y}{2}H_2O$

D. $C_xH_y + \left(\frac{x-y}{4}\right)O_2 \rightarrow xCO_2 + \frac{y}{2}H_2O$

Answer: C

10. Empirical formula is best defined as

A. The simplest formula that shows the number of atoms of a compound

B. The simplest formula that shows the number of atoms of each element in one ion of a compound

C. The simplest formula that shows the number of atoms of each element in one molecule of a compound

D. The simplest formula that shows the actual composition of a molecule of a compound

Answer: C

11. Molecular formula is best defined as

A. The formula that shows the number of atoms of a compound

B. The formula that shows the number of atoms of each

element in one ion of a compound

C. The formula that shows the number of atoms of each element in one molecule of a compound

D. The formula that shows the actual composition of a molecule of a compound

Answer: D

12. 6g of metal M reacts completely with 23.66g of chlorine to form 29.66g of the metallic chloride. Find the empirical formula of the metallic fluoride

A. MCl

B. MCl_3

C. MCl_4

D. MCl_2

Answer: **B**

13. The equivalence of 1mole of any gas at s.t.p. is

A. $22.4cm^3$

B. $22400dm^3$

C. $0.0224m^3$

D. $2.24m^3$

Answer: C

14. How many moles of atoms of oxygen are there in 0.3mole of SO_2?

A. 0.3mole

B. 0.6mole

C. 0.9mole

D. 1.2mole

Answer: B

15. How many atoms of oxygen are there in 10g of H_2SO_4?

A. 2.47×10^{23}

B. 2.46×10^{23}

C. 2.45×10^{23}

D. 2.44×10^{23}

Answer: B

16. What is the number of copper atoms in a 1naira coin which weighs 7.39g, assume the material from the coin is made is contains 86% copper

A. 6.02×10^{23}

B. 6.02×10^{22}

C. 6.02×10^{21}

D. 6.2×10^{23}

Answer: B

17. What is the mass of oxygen O_2 needed to burn 4.6g of Na in the reaction below?

$$4Na + O_2 \rightarrow 2Na_2O$$

A. 1.3g

B. 1.6g

C. 1.5g

D. 1.4g

Answer: B

18. How many moles of NH3 are there in 500cm3 of the gas?

A. 0.02mol

B. 0.2mol

C. 0.002mol

D. 2.00mol

Answer: A

19. What is the mass in grams of 1.45×10^{23} molecules of sucrose $C_{12}H_{22}O_{11}$?

A. 82.11g

B. 82.09g

C. 82.08g

D. 82.12g

Answer: C

20. What mass of $CuSO_4$ will be obtained by starting with 10g of

CuO from the following reaction (Cu = 63.5g)?

A. 20.04g

B. 20.05g

C. 20.06g

D. 20.07g

Answer: C

21. Calculate the solubility of a solution containing 6g of NaCl {NaCl = 58.44} in 200cm^3 of solution

A. 1.531

B. 0.153

C. 0.513

D. 1.153

Answer: C

22. Calculate the amount in moles and grams of $KMnO_4$ present in 3dm^3 of 0.250mol

A. 1.23mol & 54g

B. 0.75mol & 119g

C. 0.25mol & 233g

D. 0.135mol & 23g

Answer: B

23. A 0.6025g of sample of a chloride salt was dissolved in water and the chloride precipitated by adding excess silver nitrate. The precipitate of silver nitrate was filtered, washed, dried and found to weight 0.7134g. Calculate the percentage chloride in the sample

[Cl = 35.45, Ag = 107.87]

A. 22.95%

B. 95.22%

C. 29.25%

D. 25.29%

Answer: C

24. The smallest unit of matter than has the properties of an element is called

A. Atom

B. Molecule

C. Ion

D. Particles

Answer: A

25. The nucleus of an atom contributes to its .....while electrons contributes to its.....

A. Mass/weight

B. Volume/Mass

C. Mass/volume

D. volume/volume

Answer: C

26. Given an atomic species: ${}^{D}_{M}X$, The atomic identity of X is determined by its

A. D

B. M

C. M-D

D. D-M

Answer: B

27. Isotopes are

A. Atoms of same element with different atomic numbers

B. Atoms of same element with differences in their number of neutrons

C. Atoms of different elements with same mass number

D. Atoms of different elements with the same atomic number

Answer: B

28. Isobars are

A. Atoms of same element with the same number of neutrons

B. Atoms of same element with differences in their number of neutrons

C. Atoms of different elements with same mass number

D. Atoms of different elements with the same atomic number

Answer: C

29. Isotones are

A. Atoms of same element with the same number of neutrons

B. Atoms of same element with differences in their number of neutrons

C. Atoms of different elements with same mass number

D. Atoms of different elements with the same atomic number

Answer: A

30. The father of atomic theory was

A. J.J. Thompson [1766 – 1823]

B. Ernest Rutherford [1911 – 1934]

C. John Dalton [1766 – 1844]

D. R.A. Millikan [1835-1927]

Answer: C

31. Atoms are .....

A. Indestructible and unchangeable

B. Indestructible and predictable

C. The smallest particle of an ion

D. All of the above

Answer: A

32. When elements combine, they do so in

A. Simple whole number fractions

B. Multiple whole number ratios

C. Simple whole number ratios

D. Multiple whole number fractions

Answer: C

33. Atom of the same two or more given elements can combine indifferent single whole numbers ratio to form different compounds. This statement is best described as

A. Law of Mass Action

B. Law of Variable proportion

C. Law of Standard proportion

D. Law of Multiple proportion

Answer: D

34. The parameters that describe the distribution of electrons in an atom and their fundamental nature are called

A. The Principal quantum numbers

B. The Azimuthal quantum numbers

C. The Magnetic quantum numbers

D. The Quantum numbers

Answer: D

35. Principal quantum number describes

A. Main energy distribution

B. Main energy shell

C. Main energy sub-level

D. Main energy orientation

Answer: B

36. Azimuthal quantum number describes

A. Main energy distribution

B. Main energy shell

C. Main energy sub-level

D. Main energy orientation

Answer: C

37. Azimuthal quantum number is otherwise known as

A. Subordinate quantum number

B. Proportional quantum number

C. Analytical quantum number

D. Subsidiary quantum number

Answer: D

38. The respective shapes of d, f, s & p - orbitals are

A. Dumbbell, spherical, characteristic shape & double-dumbbell

B. Spherical, double-dumbbell, dumbbell & characteristic shape

C. Dumbbell, double-dumbbell, spherical & characteristic shape

D. Double-dumbbell, characteristic shape, spherical & dumbbell

Answer: D

39. The number of possible orientations in a 3-dimensional space for each type of orbital can best be described as

A. Spin Quantum number

B. Magnetic Quantum number

C. Azimuthal quantum number

D. Principal quantum number

Answer: B

40. The number of possible orientations that an electron can have in the presence of a magnetic field or in relation to another is best be described as

A. Spin Quantum number

B. Magnetic Quantum number

C. Azimuthal quantum number

D. Principal quantum number

Answer: A

41. If student took a reading for 20.44% instead of 20.34%. calculate the absolute error and the relative error respectively

A. 0.10%, 0.05

B. 0.10%, 0.005

C. 1.0%, 0.005

D. 1.0%, 0.05

Answer: B

42. The molar concentration of a solution is determined by four separate titrations, the results being 0.2041, 0.2039. 0.2049 and 0.2043. calculate the mean & median of the data

A. 0.2042 & 0.2044

B. 0.2043 & 0.2042

C. 0.2043 & 0.2043

D. 0.2043 & 0.2041

Answer: B

43. Calculate the root mean square velocity (r.m.s.) of 1 mole of CO_2 at 27^0C (mm = $44gmol^{-1}$)

A. $4.12 \times 10^2 m/s$

B. $12 \times 10^2 m/s$

C. $5.2 \times 10^2 m/s$

D. 1.2 x 10^2m/s

Answer: A

44. In a first order reaction, half of the reactant is decomposed in 300seconds. The time taken for $^2/_3$ of the reactant to be decomposed is .....

A. 198.84sec

B. 475.49sec

C. 2.54 x 10^{-3}sec

D. 4.75 sec

Answer: B

45. The rate constant for the first order reaction at 50^0C is twice that at 30^0C. the activation energy (Ea) of the reaction is ..... (R = 8.314Jmol^{-1})

A. 178KJ

B. 187KJ

C. 188KJ

D. 177KJ

Answer: C

46. Addition of catalyst to a reaction at a particular temperature .....the rate of reaction by .....the activation energy

A. increase, lowering

B. decreasing, lowering

C. increase, increasing

D. decreasing, increasing

Answer: A

47. The electronic configuration of potassium with the atomic number 19 is .....

A. $1s^2 2s^2 2p^6 3s^2 3p^6$

B. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

C. $1s^2 2s^2 2p^6 3d^9$

D. $1s^2 2s^2 2p^6 3s^2 3p^4 3d^1$

Answer: B

48. .....ions/molecules are always larger than the atoms from which they are formed

A. neutral

B. positive

C. negative

D. none

Answer: C

49. The value of m_l *when* $l = 2$ *is*

A. +2, +1, 0, -1, -2

B. +2, +1, 0

C. +2, +1, 0, -1

D. -2, -1, 0

Answer: A

50. .....is a substance which accepts a lone pair of electrons in forming a co-ordinate bond

A. base

B. acid

C. salt

D. proton

Answer: B

51. .....is an example of Lewis base

A. NH_3

B. H^+

C. SO_3

D. He

Answer: B

52. ..... is an example of a monoprotic acid

A. CH_3COOH

B. H_2SO_4

C. $H_2C_2O_4$

D. H_3PO_4

Answer: A

53. Find the *pOH* of 0.1moldm$^-$ hydrochloric acid

A. 1

B. 12

C. 13

D. 8

Answer: C

54. A 0.453g sample of a liquid consisting C, H and O was burned in pure oxygen and 1.039g of CO_2 and 0.6369 of H_2O were obtained.

What is the empirical formula of this compound? [C = 12.01115, H = 1.00797,O = 15.9994]

A. CHO

B. $C_4H_{12}O$

C. $C_2H_6O_2$

D. $C_2H_6O_2$

Answer: B

55. A reducing agent does

A. accepts electrons

B. donates a lone pair of electrons

C. donates electrons

D. donates and accepts at the same time

Answer: C

56. How many moles of oxygen atom are combined with 4.20moles of Cl atoms in Cl_2O_7?

A. 4.20

B. 42.00

C. 17.40

D. 14.70

Answer: D

57. What is the pH of a solution that is 0.5mol/dm^3 in acetic acid (CH_3COOH) adn2.5mol/dm^3 in sodium acetate (CH_3COONa), Ka of acetic acid is 1.75 x 10^{-3}

A. 5.23

B. 4.12

C. 5.44

D. 3.50

Answer: D

58. $Kp = K_c$ when and only when Δn is

A. < 1

B. > 1

C. Zero

D. ≥ 1

Answer: C

59. The oxidation number of 'B' in the compound E_2BK_3 is ..... [E = +1; K = -2]

A. +3

B. +2

C. +4

D. -2

Answer: C

60. The following principles are applicable to writing electronic configurations except

A. Hundi's principle

B. Aufbau principle

C. Pauli's principle

D. Hund's principle

Answer: A

61. The process of building atoms from the ground level, placing the first electron at the lowest potential energy is known as

A. Hundi's principle

B. Aufbau principle

C. Pauli's principle

D. Hund's principle

Answer: B

62. The electronic configuration of oxygen is

A. $1s^2\ 2s^2\ 2p_x^{\ 2}\ 2p_y^{\ 1}\ 2p_z^{\ 1}$

B. $1s^2\ 2s^2\ 2p^2\ 4d^2$

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

D. $1s^2\ 2s^2\ 2p_x^{\ 1}\ 2p_y^{\ 1}\ 2p_z^{\ 1}$

Answer: A

63. The idea of arranging electrons into generated orbitals one by one before pairing is known as

A. Hundi's principle

B. Aufbau principle

C. Pauli's principle

D. Hund's principle

Answer: D

64. The statement "Electrons to the opposite spin can occupy the same orbital" is best described as

A. Hundi's principle

B. Aufbau principle

C. Pauli's principle

D. Hund's principle

Answer: C

65. The state of equilibrium is limited to chemical reactions in

A. An open system

B. A reversible system

C. A closed system

D. A dynamic system

Answer: C

66. The Law of Mass Action states that:

A. Rate ∝ Concentration of reaction

B. Rate ∝ Concentration of products

C. Rate ∝ Concentration

D. Rate ∝ Concentration of reactants

Answer: D

67. Consider a hypothetical reaction: $aA + bB \rightarrow cC + yY$

Which of the following statements is correct?

A. $k_f[C]^c[Y]^y = k_r[A]^a[B]^b$

B. $k_f[A]^a[B]^b = k_r[C]^c[D]^d$

C. $k_f[A]^a[B]^b = k_r[C]^c[Y]^y$

D. $k_r[C]^c[Y]^y = k_f[A]^a[B]^b$

Answer: C

68. For the reaction: $N_2 + 3H_2 \leftrightarrow 2NH_3$, the value of k_p is

A. $\frac{P_{NH_3}^{\ 2}}{P_{N_2}\ P_{H_2}^{\ 3}}$

B. $\frac{P_{NH_3}^{\ 2}}{P_N\ P_{H_2}^{\ 3}}$

C. $\frac{P_{NH_3}^{\ 3}}{P_{N_2}\ P_{H_2}^{\ 2}}$

D. $\frac{P_{NH_3}}{P_{N_2}\ P_{H_2}^{\ 3}}$

Answer: A

69. The relationship between k_p and k_c is

A. $k_p = k_p.(RT)$

B. $k_p = k_c.(RT)^{\Delta n}$

C. $k_c = k_p.(RT)^{\Delta n}$

D. $k_p = k_c.(RT)$

Answer: B

70. When **Δ**n is positive, the value of k_p is

A. Greater than k_c

B. Less than k_c

C. Equal to k_c

D. Less than k_c by 1

Answer: A

71. When **Δ**n is negative, the value of k_p is

A. Greater than k_c

B. Less than k_c

C. Equal to k_c

D. Less than k_c by 1

Answer: B

72. When **Δ**n is zero, the value of k_p is

A. Greater than k_c

B. Less than k_c

C. Equal to k_c

D. Less than k_c by 1

Answer: C

73. For the reaction: $N_2 + O_2 \leftrightarrow 2NO$, the value of k_c is

A. $\frac{4x^2}{[a-x][b-x]}$

B. $\frac{4x^2}{[a-x][b+x]}$

C. $\frac{2x^2}{[a-x][b-x]}$

D. $\frac{4x^2}{[a+x][b+x]}$

Answer: A

74. Phosphorus pentachloride dissociates on heating according to the equation $PCl_5 \leftrightarrow PCl_3 + Cl_2$. If the k_c for the reaction is 0.0326 $moldm^{-3}$, calculate the value of k_p in Pascal at 191^0C and R = 8.314J/molK is

A. 152.67

B. 125.69

C. 125.76

D. 127.56

Answer: C

75. Factors affecting reactions in equilibrium are

A. Catalyst, Light, Concentration, Pressure

B. Catalyst, Temperature, Concentration, Pressure

C. Catalyst, Light, Concentration, Surface Area

D. Catalyst, Surface Area, Concentration, Pressure

Answer: B

76. The shifting of the equilibrium position to annul the effect of changes to re-establish equilibrium is termed

A. Pauli's Exclusion Principle

B. Le-Chatelier Principle

C. Aufbau Principle

D. Exclusion Principle

Answer: B

77. In an equilibrium reaction, pressure increase will favour the side with

A. Lower Volume

B. Equivalent Volume

C. Higher Volume

D. Volume

Answer: A

78. In the reaction: $H_2 + I_2 \leftrightarrow 2HI$,

A. Pressure has no effect

B. Increase in pressure will cause equilibrium to shift to the right

C. decrease in pressure will cause equilibrium to shift to the

right

D. decrease in pressure will cause equilibrium to shift to the left

Answer: A

79. In the reaction: $PCl_5 \leftrightarrow PCl_3 + Cl_2$,

A. Pressure has no effect

B. Increase in pressure will cause equilibrium to shift to the right

C. decrease in pressure will cause equilibrium to shift to the left

D. No Answer

Answer: D

80. Increase in the concentration of products in a reaction will cause the equilibrium position to

A. Shift to the left

B. Shift to the right

C. Will have no effect

D. Shift to both right and left

Answer: A

81. What is the effect of increase in concentration on the equilibrium constant of a reaction?

A. The value of equilibrium constant increases

B. The value of equilibrium constant decreases

C. The value of equilibrium constant remains constant

D. The value of equilibrium constant first increases, and later decreases

Answer: C

82. Increase in temperature will

A. Favour the forward reaction of an exothermic reaction

B. Favour the reverse reaction of an exothermic reaction

C. Favour both forward and reverse reaction of an exothermic reaction

D. Have no effect

Answer: B

83. Does temperature changes affect the equilibrium constant of a reaction?

A. No, it doesn't

B. Yes it does

C. Yes, it doesn't

D. No, it does

Answer: B

84. Catalyst speeds up the rate of

A. Forward reaction

B. Reverse reaction

C. Both forward and reverse reaction

D. All reactions

Answer: C

85. Catalyst speeds up the rate of

A. Forward reaction

B. Reverse reaction

C. Both forward and reverse reaction

D. All reactions

Answer: C

86. Catalyst ..... the rate of reaction by ..... the activation energy

A. decreases/raising

B. decreases/lowering

C. increases/raising

D. increases/lowering

Answer: D

87. Calculate the solubility in gdm-3 at 298K of calcium fluoride (CaF2) in a 0.1M NaF solution.
[K_{sp}=3.9 x $10^{14}$$mol^{3}dm^{-9}$, Ca=40, F=19g]

A. 3.04 x $10^{-9}gdm^{-3}$

B. 3.04 x $10^{-10}gdm^{-3}$

C. 3.04 x $10^{-8}gdm^{-3}$

D. 3.04 x $10^{-7}gdm^{-3}$

Answer: A

88. The reducing and oxidizing agents respectively in the reaction $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$ are

A. Fe_2O_3 and CO

B. Fe and CO

C. CO and Fe_2O_3

D. CO_2 and NH_3

Answer: C

89. The oxidation numbers of hydrogen and oxygen are respectively +1 and -2 except in

A. Peroxides and Halogens

B. Peroxides and Metallic Halides

C. Metallic hydrides and peroxides

D. Peroxides

Answer: C

90. In the reaction $MnO_4^- + Fe^{2+} + H^+ \rightarrow Mn^{2+} + Fe^{3+}$, the oxidation number of manganese changes from

A. +5 to +2

B. +7 to +2

C. +2 to +3

D. +6 to +2

Answer: B

91. To balance a redox reaction in basic medium, H_2O is added to the side with

A. Lesser number of oxygen atoms

B. Lesser number of hydrogen atoms

C. More oxygen atoms

D. Equivalent number of oxygen atoms

Answer: C

92. The values of w, x and g in the redox reaction:

$IO_3^- + wCr^{3+} + xOH^- \rightarrow zI^- + 2CrO_4^{2-} + 5H_2O$ is

A. 2,10, 1

B. 2,1,10

C. 10,1,2

D. 10,2,1

Answer: A

93. A reaction in which the same substance on the reactant side is being oxidized and reduced simultaneously is known as

A. Combustion reaction

B. Addition reaction

C. Dispropornation reaction

D. Substitution reaction

Answer: C

94. Substances that dissolve in water to release hydroxonium ion is known as

A. Base

B. Salt

C. Lewis Base

D. Acid

Answer: D

95. A substance that ionizes in solution to produce hydroxyl ion is

A. Base

B. Salt

C. Acid

D. Lewis Acid

Answer: A

96. The definitions of Arrhenius emphasizes .....and..... in water

A. IO_3^- & H^{2+}

B. OH^- & H^+

C. H^{2+} & $2OH^-$

D. IO_3^{3-} & H^{3+}

Answer: B

97. The Arrhenius acid and base respectively in the reaction

$NH_3 + H_2O \leftrightarrow NH_4^+ + OH^-$

A. H_2O and NH_3

B. NH_3 and H_2O

C. OH^- and H_2O

D. NH_4^+ and NH_3

Answer: A

98. The conjugate base and acid respectively in question 97 above are

A. H_2O and NH_3

B. NH_3 and H_2O

C. OH^- and H_2O

D. NH_4^+ and NH_3

Answer: A

99. Water is best described as

A. Acid

B. Base

C. Amphiprotic

D. Ampiteric

Answer: C

100. In the dissociation of water: $H_2O \leftrightarrow H^+ + OH^-$, the value of k_w is

A. $k_w = \frac{[OH^-][H^+]}{[H_3O]}$

B. $k_w = \frac{[OH^-][H^+]}{[H_2O]}$

C. $k_w = \frac{[H_2O]}{[OH^-][H^+]}$

D. $k_w = \frac{[H_3O]}{[OH^-][H^+]}$

Answer: B

101. The hydrogen ion concentration of pure water is

A. 1×10^{14}

B. 1×10^{-14}

C. 1×10^{-7}

D. 1×10^{7}

Answer: C

102. The pH of pure water is

A. 14

B. -14

C. -7

D. 7

Answer: D

103. What is the pH of a neutral solution at 25^0C?

A. 14

B. 3

C. 7

D. 1

Answer: C

104. What is the pH of a basic solution whose hydroxyl ion concentration is 0.00001M?

A. 9

B. 5

C. 1

D. 4

Answer: A

105. The pH of a 0.25M solution of acetic acid [$HC_2H_3O_2$] is found to be 2.68. What is the Ka for this solution and what percentage of the

acid ionized?

A. 1.76 x 10-5M and 0.74%

B. 1.76 x 10-5M and 0.84%

C. 6.17 x 10-5M and 0.64%

D. 6.71 x 10-5M and 0.54%

Answer: B

106. The change in the concentration of reactant or product per unit time is known as

A. Rate Law

B. Order of a reaction

C. Rate of a reaction

D. Molecularity of a reaction

Answer: C

107. In a hypothetical reaction A → B, the rate of the reaction is expressed as:

A. $\frac{d[A]}{dt} = \frac{+d[B]}{dt}$

B. $\frac{-d[A]}{dt} = \frac{-d[B]}{dt}$

C. $\frac{\pm d[A]}{dt} = \frac{+d[B]}{dt}$

D. $\frac{-d[A]}{dt} = \frac{+d[B]}{dt}$

Answer: D

108. Rate of a reaction is measured in

A. mol $lit^{-1}min^{-1}$

B. mol $cm^{-1}sec^{-3}$

C. mol $cm^{-3}sec^{-1}$

D. mol $cm^{-1}hr^{-1}$

Answer: **A**

109. The rate of a reaction is directly proportional to the concentration of reactants. This is referred to as

A. Order of a Reaction

B. Rate of a Reaction

C. Overall order of a Reaction

D. Molecularity of a Reaction

Answer: B

110. The correct expression for the rate of the reaction: A

→Products is

A. Rate = $[A]^n$

B. Rate = $[B]^n$

C. Rate = $k[A]^n$

D. Rate ∝ $k[A]^n$

Answer: C

111. The correct expression for the rate of the reaction: 2A + B →Products is

A. Rate = $k[A]^{2x}[B]^y$

B. Rate = $[A]^x[B]^y$

C. Rate ∝ $[A]^x[B]^y$

D. Rate ∝ $[A]^{2x}[B]^y$

Answer: C

112. An expression which shows how a reaction is related to concentration is termed

A. Order of reaction

B. Molecularity of reaction

C. Equilibrium Law

D. Rate Equation

Answer: D

113. The powers to which the concentration of each reactant is raised to give a correct dependence of rate on concentration is termed

A. Order of reaction

B. Molecularity of reaction

C. Equilibrium Law

D. Rate Equation

Answer: D

114. For a given reaction whose rate expression is given as: Rate = $k[A]^m[B]^n$, the order of reaction is

A. m, n

B. m+n

C. m-n

D. n-m

Answer: A

115. The sum of all exponents of the reactants as contained in the experimentally determined rate law is known as

A. Overall rate law

B. Overall molecularity of reaction

C. Overall order of reaction

D. Overall equilibrium law

Answer: C

116. Order of a given reaction can only be determined

A. Experimentally

B. From the Rate Equation

C. From the Molecuarity of reaction

D. From the chemical reaction

Answer: A

117. The number of molecules/ions of the reactants present in the balanced stoichiometric equation is referred to as:

A. Order of reaction

B. Molecularity of reaction

C. Equilibrium Law

D. Rate Equation

Answer: B

118. For a second order reaction A + B $\rightarrow$ Product, the rate constant expression is

A. $k_2 = \frac{2.303}{t} \log_{10} \frac{b(a-x)}{a(b-x)}$

B. $k_2 = \frac{2.303}{t} \log_{10} \left(\frac{a}{a-x}\right)$

C. $k_2 = \frac{1}{t} \log_{10} \frac{x}{a-x}$

D. $k_2 = \frac{x}{t}$

Answer: **A**

119. For a zero order reaction A + B → Product, the rate constant expression is

A. $k_0 = \frac{2.303}{t} \log_{10} \frac{b(a-x)}{a(b-x)}$

B. $k_0 = \frac{2.303}{t} \log_{10} \left(\frac{a}{a-x}\right)$

C. $k_0 = \frac{1}{t} \log_{10} \frac{x}{a-x}$

D. $k_0 = \frac{x}{t}$

Answer: D

120. For a first order reaction A + B → Product, the rate constant expression is

A. $k_0 = \frac{2.303}{t} \log_{10} \frac{b(a-x)}{a(b-x)}$

B. $k_0 = \frac{2.303}{t} \log_{10} \left(\frac{a}{a-x}\right)$

C. $k_0 = \frac{1}{t} \log_{10} \frac{x}{a-x}$

D. $k_0 = \frac{x}{t}$

Answer: B

121. The half-life of a first order reaction depends on

A. Initial concentration of the reactions

B. Concentration of the reactant left

C. Concentration of product

D. Rate constant

Answer: D

122. The half-life of a first order reaction depends on

A. Initial concentration of the reactants

B. Concentration of the reactant left

C. Concentration of product

D. Rate constant

Answer: A

123. The unit of rate constant, K, in a first order reaction is

A. $mollitre^{-1}sec^{-1}$

B. sec^{-1}

C. $litremol^{-1}sec^{-1}$

D. $seclitre^{-1}mol^{-1}$

Answer: B

124. Photolytic reactions take place in the presence of

A. Pressure

B. Light

C. Catalyst

D. Heat

Answer: B

125. The unit of rate constant, K, in a first order reaction is

A. $mollitre^{-1}sec^{-1}$

B. sec^{-1}

C. $litremol^{-1}sec^{-1}$

D. $seclitre^{-1}mol^{-1}$

Answer: A

Best Wishes!!!