211/2014

1. Which one of the following amino acids is optically inactive ?

   (A) Alanine (B) Glycine (C) Valine (D) Leucine

2. Which one of the following bases is not present in RNA ?

   (A) Adenine (B) Guanine (C) Thymine (D) Uracil

3. Name the alkaloid present in the poisonous herb hemlock.

   (A) Coniine (B) Nicotine (C) Quinine (D) Piperine

4. How many proton signals would be expected in NMR spectrum of $BrCH_2CH_2Br$?

   (A) 4 (B) 8 (C) 1 (D) 2

5. Shift of the absorption maximum to the longer wavelength is called :

   (A) Hypsochromic shift (B) Hyperchromic shift

   (C) Hyprochromic shift (D) Bathochromic shift

6. Select the azo-dye :

   (A) Indigo (B) Methyl orange

   (C) Malachite green (D) Phenolphthalein

7. Which one of the following decays takes place in phosphorescence ?

   (A) $S_1 \rightarrow S_0$ (B) $T_1 \rightarrow S_0$ (C) $T_2 \rightarrow T_1$ (D) $S_2 \rightarrow S_1$

8. Drugs which lower the body temperature in feverish conditions are called :

   (A) Antibiotics (B) Analgesics (C) Antipyretics (D) Antimalarials

9. Metal present in Vitamin B_{12} is :

   (A) Zn (B) Cu (C) Mg (D) Co

10. Compound which is used as a fixer in photography is :

(A) Sodium thiosulphate (B) Sodium acetate

(C) Sodium carbonate (D) Sodium phosphate

11. The most abundant inert gas in the atmosphere is :

(A) He (B) Ar (C) Kr (D) Ne

12. The combustible material on the tip of safety matchstick is :

(A) Antimony phosphate (B) Antimony sulphide

(C) Lead nitrite (D) Lead phosphate

13. The chief constituent of gobar gas is :

(A) Hydrogen (B) CO_2 (C) Methane (D) Ethane

14. The sulphide ores of metal are concentrated by :

(A) Mond's process (B) Froth floatation method

(C) Calcination (D) Magnetic method

15. The metal that is used as a catalyst in the hydrogenation of oil is :

(A) Ni (B) Cr (C) Sn (D) Pb

16. The gas responsible for Bhopal tragedy in 1984 was :

(A) Ethyl cyanide (B) Cynogen

(C) Phosgene (D) Methyl isocyanate

17. The main cause of the energy radiation from the sun is :

(A) Nuclear fission (B) Nuclear fusion (C) Transmutation (D) Stark effect

18. The number of radial nodes in 3s orbital is :

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

19. The bond order of O_2 molecule is :

(A) 0 (B) 1 (C) 3 (D) 2

20. 1 nanometer is :

(A) 10^{-8}m (B) 10^{-9}m (C) 10^{-7}m (D) 10^{-10}m

21. Emission of electrons from metal surfaces on exposure to radiation is called :

(A) Radioactivity (B) Compton effect

(C) Photoelectric effect (D) Zeeman effect

22. Quantum Theory of Radiation was put forward by :

(A) Max Planck (B) Maxwell (C) Bohr (D) De Broglie

23. $_{18}Ar^{40}$ and $_{19}K^{40}$ are examples of :

(A) Isotopes (B) Isotones (C) Isomers (D) Isobars

24. Expression for average translational kinetic energy of an ideal gas/mole is :

(A) $\frac{1}{2}$ RT (B) $\frac{3}{2}$ RT (C) $\frac{3}{2}$ KT (D) $\frac{1}{2}$ KT

25. Number of vibrational degrees of freedom of CO_2 molecule is :

(A) 4 (B) 3 (C) 5 (D) 1

26. The number of d-electrons retained in Fe^{3+} (At. no. Fe : 26) :

(A) 6 (B) 3 (C) 4 (D) 5

27. Which of the following has high electron affinity ?

(A) Flourine (B) Chlorine (C) Nitrogen (D) Oxygen

28. Which one of the following is para magnetic ?

(A) N_2 (B) CO (C) NO (D) O_3

29. The sugar which is present in milk is :

(A) Lactose (B) Galactose (C) Glucose (D) Maltose

30. The Brown Ring test is used for the detection of :

(A) Sulphate (B) Phosphate (C) Nitrate (D) Acetate

31. What is the Hybridisation of carbon in the singlet state of carbene ?

(A) sp (B) sp^2 (C) sp^3 (D) dsp^2

32. Diels-Alder reaction is an example for _____ cyclo addition.

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

33. A peptide bond is :

(A) -CO-NH- (B) $-CO-NH_2-$ (C) -CO-NHO- (D) -CHO-NH-

34. Sugar when reacted with conc. H_2SO_4 gives :

(A) Mannitol (B) Hydrogen (C) Carbon (D) Sucrose

35. Number of isoprene units in Diterpenoids is :

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

36. For soft soaps _____ is used.

(A) NH_4OH (B) NaOH (C) KOH (D) $Ca(OH)_2$

37. Real gases deviate from ideal behaviour at conditions of :

(A) Low pressure and high temperature

(B) High pressure and high temperature

(C) Low pressure and low temperature

(D) High pressure and low temperature

38. The number of atoms contained within a face centered cubic unit cell is :

(A) 1 (B) 8 (C) 4 (D) 2

39. To which point group H_2O belongs ?

(A) C_{3v} (B) C_{2h} (C) C_{2v} (D) D_{2h}

40. Select the ferrimagnetic substance.

(A) Fe_3O_4 (B) MnO (C) ClO_2 (D) CrO_2

41. Which is true about chemisorption ?

(A) It is irreversible (B) It is specific in nature

(C) Only monolayer adsorption (D) All the above

42. How many number of molecules are present in 22.414 litres of hydrogen at STP ?

(A) 22.4 (B) $22.4 \times 6.022 \times 10^{23}$

(C) 6.022×10^{23} (D) $2 \times 6.022 \times 10^{23}$

43. A property which progressively increases down a group in the periodic table is :

(A) Ionisation potential (B) Strength as a reducing agent

(C) Electron affinity (D) Electronegativity

44. Which of the following elements is a metalloid ?

(A) Sodium (B) Cobalt (C) Antimony (D) Tellurium

45. Hybridization of Be in $BeCl_2$ is :

(A) sp (B) sp^2 (C) sp^3 (D) dsp^2

46. The heat change in a chemical reaction at constant pressure is :

(A) ΔE (B) ΔH (C) $P\Delta V$ (D) ΔP

47. The pH of an aqueous solution is 5.2. Its pOH will be :

(A) 5.8 (B) 6.8 (C) 7.8 (D) 8.8

48. Which of the following is true at equilibrium ?

(A) Reactants and products are present in equal amounts

(B) Rates of the forward and backward reactions are equal

(C) Rates of the forward and backward reactions are zero

(D) None of these

49. An acid buffer can be prepared by mixing solutions of :

(A) NaOH and HCl (B) H_2SO_4 and Na_2SO_4

(C) CH_3COONa and CH_3COOH (D) NH_4Cl and NH_4OH

50. Which of the following is a peptide hormone ?

(A) Insulin (B) Adrenaline (C) Thyroxine (D) Testosterone

51. Which is a disaccharide ?

(A) Glucose (B) Raffinose (C) Sucrose (D) Starch

52. The central metal ion in chlorophyll is :

(A) Zn^{2+} (B) Cr^{2+} (C) Fe^{2+} (D) Mg^{2+}

53. Which is not a sweetening agent ?

(A) Saccharin (B) Cyclamate (C) Lecithin (D) Aspartame

54. Pyrimidine contains _____ nitrogen atoms.

(A) 1 (B) 2 (C) 0 (D) 3

55. pH of blood is in the range :

(A) 7.35 – 7.45 (B) 6.35 – 7.4 (C) 6.55 – 8.35 (D) 8.25 – 8.65

56. The increasing accumulation of insecticides in higher organism is called :

(A) Bio-cumulation (B) Bio-persistence

(C) Bio-concentration (D) Bio-accumulation

57. Radioactive decay follows _____ equation.

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

58. Mixture of conc. HCl and anhydrous $ZnCl_2$ is known as :

(A) Schiff's reagent (B) Lucas reagent

(C) Baeyer's reagent (D) Victor Meyer's reagent

59. In metallic conductors the electricity is carried by the movement of :

(A) Ions (B) Atoms (C) Molecules (D) Electrons

60. In order to discharge 1 mole of Al^{3+} ion in electrolysis the quantity of electricity required is :

(A) 1 Faraday (B) 2 Faraday (C) 3 Faraday (D) $\frac{1}{3}$ Faraday

61. Baking soda is :

(A) $NaHCO_3$ (B) Na_2CO_3 (C) Na_2SO_4 (D) K_2CO_3

62. Flame test is not given by :

(A) Ca (B) Be (C) Sr (D) Ba

63. Nitrolim is :

(A) $CaCN_2$ (B) $Ca(NO_3)_2$ (C) $Ca(CN)_2$ (D) $CaCN_2$ and C

64. Which of the following hydride is electron deficient molecule ?

(A) C_2H_6 (B) NaH

(C) B_2H_6 (D) None of the above

65. Cryolite is chemically :

(A) Sodium aluminium fluoride (B) Magnesium silicate

(C) Calcium magnesium carbonate (D) Sodium borofluoride

66. The site of oxidation in an electrochemical cell is :

(A) Cathode (B) Anode (C) Solvent (D) None

67. Which of the following can be used to measure pH ?

(A) Glass electrode (B) Hydrogen electrode

(C) Concentration cell (D) All the above

68. A first order reaction requires 12 months for the concentration of the reactant to be reduced to 25% of its original value. Its half life is :

(A) 6 months (B) 12 months (C) 18 months (D) 24 months

69. Which is more effective in coagulating a negative solution ?

(A) Na^+ (B) Ba^{2+} (C) Al^{3+} (D) All same

70. The phase rule can be expressed mathematically as :

(A) $F+P=C+2$ (B) $F=C-P+2$ (C) $P=C-F+2$ (D) All

71. Zeolites are used as :

(A) Building materials (B) Germs

(C) Pigments (D) Ion exchangers

72. Two wave functions ψn and ψm are orthogonal if :

(A) $\int \psi n \psi m \, d\tau = 1$ (B) $\int \psi n \psi m \, d\tau = 0$ (C) $\int \psi^2 n \psi^2 m \, d\tau = 1$ (D) $\int \psi^2 n \psi^2 m \, d\tau = 0$

73. The work done during the expansion of 1 mole of an ideal gas against a constant external pressure of 1 atm from a volume of 10 dm^3 to a volume of 30 dm^3 is :

(A) 80 dm^3 atm (B) 40 dm^3 atm (C) 20 dm^3 atm (D) 60 dm^3 atm

74. The expression for energy of the particle in a one dimensional box is :

(A) $n^2h^2/8ma^2$ (B) $n^2/8hm^2a^2$ (C) $nh/4m^2a^2$ (D) $n^2h^2/4m^2a^3$

75. The first organic compound synthesized in the laboratory is :

(A) Urea (B) Lactic acid (C) Vitamin A (D) Canesugar

76. Cyclo alkanes have the general formula :

(A) C_nH_{2n+2} (B) C_nH_{2n} (C) C_nH_{2n-2} (D) C_nH_{2n-6}

77. The C-C bond length in alkanes is :

(A) 1.54Å (B) 1.65Å (C) 1.26Å (D) 1.33Å

78. Tetra ethyl lead is used as :

(A) Fire extinguisher (B) Pain killer

(C) Lubricating oil (D) Petroleum additive

79. Benzene can be directly converted to toluene by :

(A) Wurtz reaction (B) Friedel Craft's reaction

(C) Kolbe reaction (D) None of these

80. Acid catalyzed dehydration of alcohols takes place through :

(A) carbocation intermediate (B) carbanion intermediate

(C) carbene intermediate (D) free radical intermediate

81. Electrophiles are :

(A) Negatively charged particles (B) Lewis bases

(C) Lewis acids (D) May be Lewis acids or Lewis bases

82. In Lassaigne's test for nitrogen the blue colour is due to the formation of :

(A) Ferric ferrocyanide (B) Potassium ferrocyanide

(C) Sodium ferrocyanide (D) Sodium cyanide

83. Chlorine present in an organic compound can be estimated by :

(A) Dumas method (B) Victor Meyer's method

(C) Carius method (D) None of these

84. Lyman series of lines in hydrogen spectrum is formed during the transition of electrons from higher levels to :

(A) First orbit (B) Second orbit (C) Third orbit (D) Fourth orbit

85. A metal used in storage battery is :

(A) Sn (B) Cu (C) Ni (D) Pb

86. CH_3-C≡CH and CH_3-CH_2-C≡CH form a pair of :

(A) Structural isomers (B) Tautomers

(C) Homologues (D) Optical isomers

87. The reaction used to prepare acetoacetic ester from ethyl acetate is known as :

(A) Michael reaction (B) Claisen condensation

(C) Cannizzaro reaction (D) Claisen-Schmidt reaction

88. Ziesel's method is used to estimate_____ group in organic compounds.

(A) alcoholic (B) amino (C) carboxyl (D) alkoxy

89. An inverse spinel from the following is :

(A) Mn_3O_4 (B) Fe_3O_4 (C) Al_2O_3 (D) CO_2O_3

90. At triple point :

(A) Only the temperature is fixed

(B) Only the pressure is fixed

(C) Both temperature and pressure are fixed

(D) None

91. What type of colloid is milk ?

(A) Foam (B) Gel (C) Emulsion (D) Solution

92. A system with zero degree of freedom is known as :

(A) Invariant (B) Bivariant (C) Monovariant (D) None

93. Insects can walk on the surface of water due to :

(A) Fluidity (B) Surface tension (C) Viscosity (D) Friction

94. Liquid crystals have :

(A) Properties of a super cooled liquid

(B) Properties of amorphous solids

(C) The fluidity of a liquid and optical properties of a solid

(D) None of these

95. $CaCO_3 \rightarrow CaO + CO_2$ is an example of _____ component system.

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

96. Which is a molecular crystal ?

(A) Graphite (B) Ice

(C) Aluminium (D) Sodium Chloride

97. Indicator used in the titration between oxalic acid and NaOH is :

(A) Methyl orange (B) Diphenyl amine

(C) $KMnO_4$ (D) Phenolphthalein

98. The wave number of a radiation having wavelength 4000 Å is :

(A) 25000 cm^{-1} (B) 2500 cm^{-1} (C) 6000 cm^{-1} (D) 40000 cm^{-1}

99. pH of a 0.001 M HCl solution is :

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

100. Ionic strength of 0.20 molal KCl is :

(A) 0.40 (B) 0.20 (C) 0.85 (D) 0.75

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