Full Book

Chemistry

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Objective

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1. The atomicity of $C_6H_{12}O_6$ is:

Ⓐ 12 Ⓑ 24 Ⓒ 6 Ⓓ 3

2. The size of an atom is in the range of:

Ⓐ 2×10^{-10} m Ⓑ 2×10^{-9} m Ⓒ 2×10^{-11} m Ⓓ 2×10^{-12} m

3. During combustion analysis CO_2 produced is absorbed by:

Ⓐ $CaCl_2$ Ⓑ KOH (50%) Ⓒ P_2O_5 Ⓓ $Mg(ClO_3)_2$

4. Fractional atomic mass is mainly due to:

Ⓐ Atomic mass is average mass of isobars.
Ⓑ Elements mostly consist of isotopes having different fractional abundances.
Ⓒ Mass of atom is in fraction.
Ⓓ Atomic mass is average masses of isotopes.

5. The volume occupied by 16 g of CH_4 at S.T.P is:

Ⓐ 1.3 dm^3 Ⓑ 1.8 dm^3 Ⓒ 2.2414 dm^3 Ⓓ 22.414 dm^3

6. The pressure of vapours maintain in ionization chamber of mass spectrometer during isotopic analysis is:

Ⓐ 10^{-11} torr Ⓑ 10^{-5} torr Ⓒ 10^{-7} torr Ⓓ 10^{-9} torr

7. Volume occupied by one mole of gas at standard temperature and pressure is:

Ⓐ 22.414 dm^3 Ⓑ 2.2414 dm^3 Ⓒ 2.4 dm^3 Ⓓ 1.3 dm^3

8. 1 gram formula of NaCl is equal to:

Ⓐ 12 g Ⓑ 23 g Ⓒ 35.5 g Ⓓ 58.5 g

9. The branch of chemistry which tells us the quantitative relationship between reactant and products is called:

Ⓐ Thermometry Ⓑ Physical chemistry Ⓒ Stoichiometry Ⓓ Organic chemistry

10. Average atomic mass of Neon is:

Ⓐ 20.18 Ⓑ 22.18 Ⓒ 21.81 Ⓓ 20.81

11. The number of atoms in 1.97 g of gold and ..... g of sodium arc equal.

Ⓐ 2300 Ⓑ 230 Ⓒ 23 Ⓓ 0.23

12. Oxygen molecule is heavier than hydrogen by:

Ⓐ 32 times Ⓑ 8 times Ⓒ 16 times Ⓓ 1 time

13. A pair of elements having single isotope are:

Ⓐ $_9F^{19}$, $_{79}Au^{197}$ Ⓑ $_{33}As^{75}$, $_7N^{14}$ Ⓒ $_8O^{16}$, $_7N^{14}$ Ⓓ $_{53}I^{127}$, $_{35}Br^{81}$

14. 1 mole of CH_3OH and C_2H_5OH have:

Ⓐ Equal number of atoms Ⓑ Equal number of molecules
Ⓒ Equal number of protons Ⓓ Equal number of ions

15. In 98g of sulphuric acid H_2SO_4 number of O atoms:

Ⓐ 1.2×10^{24} Ⓑ 6.02×10^{24} Ⓒ 6.02×10^{23} **Ⓓ 2.408×10^{24}**

16. Mass of one mole of chlorine(Cl_2) gas is:

Ⓐ 44g Ⓑ 23g **Ⓒ 71g** Ⓓ 35.g

17. Many elements have fractional atomic masses. This is because:

Ⓐ Atomic masses are average masses of isobars.
Ⓑ Atomic masses are average masses of isotopes.
Ⓒ The mass of the atom is itself fractional.
Ⓓ Atomic masses are average masses of isotopes proportional to their relative abundance

18. 22g of CO_2 sample has:

Ⓐ 1.5 moles of O atoms **Ⓑ 1 mole of O atoms**
Ⓒ 6.02×102 molecules of $C0_2$ Ⓓ ½ mole of O atoms

19. How many times Na atom is heavier than H-atom?

Ⓐ 23 times Ⓑ 32 times Ⓒ 46 times Ⓓ 11 times

20. The phenomenon of isotropy was first discovered by:

Ⓐ Rutherford Ⓑ Dalton Ⓒ Berzelius **Ⓓ Soddy**

21. Mass in grams of 2.74 moles of $KMnO_4$:

Ⓐ 294 g Ⓑ 0.715g **Ⓒ 432.92 g** Ⓓ 1416.2 g

22. Which is a molecular ion?

Ⓐ CH_4^+ Ⓑ Ca^{2+} Ⓒ Na^+ Ⓓ Al^{3+}

23. Nickel has isotopes:

Ⓐ 4 Ⓑ 6 Ⓒ 8 **Ⓓ 5**

24. Which of the following is a mono-isotopic element?

Ⓐ Calcium Ⓑ Chlorine **Ⓒ Fluorine** Ⓓ Silver

25. The mass of 10 moles of electrons is:

Ⓐ 5.5 mg Ⓑ 1.84 mg Ⓒ 16.73 mg Ⓓ 10.08 mg

26. 1 amu is equal to:

Ⓐ 1.661×10^{-27} kg Ⓑ 1.661×10^{27} kg Ⓒ 1.661×10^{-30} kg Ⓓ 1.661×10^{-24} kg

27. Atoms of which one of the following element have independent existence:

Ⓐ Oxygen **Ⓑ Krypton** Ⓒ Nitrogen Ⓓ Flourine

28. Which of the following element can exist in monoatomic form?

Ⓐ Helium Ⓑ Nitrogen Ⓒ Chlorine Ⓓ Oxygen

29. The atomic masses of elements were determined by:

Ⓐ Soddy **Ⓑ J. Berzelius** Ⓒ Moseley Ⓓ John Dalton

30. Haemoglobin is a macromolecule and consists of approximately atoms:

Ⓐ 10,000 Ⓑ 15000 Ⓒ 5000 Ⓓ 28000

31. Which is not a molecular ion?

(A) CO^+ (B) NH_4^+ (C) CH_4^+ (D) He^+

32. Mass of one mole of electrons is:

(A) 1.673 mg (B) 1.008 mg (C) 0.184 mg (D) 0.55 mg

33. The mass of two moles of electrons is:

(A) 1.10 mg (B) 1.008 mg (C) 1.673 mg (D) 0.184 mg

34. Tin has isotopes:

(A) 5 (B) 7 (C) 9 (D) 11

35. Isotopes differ in number of:

(A) Proton Number (B) Neutron (C) Electron (D) Proton

36. How many isotopes are present in palladium:

(A) 6 (B) 5 (C) 4 (D) 6

37. The element nickel has isotopes:

(A) 2 (B) 3 (C) 7 (D) 5

38. Isotopes differ in:

(A) Arrangement of electrons in orbitals.
(B) Chemical properties.
(C) Extent to which they may by affected in electromagnetic field.
(D) Properties which depend upon mass.

39. Bromine has isotopes:

(A) 4 (B) 6 (C) 8 (D) 2

40. Cadmium has isotopes:

(A) 3 (B) 6 (C) 9 (D) 5

41. The number of neutron present in $^{39}_{19}K$ is:

(A) 20 (B) 19 (C) 18 (D) 29

42. The height of the peaks in a mass spectrum shows:

(A) mass number of isotopes (B) relative abundance of isotopes
(C) number of protons (D) number of isotopes

43. Ascorbic acid is vitamin:

(A) C (B) E (C) B (D) A

44. Empirical formula of glucose is:

(A) CH_2O (B) $C_2H_{12}O_6$ (C) $C_2H_2O_2$ (D) CHO

45. Empirical Formula of Benzene is:

(A) C_3H_3 (B) CH (C) CHO (D) CH_2O

46. During combustion analysis $Mg(ClO_4)_2$is employed to absorb:

(A) CO (B) H_2O vapours (C) CH_4 (D) CO_2

47. In combustion analysis H_20 vapours are absorbed by:

(A) 50% KOH (B) $Mg(ClO_4)_2$ (C) $Mg(ClO_3)_2$ (D) $Mg(ClO_2)_2$

48. The number of moles of $C0_2$ which contains 8.0g of oxygen is:

(A) 0.25 (B) 1.50 (C) 1.0 (D) 0.50

49. The number of moles of CO_2 which contains 16g of Oxygen is:

(A) 0.50 (B) 1.50 (C) 1.0 (D) 0.25

50. The mass of CO_2 containing 8 grams of oxygen (O_2) in gram is:

(A) 22 (B) 11 (C) 32 (D) 16

51. Amount of NaOH required to produce $250cm^3$ of 1M solution in grams is:

(A) 25 (B) 20 (C) 15 (D) 10

52. One mole of SO_2 contain:

(A) 18.01×10^{23} molecules of $S0_2$
(B) 6.02×10^{23} atoms of Sulphur
(C) 6.02×10^{23} atoms of Oxygen
(D) 4 gram atoms of SO_2

53. The largest number of molecules are present in:

(A) 5.4g of N_2O_5 (B) 3.6g of H_20 (C) 2.8g of CO (D) 4.6g of C_2H_50H

54. 27g of Al will react completely with how much mass of O_2 to produce Al_20_3:

(A) 32g of Oxygen (B) 8g of Oxygen (C) 16g of Oxygen (D) 24g of Oxygen

55. The number of atoms present in 0.1 mole of oxygen gas are:

(A) 9.03×10^{22} (B) $2\times6.02\times10^{22}$ (C) 3.01×10^{23} (D) 6.02×10^{22}

56. The volume occupied by 1.4g of N_2 at S.T.P in dm^3 is:

(A) 22.4 dm^3 (B) 11.2 cm^3 (C) 2.24 dm^3 (D) 1.12 dm^3

57. The volume occupied by 32g of O_2 at S.T.P is:

(A) 0.224 dm^3 (B) 22.414 dm^3 (C) 2.2414 dm^3 (D) 224.414 dm^3

58. The limiting reactant is the one which:

(A) Is taken in lesser quantity in volume as compared to other reactants.
(B) Gives the maximum amount of the product under consideration.
(C) Is taken in lesser quantity in grams as compared to other reactants.
(D) Gives the minimum amount of the product which is required.

59. Percentage of nitrogen in NH_3 is:

(A) $\frac{14}{17}\times100$ (B) $\frac{3}{34}\times100$ (C) $\frac{14}{34}\times100$ (D) $\frac{3}{17}\times100$

60. The percentage of oxygen in organic compound is:

(A) calculated (B) experimentally (C) estimated (D) calorimetrically

61. Solvent extraction is a process:

(A) Equilibrium (B) Non-equilibrium (C) Endothermic (D) Exothermic

62. Chromatography in which the stationary phase is a solid is classified as:

(A) Gas Chromatography
(B) Adsorption Chromatography
(C) Thin layer
(D) Partition Chromatography

63. The rate at which the solute moves in paper Chromatography depends upon:

(A) Distribution coefficient (B) Distribution law
(C) Low partial pressures (D) Boiling point of the solvent

64. In paper Chromatography the point at which the solvent rises the maximum extent is called:

(A) Solvent front (B) Base line (C) Chromatogram (D) Eluent

65. Chromatography is the process which involves the distribution of a solute between:

(A) Two stationary phases (B) stationary phase and mobile phase
(C) Two, two stationary and mobile phases (D) Two mobile phases

66. In paper Chromatography mobile phase is:

(A) Solid (B) Liquid (C) Gas + Liquid (D) Gas

67. Which of the following technique is useful in organic synthesis for separation, purification and identification of products?

(A) Chromatography (B) Solvent extraction (C) Filtration (D) Sublimation

68. The pattern of inks formed on paper in Chromatography is called:

(A) Chromatograph and Chromatogram (B) Chromatograph
(C) Chromatogram (D) Chromatophore

69. The locating agent which cannot be used to identify colorless components in Chromatography is:

(A) HCl (B) Ninhydrim (C) H_2S (D) Rubeanic Acid

70. Solvent extraction is an equilibrium process and it is controlled by:

(A) The amount of solute (B) Distribution law
(C) The amount of solvent used (D) Law of mass action

71. Solvent extraction method is a particularly useful technique for separation when the product to be separated is:

(A) Volatile or thermally stable (B) Volatile or thermally unstable
(C) Non-volatile or thermally stable (D) Non-volatile or thermally unstable

72. The comparative rates at which the solutes move in paper chromatography, depend on:

(A) Size of the chromatographic tank used (B) R values Of solutes
(C) Temperature of the experiment (D) The size of paper

73. One of the following substances does not undergo sublimation:

(A) Iodine (B) NH_4Cl (C) Naphthalene (D) $KMnO_4$

74. Which one of the following compound is purified by sublimation:

(A) Benzoic acid (B) NaI (C) CS_2 (D) SiO_2

75. Direct conversion of solid into its vapour is called:

(A) Distribution (B) Vapourization (C) Crystallization (D) Sublimation

76. Which of the following pairs can be separated by sublimation?

(A) NaCl and KCl (B) Sand and naphthalene
(C) Sand and broken pieces of glass (D) Sand and NaCl

77. Which of the following substances is a sublime material?

(A) Acetic acid (B) Benzoic acid (C) NaCl (D) Potash alum

78. Which one is not sublimable in laboratory?

Ⓐ Naphthalene Ⓑ Benzonic Acid Ⓒ NH_4Cl Ⓓ $AlCl_3$

79. In ..... technique a solute distribute between two immiscible liquids.

Ⓐ Filtration Ⓑ Solvent extraction
Ⓒ Distillation Ⓓ Crystallizzation

80. Solvent extraction is an equilibrium process and it is controlled by:

Ⓐ The amount of solvent used Ⓑ Distribution law
Ⓒ The amount of solute Ⓓ Law of mass action

81. Solvent extraction method is particularly useful technique for separation when the product to be separated is:

Ⓐ Volatile or thermally stable Ⓑ Volatile or thermally unstable
Ⓒ Non-volatile or thermally stable Ⓓ Non-volatile or thermally unstabel

82. Equilibrium is established during the process of solvent extraction and the phenomenon obeys:

Ⓐ Law of chemical equilibrium Ⓑ Distribution law
Ⓒ Le-chatelier's principle Ⓓ Law of mass action

83. The iodine present in water can be separated by which one of the following techniques?

Ⓐ Chromatography Ⓑ Filtration Ⓒ Sublimation Ⓓ Solvent extraction

84. If Solvent front is 10 cm and distance travelled by solute is 1.2 cm, what is its R_f value?

Ⓐ 8.3 Ⓑ 1.2 Ⓒ 0.83 Ⓓ 0.12

85. The most common Solvent used for solvent extraction is:

Ⓐ Ethanol Ⓑ Carbon tetrachloride Ⓒ Ether Ⓓ Water

86. Iodine is soluble in:

Ⓐ CCl_4 Ⓑ Water Ⓒ NaCl Ⓓ Water and CCl_4

87. The liquid obtained after passing the mixture through filter paper is termed as:

Ⓐ filterate Ⓑ solid Ⓒ residue Ⓓ none of these

88. Selection of filter paper depends on size of particles to be:

Ⓐ filtered Ⓑ seen Ⓒ unseen Ⓓ none of these

89. The tip of the funnel should be along the beaker in order to avoid:

Ⓐ sampling Ⓑ splashing Ⓒ leakage Ⓓ none of these

90. The filtration process is used to separate solid from:

Ⓐ liquid Ⓑ solid Ⓒ none of these Ⓓ gas

91. Detection of functional group is called:

Ⓐ numerical analysis Ⓑ qualitative analysis
Ⓒ numerical analysis Ⓓ none of these

92. The identification of a components of a sample is known as:

Ⓐ numerical analysis Ⓑ qualitative analysis
Ⓒ quantitative analysis Ⓓ none of these

93. For smooth filtration which one of the following precaution should be used:

(A) the stem of funnel should be small.
(B) the tip of funnel should touch the base of beaker.
(C) the filter paper should be small.
(D) the stem of the funnel should remain continuously full of liquid.

94. Identification of a substance, determination of its structure and quantitative analysis of its composition are the aspects covered by:

(A) biology
(B) modern analytical chemistry
(C) modern analytical biology
(D) modern analytical physics

95. In fluted filter paper, rate of filtration increases as compared to the cone shaped filter paper because:

(A) it has greater number of holding in it.
(B) thickness of paper is more than cone shaped filter paper.
(C) fluted filter paper has greater pore size than shaped filter paper.
(D) it has greater surface area for filtration.

96. Which one of the following substance is used as decolorizing agent:

(A) asbestos (B) animal charcoal (C) cons, H_2SO_4 (D) silica gel

97. Gooch crucible is used to filter the solution of:

(A) K_2SO_4 (B) $KMnO_4$ (C) $K_2Cr_2O_7$ (D) KOH

98. "The components of which mixture can be separated by sublimation:

(A) blue and green inks
(B) sand and naphthalene
(C) calcium carbonate and NaCl
(D) NaCl and $CaCl_2$

99. 95% ethanol is called:

(A) rectified spirit (B) petrol (C) diesel (D) crystal

100. The solution remaining after the formation of crystals is called:

(A) mother liquor (B) residue (C) crystal (D) None of these

101. $CaCl_2$ and P_2O_5 are used as:

(A) deleting agents (B) drying agents (C) residue agents (D) None of these

102. Which one of the following substances is not used as drying agent in desiccators:

(A) crystal (B) Phosphorous pentaoxide (C) $CaCl_2$ (D) NaCl(50%)

103. Which one of the following property is suitable for good solvent:

(A) it should dissolve impurities easily.
(B) It should be expensive.
(C) It should react chemically with solute.
(D) it should dissolve solute at high temperature.

104. Direct conversion of solid into vapours is called:

(A) impurities (B) sublimation (C) crystals (D) None of these

105. naphthalene, iodine and NH_4Cl can be purified by:

(A) residuc (B) sublime (C) None of these (D) sublimation

106. In a better method, the process of sublimation is carried out in a:

Ⓐ normal finger Ⓑ cold finger Ⓒ hot finger Ⓓ None of these

107. One of the following substances does not undergo sublimation:

Ⓐ iodine Ⓑ NH_4CI Ⓒ naphthalene Ⓓ $KMnO_4$

108. In CCl_4 solvent I_2 shows:

Ⓐ ping colour Ⓑ purple colour Ⓒ blue colour Ⓓ brown colour

109. $\frac{[I_2CC_4]}{[I^-_{3\ (aq)}]}$:

Ⓐ equilibrium constant Ⓑ distribution co-efficient
Ⓒ rate constant Ⓓ distrution constant

110. Paper chromatography was discovered by Consdon in:

Ⓐ 1944 Ⓑ 1744 Ⓒ 1844 Ⓓ 1644

111. Proteins and amino acid can be separated by:

Ⓐ chromatography Ⓑ mobile phase Ⓒ mixed phase Ⓓ stationary phase

112. Substances produced by body like urine can be separated by:

Ⓐ mixed phase Ⓑ chromatography Ⓒ stationary phase Ⓓ mobile phase

113. Thin film of absorbed water on cellulose acts as:

Ⓐ stationary phase Ⓑ sublimation Ⓒ mixed phase Ⓓ none of these

114. In paper chromatography the rate at which solute move depend on:

Ⓐ distribution law Ⓑ distribution coefficients
Ⓒ law of partial pressure Ⓓ law of definite proportions

115. Chromatography in which stationary phase is a solid is called:

Ⓐ partition chromatography Ⓑ adsorption chromatography
Ⓒ decending chromatography Ⓓ coloumn chromatography

116. In chromatography, the point at which solvent maximum rises called:

Ⓐ element Ⓑ solvent front Ⓒ chromatogram Ⓓ base line

117. The components of which mixture can be separated by chromatography:

Ⓐ NaCl and $CaCl_2$ Ⓑ blue and red inks
Ⓒ Cell potential Ⓓ sand and naphthalene

118. Plasma is:

Ⓐ Fourth state of matter Ⓑ Third state of matter
Ⓒ Second state of matter Ⓓ First state of matter

119. Plasma consists of mixture of neutral particles , positive ions and:

Ⓐ Positron Ⓑ Electrons Ⓒ Neutrons Ⓓ Protons

120. Kinetic theory was proposed by:

Ⓐ Bernoulli Ⓑ Newton Ⓒ Maxwell Ⓓ Coulomb

121. If 10 g of a gas at one atmospheric pressure is cooled from 273 °C to 0 °C at constant volume , its pressure would become:

(A) 273 atm (B) 1 atm (C) 0.005 atm **(D) 0.5 atm**

122. 4 gm of H_2 gas at STP occupies:

(A) 60 lit **(B) 44.8 lit** (C) 35.5 lit (D) 25.5 lit

123. For an ideal gas at a constant T at which pressure its volume doubles, when the initial pressure is 2 atm:

(A) 4 atm (B) 1 torr **(C) 101325 Nm^{-2}** (D) 101325 torr

124. For an ideal gas , the compressibility factor is equal to:

(A) 2 **(B) 1** (C) 1.5 (D) 0.5

125. CH_4 gas is maintained at 0 °C and 1 atm pressure. Its density is 0.714 g dm^{-3} . What is its density at 0.5 atm and 0 °C?

(A) 0.35 dm^{-3} (B) 7.14 dm^{-3} (C) 1.428 dm^{-3} (D) 0.714 dm^{-3}

126. A graph is plotted between two variable that is pressure and volume at constant temperature and fixed number of moles of the gas, the graph is called:

(A) Adiabat (B) Isochor (C) Isobar **(D) Isotherm**

127. Equal masses of methane and oxygen are mixed in an empty container at 25 °C. The fraction of total pressure exerted by oxygen is:

(A) $\frac{1}{8}$ **(B) $\frac{1}{3}$** (C) $\frac{1}{9}$ (D) $\frac{15}{17}$

128. The gases show more deviation at:

(A) High temperature and low pressure (B) High temperature and high pressure
(C) Low temperature and high pressure (D) Low temperature and low pressure

129. ..... gas has lowest rate of diffusion.

(A) H_2 (B) N_2 **(C) O_2** (D) He

130. The molar volume of O_2 is maximum at:

(A) 127 °C and 1 atm (B) 0 °C and 2 atm (C) 273 °C and 2 atm (D) STP

131. The unit millibar is commonly used by:

(A) Engineers **(B) Meteorologists** (C) Dalton (D) Astronauts

132. The highest temperature at which a substance can exist as liquid state at its critical pressure is:

(A) Critical temperature (B) Transition temperature
(C) Consulate temperature (D) Absolute zero

133. The temperate of natural plasma is about:

(A) 10,000 °C (B) 5000 °C **(C) 20,000 °C** (D) 1000 °C

134. Temperature and number of moles are kept constant in:

(A) Charles's law **(B) Boyles law** (C) Dalton's law (D) Avogadro's law

135. Value of R at STP:

(A) 0.0821 dm^3 atm K^{-1} $Kmol^{-1}$ (B) 0.00821 dm^3 atm K^{-1} $Kmol^{-1}$
(C) 0.000821 dm^3 atm K^{-1} $Kmol^{-1}$ (D) 8.21 dm^3 atm K^{-1} $Kmol^{-1}$

136. Kinetic energy of gas molecules is zero at:

Ⓐ −1 °C Ⓑ 0 F Ⓒ 0 °C **Ⓓ 0 K**

137. At what temperature does the gaseous state of any type of matter can't exist?

Ⓐ −237.15 °C Ⓑ 273.15 °C **Ⓒ −273.15 °C** Ⓓ 100 °C

138. Density of an ideal gas can be calculated by using equation:

Ⓐ PM = dRT Ⓑ PM = dPV Ⓒ PV = dRT Ⓓ $d = \frac{RT}{MP}$

139. Dalton's law of partial pressure can be derived from:

Ⓐ Charles's law **Ⓑ General gas equation** Ⓒ Boyles law Ⓓ Avogadro's law

140. At absolute zero total Kinetic energy of gas molecules is:

Ⓐ Zero Ⓑ Minimum Ⓒ Maximum Ⓓ Lower than 20 KJ

141. Kinetic equation $PV = \frac{1}{3} m \overline{Nc^2}$ is derived by:

Ⓐ Bernulli **Ⓑ Clausius** Ⓒ Boltzmann Ⓓ Maxwell

142. The sun is a …… ball of plasma heated by nuclear fusion process.

Ⓐ 1.5 million Km Ⓑ 3 million Km Ⓒ 1.5 billion Km Ⓓ 3 billion Km

143. Gases deviate from ideal behavior at high pressure because:

Ⓐ At high pressure, the gas molecules move in all direction
Ⓑ At high pressure, there are significant attractive forces
Ⓒ Both A & B
Ⓓ At high pressure, the gas molecule move in one direction only

144. How should the conditions be changed to prevent the volume of a given gas from expanding when its mass is increased?

Ⓐ Temperature and pressure both are increased
Ⓑ Temperature is lowered and pressure is increased
Ⓒ Temperature is increased and pressure is lowered
Ⓓ Temperature and pressure both are lowered

145. Gases deviate from ideal behavior at high pressure. Which of the following is correct for non-ideality?

Ⓐ At high pressure, the collisions between the gas molecules are much increased
Ⓑ AT high pressure, the intermolecular attractions becomes significant
Ⓒ At high pressure, the volume of the gas becomes insignificant
Ⓓ At high pressure, the gas molecules move in one direction only

146. Feeling uncomfortable breathing in unpressurized cabin is due to:

Ⓐ high pressure of O_2 Ⓑ low pressure of CO_2
Ⓒ low pressure of O_2 Ⓓ high pressure of CO_2

147. Critical temperature of water vapours is:

Ⓐ 73.0 atm **Ⓑ 217.0 atm** Ⓒ 111.5 atm Ⓓ 39.6 atm

148. Critical temperature of water vapours is:

Ⓐ 647.6 K Ⓑ 405.6 K Ⓒ 384.7 K Ⓓ 304.3 K

149. 1 atmosphere is equal to:

Ⓐ 500 cm Ⓑ 760cm of Hg Ⓒ 1000 mm of Hg **Ⓓ 760mm of Hg**

150. Constant factor in Charlie's law:

Ⓐ Temperature Ⓑ Both V and T **Ⓒ Pressure** Ⓓ Volume

151. The S.I unit of pressure is:

Ⓐ m^{-2} **Ⓑ Nm^{-2}** Ⓒ mm Hg Ⓓ torr

152. Formula used for conversion of °F into °C is:

Ⓐ $°C = 5/9[°F-32]$ Ⓑ $°F = 5/9[°C]+32$ Ⓒ $°C = 9/5[°F-32]$ Ⓓ $°F = 9/5[°C]+32$

153. Equal masses of methane and oxygen are mixed in an empty container at 25 °C. The fraction of total pressure exerted by oxygen:

Ⓐ 1/9 Ⓑ 16/17 Ⓒ 8/9 **Ⓓ 1/3**

154. Partial pressure of oxygen in human lungs in torr is:

Ⓐ 760 **Ⓑ 116** Ⓒ 161 Ⓓ 159

155. The spreading of fragrance of scent in air is due to:

Ⓐ Density **Ⓑ Diffusion** Ⓒ Osmosis Ⓓ Effusion

156. Number of molecules in one dm^3 of water is closed to:

Ⓐ $55.6 \times 6.02 \times 10^{23}$ Ⓑ $\frac{18}{22.4} \times 10^{23}$ Ⓒ $\frac{12.04}{22.4} \times 10^{23}$ Ⓓ $\frac{6.02}{22.4} \times 10^{23}$

157. Normal human body temperature is:

Ⓐ 27 3K Ⓑ 37 °F Ⓒ 98.6 °C **Ⓓ 37 °C**

158. When water freezes at 0 °C, its density decreases due to:

Ⓐ Change of bond angles **Ⓑ Empty spaces present in the structure of ice**
Ⓒ Cubic structure of ice Ⓓ Change of bond lengths

159. Mass of 22.4 dm^3 of N_2 at STP is:

Ⓐ 2.8 gm **Ⓑ 28 gm** Ⓒ 14 gm Ⓓ 1.4 gm

160. The molar volume of CO_2 is maximum at:

Ⓐ 127 °C and 1 atm Ⓑ 0 °C and 2 atm Ⓒ 273 °C and 2 atm Ⓓ STP

161. Escape out of gas molecules one by one through tiny hole is:

Ⓐ Osmosis Ⓑ Diffusion Ⓒ Both A & B **Ⓓ Effusion**

162. Which gas will diffuse more rapidly?

Ⓐ SO_2 Ⓑ HCl **Ⓒ NH_3** Ⓓ CO_2

163. Which of the following will have highest rate of diffusion?

Ⓐ NH_3 Ⓑ SO_2 Ⓒ CO_2 Ⓓ O_2

164. Which of the following will have the same number of molecules at STP?

Ⓐ 28 g of N_2 and 5.6 dm^3 of oxygen Ⓑ 44 g of CO_2 and 11.2 dm^3 of CO
Ⓒ 11.2 dm^3 of O_2 and 32 g of O_2 **Ⓓ 280 cm^3 of CO_2 and 280 cm^3 N_2O**

165. In 1879, plasma was identified by scientist:

Ⓐ Chadwick Ⓑ Soddy Ⓒ William Crookes Ⓓ John Dalton

166. The order of rate of diffusion of gasses NH_3, SO_2, CO_2 and Cl_2 is:

Ⓐ $NH_3 > SO_2 > CO_2 > Cl_2$ Ⓑ $Cl_2 > SO_2 > CO_2 > NH_3$

Ⓒ $NH_3 > CO_2 > Cl_2 > Cl_2$ Ⓓ $NH_3 > CO_2 > SO_2 > Cl_2$

167. A real gas obeying Vander walls equation will resemble ideal gas if:

Ⓐ "a" is large and "b" is small Ⓑ "a" is small and "b" is large

Ⓒ both "a" and "b" are small Ⓓ if both "a" and ""b" are large

168. If "a" and "b" are zero for certain gas then gas is:

Ⓐ May be any diatomic gas Ⓑ Real Ⓒ Non-ideal Ⓓ Ideal

169. The deviation of gas from ideal behavior is maximum at:

Ⓐ 100 °C and 2.0 atm Ⓑ 0 °C and 2.0 atm

Ⓒ −10 °C and 5.0 atm Ⓓ −10 °C and 2.0 atm

170. An ideal gas has volume 1 dm^3 at 303 K. Keeping pressure constant. At which Kelvin temperature its volume will become 2 dm^3:

Ⓐ 303 K Ⓑ 330 K Ⓒ 606 K Ⓓ 240 K

171. If absolute temperature of a gas is doubled and the pressure is reduced to one half, the volume of the gas will:

Ⓐ Reduced to 1/8 Ⓑ increase four times Ⓒ be doubled Ⓓ Remain unchanged

172. The pair of gases which does not obey Dalton's law of partial pressure under normal condition is:

Ⓐ NH_3 and HCI Ⓑ He and Ne Ⓒ H_2 and He Ⓓ H_2 and O_2

173. Pressure remaining constant, at which temperature the volume of a gas will become twice of what it is at 0 °C:

Ⓐ 200 °C Ⓑ 273 K Ⓒ 456 °C Ⓓ 546 K

174. Partial pressure of oxygen in the air is:

Ⓐ 157 torr Ⓑ 158 torr Ⓒ 159 torr Ⓓ 156 torr

175. London dispersion forces are the only forces present among the:

Ⓐ Atoms of helium in gaseous state at high T Ⓑ Molecules of hydrogen chloride gas

Ⓒ Molecules of solid iodine Ⓓ Molecules of water in liquid state

176. Amorphous solids:

Ⓐ Have perfect arrangement of atoms

Ⓑ Undergo clean cleavage when cut with knife.

Ⓒ Have sharp points.

Ⓓ Can possess small regions of orderly arrangement of atoms.

177. Dipole-dipole interaction are present in the:

Ⓐ Molecules of NH_3 Ⓑ Atoms of the He gas

Ⓒ Molecules of solid iodine Ⓓ Molecules of CCl_4

178. The structure of NaCl crystal is:

Ⓐ Octahedral Ⓑ Square planar

Ⓒ Face centered cubic lattice Ⓓ Body centered cubic lattice

179. Which of the following liquid has highest boiling point:

(A) Br_2 (B) H_2O (C) HBr (D) HCl

180. The strongest acid among Halogen acids is:

(A) HF (B) Hl (C) HBr (D) HCl

181. Which of the hydrogen halides has the highest percentage of ionic character?

(A) HF (B) HBr (C) Hl (D) HCl

182. H-bonding is maximum:

(A) Diethyl ether (B) Benzene (C) Water (D) Ethanol

183. Density of ice is maximum at 4 ^{0}C due to:

(A) Lager bond lengths (B) Oxidation potential
(C) Empty spaces in structure of ice (D) Cell voltage

184. Acetone and chloroform are soluble in each other due to:

(A) Ion dipole forces (B) Instantaneous dipoles
(C) Dipole-dipole interaction (D) Intermolecular hydrogen bonding

185. When water freezes at 0^{0}C, its density decreases due to:

(A) Empty spaces present in the structure of ice (B) Change of bond length
(C) Change of bond angles (D) Cubic structure of ice

186. The repulsions of electronic clouds of molecules are responsible for the attractive forces among the molecules. These forces are:

(A) Ion-dipole forces (B) Instantaneous dipole-induced dipole force
(C) Dipole-induced dipole forces (D) Dipole-dipole forces

187. Which of the given has hydrogen bonding:

(A) NH_3 (B) NaCl (C) CCl_4 (D) CH_3

188. The force which are present between the ions and the polar molecular of the solvent are:

(A) Dipole-dipole forces (B) Dipole-induced dipole forces
(C) London dispersion forces (D) Ion-dipole forces

189. Hydrogen bonding is extensively present in proteins between:

(A) Carbon and hydrogen atoms (B) Nitrogen and hydrogen atoms
(C) Oxygen and hydrogen atoms (D) Nitrogen and oxygen

190. Ice floats on water because:

(A) Not empty spaces in ice (B) Empty spaces are present in ice
(C) Ice has two-dimensional structure (D) The hydrogen bonding in ice is stronger

191. The long chains of amino acids are coiled about one another into a spiral by:

(A) Van der Waal's forces (B) Overlapping of orbitals
(C) Ionic bond (D) Hydrogen bonding

192. The weakest intermolecular forces present in a liquid may be:

(A) Dipole-dipole forces (B) Electrostatic forces between ions in ionic
(C) London Dispersion forces (D) Dipole-induced dipole force

193. Which of the following has strongest hydrogen bonding?

(A) HF (B) HC (C) NH_3 (D) CH_4

194. Van-der Waal's forces are weak intermolecular forces, they include:

(A) Ion-Dipole forces only
(B) All of the these
(C) Dipole-induced dipole forces only
(D) Dipole-Dipole forces only

195. The London forces becomes stronger if:

(A) Density of molecules is large
(B) Molecules are homo atomic
(C) Number of atoms in a molecule are large
(D) Size of atom is smaller

196. Which of the following forces exist in noble gases?

(A) Dipole-induced Dipole forces
(B) Hydrogen bonding
(C) Dipole-dipole forces
(D) London dispersion

197. Which of the following is not a type of liquid crystal?

(A) Smectic (B) Enteric (C) Nematic (D) Cholesteric

198. Liquid crystals are used to find the point of ..... in electrical circuits.

(A) Potential failure
(B) Both A & D
(C) None
(D) Potential difference

199. Liquid crystals can diffract ..... .

(A) Heat (B) Both A & D (C) None (D) Light

200. In chromatography liquid crystal are used as ..... .

(A) Solvent (B) Substrate (C) Solute (D) None of these

201. The transition temperature of KNO_3 is:

(A) 32.02 ^{0}C (B) 95.5 ^{0}C (C) 13.2 ^{0}C (D) 128 ^{0}C

202. The solid which has no definite crystalline shape:

(A) Dry ice (B) Glass (C) Salt (D) Sugar

203. Isomorphism is present in K_2SO_4 and K_2CrO_4. These two compounds:

(A) 100% equal ionic Character.
(B) Have difference ration of the atoms in them.
(C) Show same physical and chemical properties.
(D) The shapes of both SO_4^{2-} and CrO_4^{2-}.

204. The allotropes are those solids, which have:

(A) Same physical & chemical properties
(B) Same chemical properties
(C) Same physical but different chemical properties
(D) Same physical properties

205. Which of the following substances is amorphous in nature?

(A) Graphite (B) KCl (C) Sugar (D) Plastic

206. Plastics are amorphous solids and:

(A) Possess orderly arrangement over long distances
(B) Do not undergo clean cleavage
(C) Undergo clean cleavage when cut with knife
(D) Have sharp melting point

207. Which among the following will show anisotropy:

(A) Paper (B) Glass (C) Wood (D) $BaCl_2$

208. The existence of an element in more than one form is called:

Ⓐ Symmetry Ⓑ Polymorphism **Ⓒ Allotropy** Ⓓ Isomorphism

209. Variation of a physical property in a crystal in different directions is called:

Ⓐ Anisotropy Ⓑ Absence of symmetry Ⓒ Isomorphism Ⓓ Polymorphism

210. The crystals of Na_2SO_4 and Na_2SeO_4 should be:

Ⓐ Isomorphs and allotropes of each other **Ⓑ Isomorphs of each other**
Ⓒ Polymorphs of each other Ⓓ Allotropes

211. The pure crystalline substance on heating becomes turbid liquid. On further heating turbidity disappears. The substance is:

Ⓐ Isomeric crystal Ⓑ Isomorphic crystal
Ⓒ Liquid crystal Ⓓ Allotropic crystal

212. The crystals which show different physical properties from different directions is called:

Ⓐ Anisotropy Ⓑ Habit of crystal Ⓒ Polymorphism Ⓓ Symmetry

213. Crystals can be classified into:

Ⓐ 3 crystal system Ⓑ 14 crystal systems
Ⓒ 4 crystal systems **Ⓓ 7 crystal systems**

214. Most crystals show good cleavage because their atoms , ions and molecules are:

Ⓐ Strongly bounded together Ⓑ Weakly bounded together
Ⓒ Arranged in planes Ⓓ Spherically symmetrical

215. The number of Cl^- ions per unit cell of NaCl are:

Ⓐ 4 Ⓑ 6 Ⓒ 8 Ⓓ 2

216. The Cl^- ions present at the corner of the unit cell and NaCl crystal , contributes:

Ⓐ $\frac{1}{2}$th **Ⓑ $\frac{1}{8}$th** Ⓒ $\frac{1}{4}$th Ⓓ 1

217. NaCl has faced centered cubic structure. The Na^+ ion at the faces of the unit cell is shared by:

Ⓐ Only one unit cell **Ⓑ 2 unit cells** Ⓒ 4 unit cells Ⓓ 8 unit cells

218. The number of Na^+ ions which surround each Cl ion in the NaCl crystal lattice is:

Ⓐ 12 **Ⓑ 6** Ⓒ 8 Ⓓ 4

219. Transition temperature of S_8 (monoclinic) $\rightleftharpoons$ S_8 (Rhombic) is:

Ⓐ 95.5 ^{0}C Ⓑ 128 ^{0}C Ⓒ 110 ^{0}C Ⓓ 13.2 ^{0}C

220. Which of the following metals shows hexagonal geometry?

Ⓐ Zn Ⓑ Na Ⓒ Ag Ⓓ Cu

221. Graphite belongs to the crystal system?

Ⓐ Hexagonal Ⓑ Cubic Ⓒ Tetragonal Ⓓ Monoclinic

222. Which of the following crystal systems represent the structure of sugar:

Ⓐ Tetragonal Ⓑ Cubic Ⓒ Triclinic **Ⓓ Monoclinic**

223. Which crystal system is found in $AgNO_3$?

(A) Cubic and orthorhombic
(B) Monoclinic and hexagonal
(C) Cubic and tetragonal
(D) Orthorhombic and rhombohedral

224. London dispersion forces are the only forces present among the:
(A) Atoms of helium in gaseous state at high
(B) Molecules of hydrogen chloride gas
(C) Molecules of water in liquid state
(D) Molecules of solid iodine

225. Acetone and chloroform are soluble in each other due to:
(A) Instantaneous dipole
(B) All of the above
(C) Intermolecular hydrogen bonding
(D) Ion-dipole interaction

226. NH, shows a maximum boiling point among the hydrides of V_{th} group elements due to:
(A) Enhanced electronegative character of nitrogen
(B) Oxidation potential
(C) lone pair of electrons present on nitrogen
(D) Pyramidal structure of NH_3

227. Dipole-induced dipole forces are also called:
(A) Debye Forces
(B) Hydrogen bounding
(C) Huckel Forces
(D) London Dispersion Forces

228. Polarizability is responsible for the intermolecular forces and it:
(A) Almost remains the same
(B) Decrease down the group
(C) Increases along a period
(D) Increases down the group

229. The order of acidic strength:
(A) HBr>HF>HI>HCI
(B) HCI>HF>H>HBr
(C) HF > HCI> HBr>HI
(D) HI>HBr> HCI> HF

230. Which one of the following is an example of cubic system?
(A) lodine
(B) Graphite
(C) Borax
(D) Diamond

231. The angle between sides 'b' and 'c' is:
(A) Alpha
(B) Theta
(C) Gamma
(D) Beta

232. Density of ice is minimum at 4 °C due to:
(A) Empty spaces in structure of ice
(B) Large bond lengths
(C) Tetrahedral shape of crystal of
(D) Large bond angles

233. A-ring has 6.0 g of diamond in it. Calculate the number of atoms of Carbon in it:
(A) 1.8×10^{24}
(B) 9.03×10^{23}
(C) 6.02×10^{3}
(D) 3.01×10^{23}

234. Liquid hydrocarbon is:
(A) Hexane
(B) Ethane
(C) Propane
(D) Methane

235. The charge on proton is:
(A) $1.6022 \times 10^{+19}C$
(B) $1.6022 \times 10^{-19}C$
(C) $1.6022 \times 10^{-11}C$
(D) $1.6022 \times 10^{-12}C$

236. The maximum number of unpaired electrons are present in:
(A) Cr = 24
(B) Na = 11
(C) Ni = 28
(D) Fe = 26

237. Quantum number values for '3d' orbitals will be:
(A) n = 3, I = 3
(B) n = 3, I = 0
(C) n = 3, I = 1
(D) n = 3, I = 2

238. The value of quantum number is n = 1,2,3,4,5 ..... for:

(A) azimuthal quantum number (B) spin quantum number
(C) principal quantum number (D) magnetic quantum number

239. Among the given e/m value is maximum for:

(A) Nitrogen (B) Helium (C) Hydrogen (D) Oxygen

240. Brackett series lie in the region:

(A) X-Ray (B) I.R (C) U.V (D) Visible

241. The total number of Fundamental particles in an atom of Carbon - 14 is:

(A) 20 (B) 16 (C) 14 (D) 8

242. Total number of electrons in f − orbital is:

(A) 2 (B) 8 (C) 10 (D) 14

243. Which of the given sub-atomic particle do not show ionization?

(A) Alpha ray (B) Electron (C) Neutron (D) Proton

244. The value of charge on electron is:

(A) $1.602 \times 10^{+19}C$ (B) $1.6023 \times 10^{-19}C$ (C) $2.602 \times 10^{19}C$ (D) $1.6022 \times 10^{19}Kg$

245. Quantum number value for 2S orbitals are:

(A) $n = 1, I = 0$ (B) $n = 2, I = 0$ (C) $n = 1, I = 2$ (D) $n = 2, I = 1$

246. How many subatomic particles are thought to exist in an atom:

(A) 100 (B) 75 (C) 50 (D) 25

247. (n + I) value for 5S orbital will be:

(A) 3 (B) 7 (C) 10 (D) 5

248. The velocity of photon is:

(A) Depends on its wave length (B) Independent of its wave length
(C) Depends on its source (D) Equal to square of its amplitude

249. Neutron was discovered by:

(A) Goldstein (B) Chadwick (C) C.D Anderson (D) Rutherford

250. Mass of electron is:

(A) $9.1095 \times 10^{31}kg$ (B) $9.1095 \times 10^{-31}kg$ (C) $9.1095 \times 10^{27}kg$ (D) $9.1095 \times 10^{-27}kg$

251. Positive rays were discovered by:

(A) William Crooks (B) JJ. Thomson (C) Rutherford (D) E.Goldstein

252. $^{66}_{29}Cu \longrightarrow {}^{66}_{30}Zn +$ X where X is:

(A) Neutron (B) Proton (C) Electron (D) Positron

253. The e/m value for the positive rays in maximum for:

(A) Hydrogen (B) Nitrogen (C) Helium (D) Oxygen

254. The positive particle produced in the discharge tube from hydrogen gas was named proton by:

(A) Chadwick (B) Millikan (C) Goldstein (D) Rutherford

255. The nature of the positive rays depends on:

(A) The nature of the discharge tube (B) The nature of the cathode
(C) The nature of the anode **(D) The nature of the residual gas**

256. When α −particles strike on the nucleus of $^{9}_{4}Be$ then the emitted particle is:

(A) γ −radiations (B) Neutrino **(C) Neutron** (D) Proton

257. Cathode rays cause a chemical change because they have ..... effect.

(A) Diffusing **(B) Reducing** (C) Conducting (D) Oxidizing

258. The mass of a proton is how much times more than that of an electron:

(A) 1836 (B) 8136 (C) 6138 (D) 1386

259. The velocity of photon is:

(A) equal to square of its amplitude (B) depends on its source
(C) depends on its wavelength **(D) independent of its wavelength**

260. Bohr's model is contradicted by:

(A) Dual nature of matter (B) Compton effect
(C) Heisenberg's uncertainty principle (D) Planck's quantum theory

261. When fast neutron carry nuclear reaction with nitrogen it ejects particles:

(A) δ (B) γ (C) β **(D) α**

262. The electrons in a sub shell are filled according to formula:

(A) $(2l+1)$ (B) $2n^2$ **(C) $2(2l+1)$** (D) None of these

263. Cathode rays can be generated at the pressure of:

(A) 0.001 torr **(B) 0.01 torr** (C) 0.1 torr (D) 1 torr

264. When 6d orbital is complete the entering electron goes into:

(A) 7d (B) 7s **(C) 7p** (D) 7d

265. Rutherford's model of atom failed because:

(A) There is actually no space between nucleus and electrons.
(B) It did not account for the stability of the atom
(C) It did not account for the attraction between proton and neutron
(D) The atom did not have a nucleus and electron

266. After filling of 4f the entering electron goes into:

(A) 6s **(B) 5d** (C) 4d (D) 6p

267. When one beta (β) particle is emitted from the nucleus of an atom is:

(A) atomic number increases by 1 (B) atomic mass decreases by 1
(C) atomic number decreases by 1 (D) action mass decreases by 1

268. When 5d orbital is completed then entering electron goes into:

(A) 6p (B) 6s (C) 6f **(D) 6d**

269. Name the electron is given by:

(A) Chadwick (B) William Crooks **(C) Stoney** (D) J.J. Thomson

270. Orbitals having equal energy are called:

(A) Degenerate orbital (B) d-orbital (C) Molecular orbital (D) Valence orbital

271. Balmer series in hydrogen spectrum lies in the region:

(A) Microwave (B) visible (C) Infra-red (D) Ultraviolet

272. Lyman series lies in:

(A) U.V region (B) I.R region (C) Microwave region (D) Visible region

273. Maximum number of electrons in an orbital is:

(A) 14 (B) 2 (C) 10 (D) 7

274. Cathode rays strike alumina and produce a colour:

(A) Red (B) Green (C) Blue (D) Yellow

275. Bombardment of α −particles on Berylium (Be) atoms emits neutron and this process is called:

(A) Hund's rule (B) Pauli exclusion principle
(C) Artificial radioactivity (D) Natural radioactivity

276. The wave number of light emitted by certain source is $2 \times 10^6 m^{-1}$. The wavelength of this light will be:

(A) $5 \times 10^6 m$ (B) 500nm (C) 500m (D) 200nm

277. The element which has maximum number of unpaired electron is:

(A) Cr_{24} (B) Cu_{29} (C) Ca_{20} (D) Fe_{26}

278. In the ground state of an atom, the electron is present:

(A) Nearest to the nucleus (B) farthest from the nucleus
(C) in the second shell (D) In the nucleus

279. Splitting of spectral lines when atom are subjected to strong electric field is called:

(A) photoelectric effect (B) Compton effect (C) Zeeman effect (D) Stark effect

280. De.Broglie equation is represented by:

(A) $m = \frac{h}{\lambda v}$ (B) $m = \frac{\lambda}{hv}$ (C) $\lambda = \frac{h}{mv}$ (D) $h = \frac{\lambda}{mv}$

281. The quantum number values of 2p orbital are:

(A) $n = 1, l = 1$ (B) $n = 2, l = 1$ (C) $n = 1, l = 2$ (D) $n = 1, l = 0$

282. $(n + l)$ value of 6d orbital is:

(A) 08 (B) 11 (C) 10 (D) 06

283. When the azimuthal quantum number is 3 then 'm' can have:

(A) 2 values (B) 3 values (C) 5 values (D) 7 values

284. $^{65}_{29}Cu + {}^{1}_{0}n \longrightarrow {}^{66}_{30}Cu + X$:

(A) B-rays (B) hv/ γ −rays (C) Electron (D) Proton

285. Dipole Moment of H_2O is:

(A) 0.12 D (B) 0.95 D (C) 1.61 D (D) 1.85 D

286. The pH of 10^{-3} mol dm $^{-3}$ of an aqueous solution of H_2SO_4 is:

Ⓐ 1.5 Ⓑ 2.0 Ⓒ 2.7 Ⓓ 3.0

287. In nitrogen molecule (N_2), each nitrogen atom contributes in sharing for formation of bond:

Ⓐ four electrons Ⓑ three electrons Ⓒ two electrons Ⓓ one electron

288. Which one has highest value of ionization energy:

Ⓐ F Ⓑ Be Ⓒ C Ⓓ O_2

289. Geometry of SO_2 molecule is:

Ⓐ Trigonal pyramidal Ⓑ Linear Ⓒ Tetrahedral Ⓓ Angular

290. 1 A° = ... m.

Ⓐ 157 torr Ⓑ 158 torr Ⓒ 10^{-10} Ⓓ 156 torr

291. Which of the following molecules has zero dipole moment?

Ⓐ $CHCl_3$ Ⓑ CS_2 Ⓒ NH_3 Ⓓ H_2O

292. Optimum temperature for synthesis of ammonia by Haber Process is:

Ⓐ 400 °C Ⓑ 410 °C Ⓒ 390 °C Ⓓ 370 °C

293. The type of hybridization in $BeCl_2$ is:

Ⓐ dSp^2 Ⓑ Sp^3 Ⓒ Sp^2 Ⓓ sp

294. Minimum amount of energy required to remove an electron from its gaseous atom is called:

Ⓐ Reduction Ⓑ Oxidation Ⓒ Ionization energy Ⓓ Electron-Affinity

295. The amount of energy released by absorbing electron in the valence shell is:

Ⓐ Atomization energy Ⓑ Electron affinity
Ⓒ Electronegativity Ⓓ Ionization energy

296. Most stable electronic configuration is of a/an:

Ⓐ Alkali metal Ⓑ Noble gas Ⓒ Halogen Ⓓ Electronegative element

297. The covalent radius of Cl-atom is:

Ⓐ 99.4 pm Ⓑ 66.4 pm Ⓒ 70 pm Ⓓ 80 pm

298. The bond order of He_2 is:

Ⓐ One Ⓑ Two Ⓒ Three Ⓓ Zero

299. In sp hybrid orbital percentage of S-character is:

Ⓐ 25% Ⓑ 50% Ⓒ 75% Ⓓ 100%

300. In sp^3 hybrid orbital percentage of S-character is:

Ⓐ 50% Ⓑ 25% Ⓒ 75% Ⓓ 100%

301. Bond order of N_2 molecule is:

Ⓐ 04 Ⓑ 03 Ⓒ 02 Ⓓ 01

302. The electron affinity of chlorine is:

Ⓐ $+396\ KJ\ mol^{-1}$ Ⓑ $-449\ KJ\ mol^{-1}$ Ⓒ $-249\ KJ\ mol^{-1}$ Ⓓ $-349\ KJ\ mol^{-1}$

303. Noble gases are highly stable and least reactive because:

(A) Their valence shell are complete (B) They are very safe
(C) They are present in zero group (D) They are gasses

304. Octet rule is not obeyed during its formation:

(A) CCl_4 (B) PCl_5 (C) CF_4 (D) NF_3

305. Which of the following Molecule Obey Octet Rule:

(A) NF_3 (B) SF_6 (C) BCl_3 (D) BF_3

306. Molecule in which the distance between two carbon atoms is the largest is:

(A) C_2H_2 (B) C_2H_4 (C) C_6H_6 (D) C_2H_6

307. The radius of Na^{+1} ion is:

(A) 93 pm (B) 95 pm (C) 94 pm (D) 92 pm

308. Total number of bonds in C_2H_4 molecule are:

(A) Eight (B) Five (C) Six (D) Four

309. The number of bond in oxygen molecule is:

(A) Two sigma only (B) One σ and one π (C) One σ and two π (D) Three sigma only

310. The number of bonds in nitrogen molecule are:

(A) Two sigma only (B) One σ and two π (C) One σ and one π (D) Three sigma only

311. In methanol, bond between carbon and oxygen is:

(A) Polar (B) Co-ordinate (C) Ionic (D) Nonpolar

312. CsF has ionic character:

(A) 100% (B) 80% (C) 70% (D) 92%

313. The most electronegative element is:

(A) Hydrogen (B) Fluorine (C) Oxygen (D) Nitrogen

314. The shielding effect is responsible for:

(A) The increase in nuclear attractive influence over the valence electrons.
(B) The decrease in nuclear attractive influence over the valence electrons.
(C) The increase in attraction between nucleus and inner electrons.
(D) The decrease repulsion between nucleus and inner electrons.

315. The value of third ionization energy of Mg is:

(A) 7850 kJ mol^{-1} (B) 1890 kJ mol^{-1} (C) 7730 kJ mol^{-1} (D) 1450 kJ mol^{-1}

316. First ionization Energy of Mg atom is:

(A) +738 KJ mol^{-1} (B) −500 KJ mol^{-1} (C) +1450 KJ mol^{-1} (D) −349 KJ mol^{-1}

317. Ionic and co-ordinate covalent bonds are present in:

(A) C_2H_5 (B) NH_4CI (C) H_2O (D) SO_2

318. Which of the following has coordinate covalent bond?

(A) $AlCl_3$ (B) HCl (C) NH_4CI (D) NaCl

319. The molecules which cannot form co-ordinate covalent bond with H^+ ion is:

Ⓐ PH_3 Ⓑ CH_4 Ⓒ NH_3 Ⓓ H_2O

320. Who developed the VSEPR theory:

Ⓐ Bolzmann Ⓑ Bernoulli Ⓒ Maxell Ⓓ Nylholm and Gillespie

321. Which of the following has linear structure?

Ⓐ H_2O Ⓑ CO_2 Ⓒ CH_4 Ⓓ NH_3

322. Which of the following has bond angle of 120°:

Ⓐ BF_3 Ⓑ CH_4 Ⓒ $BeCl_2$ Ⓓ NH_3

323. The geometry of ethane is:

Ⓐ Linear Ⓑ Tetrahedral Ⓒ V – shaped Ⓓ Trigonal planar

324. Which of the hydrogen halides has the highest percentage of ionic character?

Ⓐ HF Ⓑ HBr Ⓒ HI Ⓓ HCI

325. The bond angle in NH_3 molecule is:

Ⓐ 104.5° Ⓑ 108.5° Ⓒ 109.5° Ⓓ 107.5°

326. The molecular shape of SO_3 is:

Ⓐ Tetrahedral Ⓑ Linear Ⓒ Triangular planar Ⓓ Pyramidal

327. Shape of $SnCl_2$ is:

Ⓐ Tetrahedral Ⓑ bent or angular Ⓒ trigonal (planar) Ⓓ Linear

328. The hybridization in ammonia molecule is:

Ⓐ sp^3 Ⓑ sp^2 Ⓒ sp Ⓓ dsp

329. Carbon atom in CH_4 is hybridized:

Ⓐ dsp^2 Ⓑ Sp Ⓒ sp^2 Ⓓ sp^3

330. Molecular orbital theory was proposed by:

Ⓐ Werner Ⓑ Millikan Ⓒ Mosley Ⓓ Kossel

331. An ionic compound $A^+ B^-$ is most likely to be formed when:

Ⓐ both the ionization energy of A and electron affinity of B are high
Ⓑ the ionization energy of A is low and electron affinity of B is high
Ⓒ both the ionization energy of A and electron affinity of B are low
Ⓓ the ionization energy of A is high and electron affinity of B is low

332. Which of the following has the highest bond order?

Ⓐ O_2^{-2} Ⓑ O_2^{-1} Ⓒ O_2^{+2} Ⓓ O_2^{+1}

333. Bond order of O_2^{-2} is:

Ⓐ One Ⓑ Two Ⓒ Three Ⓓ Zero

334. Which of the following species has unpaired electrons in ant bonding molecular orbitals?

Ⓐ F_2 Ⓑ Br_2 Ⓒ O_2^{+2} Ⓓ N_2^{-2}

335. Which of the following molecule has zero dipole moment:

Ⓐ H_2O Ⓑ BF_3 Ⓒ NH_3 Ⓓ $CHCl_3$

336. The Sl unit of dipole moment is:

(A) mC (B) Nm^{-2} (C) Debye (D) Joule

337. The dipole moment of SO_3 is:

(A) 0.95 D (B) 0.78 D (C) 0.12 D (D) 0.0 D

338. The dipole moment of SO_3 is:

(A) 0.95 D (B) 1.49D (C) 1.61D (D) 1.85 D

339. ..... molecules have zero dipole moment.

(A) CH_4 (B) SO_2 (C) CO (D) H_2S

340. Dipole moment of CO_2 is:

(A) 3.1D (B) 1.85D (C) zero (D) 1.25D

341. Which one of the given compounds possesses ionic bonding?

(A) CH_3CI (B) CaO (C) CH_2H_6 (D) CH_4

342. How many types of bonds in NH_4Cl are:

(A) Four types (B) Three types (C) Two types (D) One type

343. Ionization energy for $Mg \rightarrow Mg^+ + 1e^-$ has $\Delta H = ?$

(A) 738 KJ mol^{-1} (B) 138 KJ mol^{-1} (C) 238 KJ mol^{-1} (D) 438 KJ mol^{-1}

344. Which one of the following hydrocarbon has shortest C-C bond length?

(A) Benzene (B) Ethane (C) Ethene (D) Ethyne

345. Ethyne molecule have:

(A) One π and two σ bonds (B) One σ bonds between carbon atom
(C) Three σ bonds between carbon atom (D) Three π bonds between carbon atom

346. According to VSEPR theory, the shape of PH_3 molecule is:

(A) Trigonal planar (B) Linear (C) Trigonal Pyramidal (D) Tetragonal

347. An orbital which is spherical and symmetrical is:

(A) s – orbital (B) f – orbital (C) d –orbital (D) p – orbital

348. Which molecule has sp^2 hybridization?

(A) C_2H_6 (B) C_2H_4 (C) CH_4 (D) C_2H_2

349. The Carbon atom in C_2H_4 is:

(A) sp^2 – hybridized (B) Sp^3 – hybridized (C) dsp^2 – hybridized (D) sp – hybridized

350. Burning of coal is the example of:

(A) Irreversible reaction (B) Spontaneous reaction
(C) Reversible reaction (D) Non spontaneous reaction

351. The exothermic process is:

(A) Respiration (B) Boiling (C) Sublimation (D) Evaporation

352. In endothermic reaction ΔH is taken as:

(A) May be any value (B) Positive (C) Negative (D) Zero

353. In endothermic reactions, the heat content of the:

(A) Products is more than that of reactants (B) Reactants and products are equal
(C) Reactants is more than that of products (D) Both A & C

354. Which of the following is not a state function:

(A) Heat (B) Temperature (C) Volume (D) Pressure

355. Standard enthalpy change is measured at:

(A) 273K (B) 298K (C) 373K (D) 273°C

356. For a given process, the heat changes at constant pressure (q_p) and at constant volume (q_v) are related to each other as:

(A) $(q_p)^2 = q_v$ (B) $q_p < q_v$ (C) $q_p = q_v$ (D) $q_p > q_v$

357. For reaction $NaOH + HCl \longrightarrow NaCl + H_20$, the change in enthalpy is:

(A) Heat of formation of NaCl (B) Heat of neutralization
(C) Heat of reaction (D) Heat of formation of water

358. For the reaction, H^+ & OH^- the change in enthalpy is called heat of:

(A) Solution (B) Neutralization (C) Combustion (D) Reaction

359. The internal energy of a system is equal to:

(A) Kinetic energy of the particles (B) Sum of K.E and P.E
(C) P.E. of the particles (D) Enthalpy

360. The change in heat energy of a chemical reaction at constant temperature and pressure is called:

(A) Bond energy (B) Enthalpy change
(C) Internal energy change (D) Heat of sublimation

361. Heat of combustion can be determined by:

(A) Heat calorimeter (B) Copper calorimeter (C) Glass calorimeter (D) Bomb calorimeter

362. In bomb calorimeter the reactions are carried out at:

(A) Constant temperature (B) Constant volume
(C) Constant pressure (D) Constant enthalpy

363. Calorie is equivalent to:

(A) 4.184J (B) 418.4J (C) 41.84J (D) 0.418J

364. The net heat change in a chemical reaction is same, whether it is brought about in one or several steps. It is known as:

(A) Charle's law (B) Hesse's law (C) Boyle's law (D) Henry's law

365. If an endothermic reaction is allowed to take place very rapidly in the air, the temperature of the surrounding air:

(A) Increase (B) Remain unchanged (C) Remain constant (D) Decrease

366. The change in the heat energy of a chemical reaction at constant temperature and pressure is called:

(A) Heat of sublimation (B) Enthalpy change
(C) Internet energy change (D) Bond energy

367. The pressure of oxygen inside the bomb calorimeter is:

(A) 20 atm (B) 25 atm (C) 50 atm (D) 100 atm

368. $\sum \Delta H$ (Cycles) $= 0$ The above law is known as:

(A) Hess's law (B) Darwin's law (C) Kohlrausch law (D) Henry's law

369. The enthalpy of solution of sodium carbonate is:

(A) $-285.8\ KJmol^{-1}$ (B) $-25.0\ KJmol^{-1}$ (C) $-16.2\ KJmol^{-1}$ (D) $+16.2\ KJmol^{-1}$

370. At constant volume q_v is equal to:

(A) ΔP (B) ΔV (C) ΔH (D) ΔE

371. Enthalpy of atomization of Na-metal is:

(A) $108\ KJmol^{-1}$ (B) $90\ KJmol^{-1}$ (C) $120\ KJmol^{-1}$ (D) $130\ KJmol^{-1}$

372. The heat of atomization of chlorine is:

(A) $110\ KJmol^{-1}$ (B) $121\ KJmol^{-1}$ (C) $95\ KJmol^{-1}$ (D) $90\ KJmol^{-1}$

373. The study of heat changes accompanying a chemical reactions is known as:

(A) Analytical chemistry (B) Thermochemistry
(C) Physical chemistry (D) Electrochemistry

374. When a bond is formed energy is:

(A) Remains constant (B) Released
(C) Absorbed (D) Neither absorbed nor released

375. Units of energy in which heat changes in S.I system are:

(A) Newton (B) Erg (C) Torr (D) Joule

376. Spontaneous reactions are:

(A) Irreversible (B) Reversible (C) No irreversible (D) None of these

377. The study of heat changes accompanying a chemical reaction is known as:

(A) Biochemistry (B) Chemistry (C) Physical chemistry (D) Thermochemistry

378. The number of fundamental ways of transferring energy into or out of system is:

(A) One (B) Two (C) Three (D) Four

379. ..... is not state function.

(A) Heat (B) Temperature (C) Volume (D) Pressure

380. The Born-Haber cycle is the best application of ..... law.

(A) Graham's (B) Hess's (C) Dalton's (D) Boyle's

381. The amount of heat absorbed when one mole of gaseous atoms are formed from the element is called enthalpy of:

(A) Reaction (B) Combustion (C) Formation (D) Atomization

382. The property of a system which has some definite values for initial and final states is called:

(A) State function (B) State (C) Surroundings (D) System

383. Energy of universe remains constant it is called:

Ⓐ First law of thermochemistry
Ⓑ First law of thermodynamics
Ⓒ Second law of thermodynamics
Ⓓ Second law of thermochemistry

384. The term pH was introduced by:

Ⓐ Le-chattilier
Ⓑ Sorenson
Ⓒ Millikan
Ⓓ Henderson

385. The pH of Milk of Magnisia is:

Ⓐ 10.5
Ⓑ 11.1
Ⓒ 8.5
Ⓓ 3.5

386. Which one affects the value of K_C?

Ⓐ catalyst
Ⓑ pressure
Ⓒ concentration
Ⓓ temperature

387. Which one of the following salts dissolves in water to form a solution with a pH greater than 7?

Ⓐ $CuSO_4$
Ⓑ NH_4CI
Ⓒ Na_2CO_3
Ⓓ NaCl

388. When ionic product of a solution is greater than the solubility product at a particular temperature then the solution is said to be:

Ⓐ super saturated
Ⓑ saturated
Ⓒ unsaturated
Ⓓ very dilute

389. Approximate pH of apple is:

Ⓐ 3.1
Ⓑ 4.2
Ⓒ 4.5
Ⓓ 5.2

390. The pH of a solution is 9, the solution is:

Ⓐ Strongly acidic
Ⓑ strongly basic
Ⓒ Weakly acidic
Ⓓ Weakly basic

391. The reaction which proceeds in both forward and backward directions is called:

Ⓐ Spontaneous reaction
Ⓑ Irreversible reaction
Ⓒ Spontaneous reaction
Ⓓ Reversible reaction

392. The value of pK_w at 25 °C for water is:

Ⓐ 10^{-14}
Ⓑ 10^{-7}
Ⓒ 14
Ⓓ 7

393. pH value of vinegar is:

Ⓐ 3.5
Ⓑ 2.8
Ⓒ 2.2
Ⓓ 1.5

394. pH of 10^{-4} mol dm^{-3} of HCl is:

Ⓐ 4
Ⓑ 3
Ⓒ 2
Ⓓ 1

395. The rate of Reaction:

Ⓐ Remain the same as the reaction procee
Ⓑ Increase as reaction proceed
Ⓒ None of these
Ⓓ Decrease as reaction proceed

396. For which system, does the equilibrium constant has no units:

Ⓐ $2HF \rightleftharpoons H_2 + F_2$
Ⓑ $2NO_2 \rightleftharpoons N_2O_4$
Ⓒ $H_2 + I_2 \rightleftharpoons 2HI$
Ⓓ $N_2 + 3H_2 \rightleftharpoons 2NH_3$

397. The solution having zero pH will be:

Ⓐ neutral
Ⓑ basic
Ⓒ acidic
Ⓓ Highly acidic

398. pH value for 1.0 M HCI solution is:

Ⓐ 0.8
Ⓑ 0.7
Ⓒ 0.0
Ⓓ 0.5

399. Equilibrium constant for the reaction at 2000 °C $2HF_{(g)} \rightleftharpoons H_{2(g)} + F_{2(g)}$ is:

Ⓐ 10^{-5} Ⓑ 10^{-13} Ⓒ 10^{-9} Ⓓ 10^{-7}

400. A solution which resists to change its pH is called as:

Ⓐ Buffer solution Ⓑ Standard solution Ⓒ Basic solution Ⓓ Acid solution

401. Catalyst used in conversion of SO_2 into SO_3 in contact process is:

Ⓐ SiO_2 Ⓑ V_2O_5 Ⓒ Al_2O_3 Ⓓ MgO

402. The value of pH of pure water at 25°C is:

Ⓐ 7 Ⓑ 14 Ⓒ 1×10^{14} Ⓓ 1×10^{-14}

403. Mixture of NH_4OH and NH_4Cl makes a buffer whose pH is:

Ⓐ 4 Ⓑ more than seven Ⓒ less than seven Ⓓ 7

404. PH of the soft drink is:

Ⓐ 3.0 Ⓑ 4.6 Ⓒ 5.6 Ⓓ 2.0

405. Dilution increases the degree of dissociation, is the statement of which of the following law or principle:

Ⓐ Law of mass action Ⓑ Hess's law
Ⓒ Ostwald dilution Ⓓ Le-Chatelier principle

406. The pH of tomato is:

Ⓐ 9.2 Ⓑ 4.2 Ⓒ 7.2 Ⓓ 10

407. The reaction for synthesis of NH_3 the value of Δn is: $N_2 + 3H_2 \rightleftharpoons 2NH_3$

Ⓐ -2 Ⓑ +2 Ⓒ +4 Ⓓ +1

408. For an Exothermic Reversible reaction, increase in temperature will favour which:

Ⓐ Reverse Direction Ⓑ Initially in forward direction, then in reverse direction
Ⓒ Forward Direction Ⓓ Equilibrium will not disturbed

409. The law of mass action was given by Guldberg and P.Waage in:

Ⓐ 1909 Ⓑ 1946 Ⓒ 1846 Ⓓ 1864

410. The law of mass action was given by:

Ⓐ Bodentein Ⓑ Vant Hoff Ⓒ Gulderg and Waage Ⓓ Berthelot

411. The units of K_C for reaction $N_2 + O_2 \rightleftharpoons 2NO$ will be:

Ⓐ $moles^{-2}\ dm^{+6}$ Ⓑ No unit Ⓒ $moles^{-1}\ dm^{-3}$ Ⓓ $moles\ dm^{-3}$

412. The unit of equilibrium constant (K_C) for the reaction $N_2 + 3H_2 \rightleftharpoons 2NH_3$ will be:

Ⓐ $Mol^{-2}\ dm^{+6}$ Ⓑ $Mol^{+2}\ dm^{-6}$ Ⓒ $Mol\ dm^{-3}$ Ⓓ Having no unit

413. The relationship between K_p and K_c is given by:

Ⓐ $K_c = K_p\left(\frac{P}{N}\right)^{\Delta n}$ Ⓑ $K_c = K_p(P)^{\Delta n}$ Ⓒ $K_p = K_c(RT)^{-\Delta n}$ Ⓓ $K_p = K_c(RT)^{\Delta n}$

414. Acid having Ka > 1 will be:

Ⓐ Very weak Ⓑ weak Ⓒ strong Ⓓ moderate

415. Which statement about the following equilibrium is correct? $2SO_2 + O_2 \rightleftharpoons 2SO_3$

(A) The value of K_p falls with increase in pressure.
(B) The value of K_p falls with rise in temperature.
(C) The value of K_p is equal to K_c.
(D) Adding V_2O_5 catalyst increases the equilibrium yield of SO_3.

416. For the reaction $2SO_2 + O_2 \rightleftharpoons 2SO_3$:

(A) $K_c = K_x$ (B) $K_c > K_p$ (C) $K_c < K_p$ (D) $K_c = K_p$

417. The units for K_w of H_2O are:

(A) $Mol^{+2}\ dm^{-6}$ (B) $Mol^{-2}\ dm^{+6}$ (C) $Mol^{-2}\ dm^{-3}$ (D) $Mol\ dm^{-3}$

418. Reaction of $BiCl_3$ with H_2O gives while ppt. of BiOCl and HCl is formed. The white ppt. disappears by:

(A) Adding HCI
(B) Adding $BiCl_3$
(C) Decreasing temperature
(D) Increase temperature

419. The value of K_w at 25°C is:

(A) 0.30×10^{-14} (B) 3×10^{-14} (C) 0.11×10^{-14} (D) 1×10^{-14}

420. The optimum temperature for the synthesis of NH_3 by Haber's process is:

(A) 500 °C (B) 300 °C (C) 400 °C (D) 200 °C

421. Catalyst used in preparation of NH_3 from N_2 and H_2 is:

(A) V_2O_5 (B) Fe (C) Ni (D) Pt

422. In synthesis of ammonia by Haber's process, the optimum condition for pressure is:

(A) 200-300atm (B) 300-350atm (C) 150-170 atm (D) 180-200 atm

423. When KCI is added to a saturated solution of $KClO_3$ the equilibrium is shifted to the:

(A) Forward Direction (B) Not affected (C) Both A & B (D) Backward Direction

424. For which system does the equilibrium constant K_C has the Unit $(concentration)^{-1}$:

(A) $2HF \rightleftharpoons H_2 + F_2$
(B) $H_2 + I_2 \rightleftharpoons 2HI$
(C) $2NO_2 \rightleftharpoons N_2O_4$
(D) $N_2 + 3H_2 \rightleftharpoons 2NH_3$

425. An aqueous solution of ethanol in water may have vapour pressure:

(A) Less than that of water
(B) More than that of water
(C) Equal to that of water
(D) Equal to that of ethanol

426. The increase in dilution of solution:

(A) Decreases the degree of dissociation
(B) Depends upon the degree of the solute
(C) Increase the degree of dissociation
(D) Does not affect the degree of dissociation

427. A solution with pH = 0 indicates molar concentration of H^+ ions:

(A) 10^{+7} (B) 10^{-7} (C) 1.0 (D) 10^{-14}

428. Molarity of pure water is:

(A) 6 (B) 55.5 (C) 10 (D) 18

429. The nature of milk is:

(A) Acidic (B) Normal (C) Basic (D) Neutral

430. Sum of pK_a and pK_b is equal to:

Ⓐ 0 Ⓑ 1 Ⓒ 7 Ⓓ 14

431. The pH of 10^{-4} moles dm^{-3} of $Ba(OH)_2$ is:

Ⓐ 6.4 Ⓑ 7.5 Ⓒ 10.3 Ⓓ 4.5

432. The pH of 10^{-3} moles dm^{-3} of an aqueous solution of H_2SO_4 is:

Ⓐ 3.0 Ⓑ 2.7 Ⓒ 2.0 Ⓓ 1.5

433. PH of buffer can be calculated by using:

Ⓐ Bohrs equation Ⓑ Henderson's equation
Ⓒ Moseley's equation Ⓓ De-Broglie's equation

434. The pH of the gastric juice is:

Ⓐ 2.0 Ⓑ 2.5 Ⓒ 3 Ⓓ 5.5

435. Which aqueous solution has highest pH?

Ⓐ 0.1M HCl Ⓑ 0.2M HNO_3 Ⓒ 0.1M H_2SO_4 Ⓓ 0.1M NaOH

436. The pH of buffer of CH_3COONa and CH_3COOH is:

Ⓐ 1 Ⓑ 7 Ⓒ < 7 Ⓓ > 7

437. The term pH was introduced by:

Ⓐ Thomson Ⓑ Sorenson Ⓒ Goldstein Ⓓ Henderson

438. The pH of human blood is:

Ⓐ 7.35 Ⓑ 8.0 Ⓒ 7.63 Ⓓ 7.53

439. The solubility of $KClO_3$ in water is suppressed by adding:

Ⓐ $KMnO_4$ Ⓑ $NaClO_3$ Ⓒ NaCl Ⓓ KCl

440. In the presence of common ion, the ionization of an electrolyte will:

Ⓐ Moderate change Ⓑ no affect Ⓒ decrease Ⓓ Increase

441. The HCl is added to aqueous solution of H_2S the solubility will be:

Ⓐ Decreases Ⓑ Increase
Ⓒ First decreases then increases Ⓓ Remain constant

442. When HCl is added to H_2SO_4 aqueous solution, its ionization:

Ⓐ First increases then decreases Ⓑ Remain constant
Ⓒ Increases Ⓓ Decreases

443. An excess of aqueous silver nitrate is added to aqueous barium chloride and precipitate is removed by filtration. What are the main ions in the filtrate?

Ⓐ Ag^+ and NO only Ⓑ Ba^{2+} and NO_3^{-1} and Cl^-
Ⓒ $Ag^+$and Ba^{2+} NO_3^{-1} Ⓓ Ba^{2+} and NO_3^{-1} only

444. The solubility product of AgCl is $2.0 \times 10^{-10} mol^2\ dm^{-3}$. The maximum concentration of Ag^+ ions in the solution is:

Ⓐ 1.0×10^{-10} $moldm^{-3}$ Ⓑ 2.0×10^{-10} $moldm^{-3}$
Ⓒ 4.0×10^{-2} $moldm^{-3}$ Ⓓ 1.4×10^{-5} $moldm^{-3}$

445. The Oxidation Number of Sulphur in SO_4^{2-} is:

Ⓐ 1 Ⓑ 2 Ⓒ 4 Ⓓ 6

446. 10g of NaOH has been dissolved per dm^3 of solution. The molarity of solution is:

Ⓐ 2 M Ⓑ I M Ⓒ 0.5 M **Ⓓ 0.25 M**

447. The sum of mole fraction of all the components of solution is always equal to:

Ⓐ Less than 100 Ⓑ 100 **Ⓒ Unity** Ⓓ Less than one

448. Which of the following concentration unit is used for very dilute solutions:

Ⓐ Normality **Ⓑ ppm** Ⓒ Molality Ⓓ Molarity

449. Which has maximum freezing point:

Ⓐ 1m Urea Ⓑ 1m KCI Ⓒ 1m NaCl Ⓓ Im $CaCl_2$

450. Which caption has least heat of hydration:

Ⓐ K^+ Ⓑ Mg^{+2} Ⓒ Li^+ **Ⓓ K^+**

451. 10% aqueous solution of glucose freezes at:

Ⓐ Greater than 0°C **Ⓑ Less than 0°C** Ⓒ Greater than 10°C Ⓓ 0°C

452. A mixture of benzene and toluene form:

Ⓐ Ideal solution Ⓑ Suspension Ⓒ Azeotropic mixture Ⓓ Non-ideal solution

453. The substance which has water of crystallization in it, is called:

Ⓐ Complex Ⓑ Hydrolysis Ⓒ Hydride **Ⓓ Hydrate**

454. Hydrolysis of CH_3COOK will produce:

Ⓐ Neutral solution Ⓑ Acidic solution **Ⓒ Basic solution** Ⓓ None of these

455. The molarity of 2% $\frac{W}{V}$ NaOH solution is:

Ⓐ 0.05 **Ⓑ 0.5** Ⓒ 1.5 Ⓓ 2

456. If 9.8 g H_2SO_4 is present in one dm^3 of solution, the solution is:

Ⓐ 0.1 M Ⓑ 0.5M Ⓒ 0.1 N Ⓓ 0.1m

457. An aqueous solution boils at 100.52 °C. It should freeze at:

Ⓐ −2°C Ⓑ 0°C Ⓒ +1.86°C **Ⓓ −1.86°C**

458. 15g urea is dissolved in 180 cm^3 of water. The relative lowering of vapour pressure will be:

Ⓐ 10.25 Ⓑ 2.5 **Ⓒ 0.024** Ⓓ 25.024

459. A solution of glucose is 10% w/v. The volume in which 1 g mole of it dissolved will be:

Ⓐ $900cm^3$ Ⓑ $200cm^3$ Ⓒ $1dm^3$ **Ⓓ $1.8dm^3$**

460. Molal boiling point constant is the ratio of the elevation in boiling point to:

Ⓐ More fraction of Ⓑ Molarity **Ⓒ Molality** Ⓓ More fraction of solute

461. Molarity of pure water is:

Ⓐ 60 **Ⓑ 55.5** Ⓒ 18 Ⓓ 10

462. The salt dissolved in water forms a solution of pH greater than 7:

Ⓐ Na_2CO_3 Ⓑ $CuCO_4$ Ⓒ NH_4CI Ⓓ NaCI

463. Liquids which are practically immiscible:

Ⓐ $H_2O + CH_3 - O - CH_3$ Ⓑ $H_2O + HCl$ Ⓒ $H_2O + C_2H_5 - OH$ **Ⓓ $H_2O + C_6H_6$**

464. Osmotic pressure is an example of:

Ⓐ Constitutive properties **Ⓑ Colligative properties**
Ⓒ internal energy Ⓓ Additive properties

465. Mathematical expression of Raoult's law is:

Ⓐ $\frac{\Delta p}{p^\circ} = x_2$ Ⓑ $\Delta p \propto x_2$ **Ⓒ All of these** Ⓓ $p \propto x_1$

466. The correct equation of Raoult's law:

Ⓐ $\frac{p^\circ}{\Delta p} = X_2$ **Ⓑ $\frac{\Delta p}{p^\circ} = X_2$** Ⓒ $\frac{p^\circ}{\Delta p} = X_2 - X_1$ Ⓓ $\frac{\Delta p}{p^\circ} = X_1$

467. Which one of the given salts will not hydrolyse in water?

Ⓐ NaCl Ⓑ CH_3COONa Ⓒ Na_2CO_3 Ⓓ $AlCl_3$

468. Colligative properties are the properties of:

Ⓐ Concentrated solutions which behave as nearly non-ideal solutions
Ⓑ Dilute solutions which behave as nearly ideal solutions
Ⓒ Neither A nor B
Ⓓ Both A & B

469. Which one of the following pair of liquids is not completely miscible?

Ⓐ Alcohol and ether Ⓑ Benzene and cyclohexane
Ⓒ Alcohol and water **Ⓓ Phenol and water**

470. Amount of NaOH required to prepare 250 cm^3 of 1M solution is:

Ⓐ 10g Ⓑ 6g Ⓒ 4g Ⓓ 2g

471. The consulate temperature of water-aniline system is:

Ⓐ 49.1°C Ⓑ 64.5°C Ⓒ 69.5°C **Ⓓ 167°C**

472. Upper - Consulate temperature for water - phenol System is:

Ⓐ 120 °C Ⓑ 130 °C **Ⓒ 65.9 °C** Ⓓ 150 °C

473. Which one is not equation of Raoult's law:

Ⓐ $\Delta P/P^\circ = X_2$ **Ⓑ $PV = n_2RT$** Ⓒ $P = P^\circ X_1$ Ⓓ $\Delta P = P^\circ X_2$

474. The sum of mole fraction of gases in a mixture of gases is:

Ⓐ May be less or more than 1 Ⓑ Always less than 1
Ⓒ Always 1 Ⓓ Always more than 1

475. Which one is not an electrolyte:

Ⓐ Cu metal Ⓑ H_2SO_4 Ⓒ Aqueous $CuSO_4$ Ⓓ Aqueous NaCl

476. An azeotropic mixture of two liquids boils at a lower temperature than either of the when:

Ⓐ It is metastable **Ⓑ It shows (+) deviation from Raoult's law**
Ⓒ It is saturated Ⓓ It shows (−) deviation from Raoult's law

477. Which of the following gives acidic solution when dissolved in H_2O:

Ⓐ Na_2SO_4 Ⓑ CH_3COONH_4 Ⓒ NaCl **Ⓓ NH_4Cl**

478. The mass of glucose required to prepare 1 dm^3 of 20% glucose solution is:

Ⓐ 100 g Ⓑ 180 g **Ⓒ 200 g** Ⓓ 50 g

479. Relative lowering of vapour pressure is equal to:

Ⓐ Mole fraction of solute Ⓑ Molality
Ⓒ Mole fraction of solvent Ⓓ Molarity

480. 18g of glucose is dissolved in 90 g of water. The relative lowering of vapour pressure is equal to:

Ⓐ 5.1 **Ⓑ $\frac{1}{51}$** Ⓒ 6.0 Ⓓ $\frac{1}{5}$

481. Melting point of ice can be lowered by the use of:

Ⓐ NaCI Ⓑ AgCl Ⓒ $BeCl_2$ Ⓓ LiCI

482. A thermometer used in Lands Berger's method can read up to:

Ⓐ 0.01F Ⓑ 0.01°C Ⓒ 0.1K **Ⓓ 0.01K**

483. Elevation of boiling point is:

Ⓐ Colligative property Ⓑ Substitution property
Ⓒ Constitutive property Ⓓ Additive property

484. Which of the following solutions has highest boiling point elevation:

Ⓐ 18% solution of Glucose Ⓑ 34.2% solution of Sucrose
Ⓒ 5.85% solution of NaCI Ⓓ 6% solution of Urea

485. Which of the following concentration unit is temperature dependent?

Ⓐ percentage w/w Ⓑ mole fraction **Ⓒ molarity** Ⓓ molality

486. The Number of Moles of Solute per kg of Solvent is called:

Ⓐ Normality **Ⓑ Molality** Ⓒ Molarity Ⓓ Mole Fraction

487. One molar solution of glucose ($C_6H_{12}O_6$) contains the amount of solute in 500 cm^3 solution:

Ⓐ 90 g Ⓑ 180 g Ⓒ 270 g Ⓓ 45 g

488. ..... used as antifreeze in radiator of automobile.

Ⓐ Hydrazine Ⓑ Serotenin Ⓒ Aspartame **Ⓓ Ethylene glycol**

489. The number of water molecules in $CuSO_4.5H_2O$ attacked with Cu^{2+} ion:

Ⓐ two Ⓑ three **Ⓒ four** Ⓓ one

490. Ideal solutions obey:

Ⓐ Smith's law **Ⓑ Raoult's law** Ⓒ Avogardo's law Ⓓ Henry's law

491. An aqueous solution of ethanol in water may have vapour pressure:

Ⓐ equal to ethanol **Ⓑ more than that of water**
Ⓒ less than that of water Ⓓ equal to water

492. In order to maintain the boiling point of water at 110 °C, the external pressure should be:

Ⓐ any value of pressure Ⓑ 765 torr
Ⓒ between 760 torr and 1200 torr Ⓓ between 200 torr and 760 torr

493. The least value of reduction potential is for:

Ⓐ Li^{+1} Ⓑ Na^{+1} Ⓒ K^{+1} Ⓓ F_2

494. The electrode potential of standard hydrogen electrode is arbitrarily taken as:

Ⓐ Negative Ⓑ Zero Ⓒ Vary with situation Ⓓ Positive

495. The overall positive values for cell potential predicts that the process is energetically:

Ⓐ Not feasible Ⓑ Not possible Ⓒ Cannot be predicted Ⓓ Feasible

496. In electro-chemical series , the electrodes are compared with SHE and they are arranged in the decreasing order of:

Ⓐ Ionization potential Ⓑ Oxidation potential
Ⓒ Reduction potential Ⓓ Cell voltage

497. The electrochemical cell stop's working after sometime because:

Ⓐ One of electrode completely vanishes.
Ⓑ Electrode potentials of both the electrodes become zero.
Ⓒ The reaction reverses its direction.
Ⓓ Electrode potentials of both the electrodes equalize.

498. The catholic reaction in the electrolysis of dil. H_2SO_4 with Pt electrodes is:

Ⓐ Reduction Ⓑ Both oxidation and reduction
Ⓒ Neither oxidation and reduction Ⓓ Reduction

499. Which of the following statements is not correct about Galvanic cell?

Ⓐ Reduction occurs at cathode Ⓑ Reduction occurs at anode
Ⓒ Cathode is positively charged Ⓓ Anode is negatively charged

500. Strong the oxidizing agent , greater is the:

Ⓐ Reduction potential Ⓑ E.M.F of cell Ⓒ Redox potential Ⓓ Oxidation potential

501. If the salt bridge is not used between two half cells , then the voltage:

Ⓐ Does not change Ⓑ Decreases slowly Ⓒ Drops to zero Ⓓ Decreases rapidly

502. If a strip of Cu metal is placed in a solution of Fe SO_4:

Ⓐ Cu and Fe both dissolve Ⓑ No reaction takes place
Ⓒ Fe is precipitated out Ⓓ Cu will be deposited down

503. A redox reaction is:

Ⓐ Proton combination reaction Ⓑ Electron transfer reaction
Ⓒ Proton transfer reaction Ⓓ Ion combination reaction

504. Which of the following process always involve the decrease in oxidation number?

Ⓐ Reduction Ⓑ Oxidation Ⓒ Decomposition Ⓓ Hydrolysis

505. The oxidation number of C in $C_{12}H_{22}O_{11}$ is:

Ⓐ 12 Ⓑ Zero Ⓒ -6 Ⓓ +6

506. The oxidation number of chromium in $K_2Cr_2O_7$ is:

Ⓐ 2 Ⓑ 3 Ⓒ 4 Ⓓ 6

507. Oxidation number of Cr in K_2CrO_4 is:

Ⓐ +8 Ⓑ +6 Ⓒ +4 Ⓓ +2

508. The oxidation state of oxygen in OF_2 is:

(A) +1 (B) -1 (C) -2 **(D) +2**

509. The oxidation state of Mn in $KMnO_4$ is:

(A) +5 **(B) +7** (C) +6 (D) +2

510. The reduction potential of Zn is:

(A) - 0.76V (B) + 0.34V (C) 0.34V **(D) + 0.76V**

511. The electrolysis of aqueous solution of NaCl is employed to prepare caustic soda on commercial scale. The reaction at the cathode is:

(A) Reduction of Na ions **(B) Reduction of H ions**
(C) Oxidation of Cl ions (D) Formation of water molecule

512. Cu metal can be purified in electrolytic cell by making the impure Cu are:

(A) SHE (B) Cathode (C) By making its CuSO **(D) Anode**

513. The electrode reaction of a voltaic cell can be reversed when:

(A) Temperature is increase
(B) Electrodes are interchanged.
(C) Concentration of solutions is changed.
(D) External circuit is employed to supply the source of electricity.

514. A salt bridge contains:

(A) Gelatin + H_2SO_4 **(B) Gelatin + HCl**
(C) Gelatin + NaOH (D) Gelatin + HCl

515. Which one of the following is not an example of voltaic cell:

(A) Ni - Cd cell (B) Fuel cell (C) Silver oxide battery **(D) Down's cell**

516. Which of the following statements is correct about Galvanic cell?

(A) Oxidation occurs at cathode **(B) Anode is negatively charged**
(C) Reduction occurs at anode (D) Cathode is positively charged

517. If a salt bridge is not used between two half-cells , then the voltage:

(A) Does not change (B) Decreases slowly **(C) Drops to zero** (D) Decreases rapidly

518. The cell in which electrical energy is converted into chemical energy is called:

(A) Electrolytic cell (B) Fuel cell (C) Daniel cell (D) Galvanic cell

519. When Non-spontaneous redox reaction is carried out by using the electrical current , then the process is called:

(A) Hydrolysis **(B) Electrolysis**
(C) Decomposition of the substances (D) Exothermic process

520. The standard electrode potential (in volt) of SHE is taken as:

(A) 1.00 (B) 10.0 (C) 100 (D) 0.00

521. The standard reduction potential of Ag and Zn are + 0.80 and − 0.76V respectively. Which of the following conclusions can be drawn from the data?

(A) Zn will always act as a reducing agent.
(B) Ag displaces Zn from a solution containing Zn ion.
(C) Ag is a poor Oxidizing agent.
(D) Zn has greater tendency than Ag to from positively charged ion.

522. In the reaction $2Fe + Cl_2 \longrightarrow 2FeCl_3$:

(A) Fe is oxidized (B) Cl_2 is oxidized (C) None of these (D) Fe is reduced

523. When fused $PbBr_2$ is electrolyzed when:

(A) Lead appears at the anode (B) Lead is deposited at the cathode
(C) None of these (D) Bromine appears at cathode

524. During electrolysis of KNO_3, H_2 is evolved at:

(A) Anode (B) Cathode (C) None of these (D) Both a and b

525. An electrochemical cell is based upon:

(A) Nuclear reaction (B) Redox reaction
(C) Acid-base reaction (D) None of these

526. Which one of the following is good conductor of electricity:

(A) Chloroform (B) Molten NaCl
(C) Pure distilled water (D) Dilute solution of glucose

527. During a redox reaction, an oxidizing agent:

(A) Loses electrons (B) Gains electrons (C) Is hydrolyzed (D) Is oxidized

528. In an oxidation process the oxidation number of the element:

(A) Decreases (B) Increases (C) None of these (D) Does not change

529. Which element acts as a reducing agent in the reaction?

$Zn + H_2SO_4 \longrightarrow ZnSO_4 + H_2$

(A) Zn (B) O (C) H (D) S

530. Electric current passes through both molten and solution form of NaCl because of:

(A) Na^+ and Cl ions (B) Hydration of ions (C) Ions of water (D) Ionic bonding

531. Oxidation number of sulphur in $S_2O_3^{2-}$ is:

(A) +2 (B) -2 (C) -4 (D) +6

532. Metallic conduction is due to the:

(A) Movement of ions (B) Movement of electrons
(C) Movement of ions & Movement of electrons (D) None of these

533. The process in which electric current is used to carry out a non-spontaneous redox reaction is called:

(A) Electrolysis (B) Metallic conductor (C) Electrolyte (D) None of these

534. The process in which ionic compound when fused or dissolved in water split up into charged particles is called:

(A) Conduction (B) Ionization (C) Hydration (D) Electrolysis

535. The metallic conductors in contact with the solution are called:

(A) Down cell (B) Insulator (C) Electrolyte (D) Electrodes

536. The reaction in a galvanic cell is:

(A) Non-spontaneous (B) Spontaneous (C) Acid base (D) None of these

537. Sodium metal is obtained by the electrolysis of fused NaCl in a cell is called:

Ⓐ Danicll cell Ⓑ Voltaic cell Ⓒ Nelson's cell **Ⓓ Down's cell**

538. The branch of chemistry which deals with the relationship between electricity and chemical reaction is called:

Ⓐ Stoichiometry **Ⓑ Electrochemistry** Ⓒ Thermochemistry Ⓓ Chemical kinetics

539. A cell in which spontaneous redox reaction generates an electric current is called:

Ⓐ Voltaic or galvanic cell **Ⓑ Biological cell**
Ⓒ Electrochemical cell Ⓓ Electrolytic cell

540. A cell in which an electric current drives a non-spontaneous reaction is called:

Ⓐ Voltaic cell **Ⓑ Electrolytic cell**
Ⓒ Electrochemical cell Ⓓ Biological cell

541. A process for converting one metal with a thin layer of another metal is called:

Ⓐ Electrode potential **Ⓑ Electroplating**
Ⓒ Electrolysis Ⓓ Standard electrode

542. Greater the value of standard reduction potential of a species indicates:

Ⓐ Greater its tendency to accepted electron: Ⓑ Greater tendency to lose electrons.
Ⓒ Lesser tendency to accept electrons. Ⓓ None of these

543. In lead accumulator the electrolyte H_2SO_4 solution is:

Ⓐ 30% Ⓑ 70% Ⓒ 60% H_2SO_4 Ⓓ 80%

544. In alkaline battery, the electrolyte contains:

Ⓐ MnO_2 **Ⓑ KOH** Ⓒ NaCl Ⓓ $NaNO_3$

545. Metals which are above SHE in electrochemical series:

Ⓐ Cannot always liberate H_2 from acid **Ⓑ Can liberate H_2 from acid**
Ⓒ None of these Ⓓ Cannot liberate H_2 from acid

546. Corrosion reactions are:

Ⓐ Spontaneous acid-base reactions. **Ⓑ Spontaneous redox reaction**
Ⓒ Non-spontaneous acid-base reactions. Ⓓ None of these

547. In SHE the standard is the …… atom.

Ⓐ H Ⓑ N Ⓒ O Ⓓ C

548. In cells metal oxides usually act as:

Ⓐ Anode Ⓑ Solution **Ⓒ Cathode** Ⓓ All of these

549. In alkaline battery, the electrolyte contains:

Ⓐ MnO_2 **Ⓑ KOH** Ⓒ NaCl Ⓓ $NaNO_3$

550. The tendency of an element to form ions in solution is called:

Ⓐ Ionization potential **Ⓑ Electrode potential**
Ⓒ Cell potential Ⓓ Standard electrode

551. While balancing an equation by ion electron method the number of oxygen atoms are balanced by:

(A) H^+ (B) OH^- (C) H_2O (D) O_2

552. Zinc-Copper galvanic cell may be formed by:

(A) Porous partition (B) Both a and c (C) Salt bridge (D) $NaNO_3$

553. Oxidation occurs at:

(A) Cathode (B) During movement (C) None of these (D) Anode

554. The oxidation number of free element is always taken to be:

(A) 2 (B) 0 (C) 1 (D) -1

555. The reaction rate can be measure by:

(A) Hit and trial method (B) Graph method
(C) Both a and b (D) None of these

556. In zero order reaction , the rate is independent of:

(A) Pressure of reaction (B) Concentration of reactants
(C) Temperature of reaction (D) Concentration of products

557. $3Fe^+ 4H_2O \rightleftharpoons Fe_3O_4 + 4H_2$ is an example of ..... Equilibrium.

(A) Heterogeneous (B) Isogeneous (C) All of these (D) Homogeneous

558. The order of the reactions is $2NO + 2H_2 \longrightarrow 2H_2O + N_2$:

(A) Zero (B) Three (C) Two (D) One

559. A second order rate constant can have the units:

(A) $dm^3\ mole^{-1}\ s^{-1}$ (B) $dm^3\ mole\ s^{-1}$ (C) $dm^{-6}\ mole^{-2}\ s^{-1}$ (D) $dm^{-6}\ mole^2\ s^{-1}$

560. The rate of a reaction depends upon:

(A) Concentration (B) T (C) All of these (D) P

561. If the rate of reaction for $2A + B \longrightarrow$ products is rate = $k\ [A]\ [B]^2$ and A is present in large excess , then order of reaction is:

(A) 4 (B) 3 (C) 2 (D) 1

562. The branch of chemistry which deals with the study of rate of reaction is called:

(A) Chemical kinetics (B) Mechanistic studies
(C) Chemistry of reversibility (D) Thermodynamics

563. The unit of the rate constant is same as that of the rate of reaction in:

(A) Third order reaction (B) Second order reaction
(C) Zero order reaction (D) First order reaction

564. Velocity constant is the rate of reaction when the concentrations of reactants are:

(A) Three (B) Two (C) Unity (D) Zero

565. When a reaction proceeds in more than one steps the overall rate is determined by:

(A) Any step can be used (B) Slowest step
(C) Rate cannot be determined (D) Fastest step

566. The half-life period for the decomposition of $N_2\ O_5$ is:

(A) 50 minutes (B) 54 minutes (C) 24 minutes (D) 48 minutes

567. If the energy of the activated complex lies close to energy of reactants , it means that reactions is:

Ⓐ Endothermic Ⓑ Exothermic **Ⓒ Fast** Ⓓ Slow

568. The rate of a reaction is given by the relation:

Ⓐ dx/dt Ⓑ dx/dv Ⓒ dx/dT Ⓓ dx/dp

569. Rate of a chemical reaction depends upon:

Ⓐ The number of molecules taking part in a chemical reaction.
Ⓑ The number of total collisions per second.
Ⓒ The number of fruitless collisions per second.
Ⓓ The number of fruitful collisions per second.

570. Under a given set of experimental conditions , with increase of concentration of the reactants , the rate of a chemical reaction:

Ⓐ Always increases Ⓑ Remains same
Ⓒ First decreases , than increases Ⓓ Always decrease

571. The minimum energy more than the average energy required for the molecules to undergo reaction is:

Ⓐ Kinetic energy **Ⓑ Activation energy** Ⓒ Free energy Ⓓ Internal energy

572. The value of activation energy is primarily determined by:

Ⓐ Chemical nature of reactants and products Ⓑ Collision frequency
Ⓒ Concentration of reactants Ⓓ Temperature

573. After 2 half-lives of a chemical reaction, the % fraction of the amount left is:

Ⓐ 50 **Ⓑ 12.5** Ⓒ 75 Ⓓ 6.25

574. All radioactive disintegration nuclear reactions are of:

Ⓐ Zero order Ⓑ 3^{rd} order Ⓒ 2^{nd} order **Ⓓ First order**

575. Hydrolysis of Tertiary butyl bromide has order of reaction:

Ⓐ Third order Ⓑ Second order **Ⓒ Pseudo first order** Ⓓ First order

576. Half-life of a second order reaction in inversely proportional to:

Ⓐ Final concentration of products Ⓑ Final concentration of reactants
Ⓒ Initial concentration of reactants Ⓓ Initial concentration of products

577. In the hydrolysis of $CH_3COOC_2H_5$ the acid produce act as:

Ⓐ Inhibitor Ⓑ Catalyst **Ⓒ Auto catalyst** Ⓓ none of above

578. The factors which affect rate of reaction:

Ⓐ Surface area Ⓑ light Ⓒ Nature of reactants Light **Ⓓ All of above**

579. Arrhenius equation describe the effect of:

Ⓐ Pressure on rate of reaction Ⓑ All of these
Ⓒ Temp on rate of reaction Ⓓ Volume on rate of reaction

580. The reaction rate may be measure by:

Ⓐ Chemical method Ⓑ Physical method Ⓒ None **Ⓓ Both a and b**

581. By the use of catalysts the energy of activation is:

(A) Not affected (B) Decreased (C) Increased (D) All of these

582. The addition of small amount of catalyst in a reaction is called:

(A) Catalytic poisoning (B) Catalytic deactivation
(C) None of these (D) Both a and b

583. Catalysis may be:

(A) Heterogeneous (B) Homogeneous (C) Both a and b (D) None of these

584. For a hypothetical reaction $A + 2B \longrightarrow$ products, the rate law is rate = k [A] [B]. the order of reactions is:

(A) 4 (B) 3 (C) 2 (D) 1

585. Decrease in concentration is denoted by:

(A) -dt/dx (B) -dx/dt (C) +dx/dt (D) dx/dt

586. The number of atoms molecules or ions whose conc. determine the rate of reaction is called:

(A) Order of reaction (B) Value or reaction (C) None (D) Rate constant

587. The unit of rate constant depends on:

(A) Concentration terms (B) Molecularity of reaction
(C) Order of reaction (D) Number of reactants

588. For a forward reaction according to collision theory the molecules must have energy:

(A) Less than Ea (B) Equal to Ea (C) None (D) Greater than Ea

589. The change in the conc. of reactants and products in a unit time is called:

(A) Rate constant (B) Diffusion (C) None (D) Reaction rate

590. An increase in conc. is related to number of collisions:

(A) All (B) Indirectly (C) No more (D) Directly

591. The energy of activation is usually expressed in:

(A) Joules (B) Moles (C) Calories (D) Ergs

592. The addition of a catalyst to a reaction changes the:

(A) Entropy (B) Nature of reactants
(C) Energy of activation (D) Enthalpy

593. Pt is poisoned by:

(A) Argon (B) Zinc (C) Silver (D) Arsenic

594. The minimum amount of energy required to convert reactants into product is called:

(A) Activated state (B) Activated complex
(C) Energy of activation (D) Energy barrier

595. The reaction may be:

(A) 2nd order (B) 1st order (C) Forth order (D) Third order

596. The main function of a catalyst is to:

Ⓐ Decrease pressure Ⓑ Decrease temp Ⓒ Decrease Ea Ⓓ Increase Ea

597. ..... are called biocatalysts.

Ⓐ Enzymes Ⓑ Organic bases Ⓒ All of these Ⓓ Organic acids

598. With increases in 100 ^{0}C temperature, the rate of reaction doubles. This increase in rate of reaction is due to:

Ⓐ Increase in activation energy of reaction.
Ⓑ Increase in number of effective collisions.
Ⓒ Decrease in the number of collisions between reactant molecules.
Ⓓ Decrease in activation energy of reaction.

599. The rate of reaction:

Ⓐ May decrease or increase as the reaction Ⓑ Remains the same as the reactions procee
Ⓒ Decreases as the reaction proceeds Ⓓ Increase as the reaction proceeds