Arts, Commerce & Science College, Bodwad.

Question Bank

Class: F.Y.B.Sc.   Sem: II

Subject: Physical & Inorganic Chemistry   Paper Name: Chemistry-I

1. The average kinetic energy of a gas molecule is_____

   A. Inversely proportional to absolute temperature.

   B. Directly proportional to absolute temperature.

   C. Equal to square of absolute temperature.

   D. Directly proportional to square root of absolute temperature.

2. For the mole of a gas, the kinetic energy of the gas molecule is_____

   A. K.E. = ½ RT

   B. K.E. = 5/2 RT

   C. K.E. = 3/2 RT

   D. K.E. = 7/2 RT

3. The real gas shows nearly ideal behaviour at_____

   A. Low pressure and low temperature.

   B. High pressure and high temperature.

   C. High pressure and low temperature.

   D. Low pressure and high temperature.

4. The unit of van der Waal constant 'a' is _____

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

   B. $atm.lit^{-1}.mol^{-1}$

   C. $atm.lit^2.mol^{-2}$

   D. $atm.lit^{-1}.mol^{-2}$

5. The compressibility factor z for an ideal gas is_____

   A. zero   B. < 1 C. > 1 **D. $= 1$**

6. When z > 1 the gas _____

    A. more compressible   B. less compressible   C. expandable   D. not expandable

7. the unit of van der Waal constant 'b' is_____

    A. $lit.atm.deg^{-1}.mol^{-1}$ B. $atm.deg^{-1}$ **C. $lit.mol^{-1}$**   D. $deg^{-1}.K$

8. The incompressible volume per mole of a gas is related with_____

    A. constant 'a'   **B. constant 'b'**   C. constant 'R'   D. critical constant

9. The critical volume is related with van der Waal constant as,

    A. $Vc = 3/b$ B. $Vc = 4/3\ b$ **C. $Vc = 3b$**   D. $Vc = b^2$

10. Rates of diffusion of two gases under identical conditions of temperature and pressure are inversely proportional to _____

    A. square of densities

    B. square of molar mass

    C. square root of molar masses or densities

    D. none of these

11. Graham's law of diffusion is valid under identical conditions of _____

    A. volume and pressure

    B. temperature and pressure

    C. volume and temperature

    D. equal number of moles.

12. During elastic collision of the molecules,_____

    A. the K.E. remain constant

    B. the K.E. increases

    C. the K.E. decreases

    D. there is increase in temperature.

13. The temperature at which the real gas obeys ideal gas equation over an appreciable range of pressure is_____

A. critical temperature
B. absolute temperature
C. Boyle's temperature
D. reduced temperature

14. The compression of nitrogen gas at different temperature shows its Boyle's temperature is,

A. -70^0C
B. -35^0C
C. -200^0C
D. 50^0C

15. Andrew's isotherm proved critical temperature for CO_2 is,

A. 48.1^0C
B. 31.1^0C
C. 21.1^0C
D. 13.1^0C

16. Molar gas constant is _____ to critical temperature.

A. directly proportional
B. inversely proportional
C. equal
D. 8 times

17. The van der Waal constant 'b' is always equal to_____

A. one third to critical volume
B. three times to critical volume
B. zero
D. reciprocal to critical volume

18. The ratio of molar gas constant to Avogadro's number is known as,

A. Boyle's point
B. critical constant
C. compressibility factor
D. Boltzman constant

19. K.E. of translation per molecule is always equal to,

A. 1.5 nkT
B. RT
C. PV
D. 0.5 mV^2

20. Liquification of gas depends on _____

A. Temperature of gas
B. pressure of gas
C. shape of container
D. nature of gas

21. The permanent gases like hydrogen, oxygen, nitrogen, have _____ critical temperature.

A. very low
B. very high
C. moderate
D. zero

22. The gases such as ammonia, methyl chloride, carbon dioxide, have _____critical temperature

   A. very low   B. fairly high

   C. absolute   D. zero

23. In Joule Thomson effect, there is fall in temperature of gas occur due to _____

   A. zero work done   B. work is done on the gas

   C. work is done by the gas   D. maximum work

24. Linde's process is based on _____

   A. van der Waal equation   B. law of corresponding states

   C. Joule Thomson principle   D. Andrew's method

25. In Linde's process, the gas is compressed to a pressure_____

   A. 50 atm   B. 500 atm   **C. 100 atm**   D. 300 atm

26. The gas used in refrigeration and air conditioning has _____

   A. low critical temperature   **B. high critical temperature**

   C. low temperature coefficient   D. high pressure

27. Physical properties of liquid are controlled by _____

   A. strength of repulsive forces   **B. strength of attractive forces**

   C. strength of covalent bond   D. strength of overlapping

28. The air drop liquid is spherical in shape because_____

   A. for a given volume sphere has maximum surface area

   B. for a given volume sphere has minimum surface area

   C. of internal frictional forces

   D. of capillary action

29. The cgs unit of surface tension is_____

   A. Newton/meter   **B. dyne per centimeter**   C. Poise   D. None

30. Surface tension of liquid _____ with rise in temperature

   A. Increases   B. Not changes   **C. Decreases**   D. Becomes zero

31. When the capillary is placed in a liquid whose adhesive forces are stronger then the meniscus of liquid is_____

   A. Concave   B. Convex   C. Spherical   D. Indefinite

32. When the capillary is placed in a liquid whose cohesive forces are stronger then the meniscus of liquid is_____

   A. Concave   **B. Convex**   C. Spherical   D. Indefinite

33. When glass capillary dips in water, the meniscus of water is_____

   A. Concave   **B. Convex**   C. Spherical   D. Indefinite

34. Surface tension of liquid is determined by_____

   A. Viscometer   B. Refractometer   **C. Stalagmometer**   D. Eudiometer

35. When liquid is flowing through pipe, the velocity of the central layer is_____

   A. minimum   B. slow   C. zero   **D. fast**

36. The molecules having spherical shape has _____

   A. Higher viscocity   **B. Lower viscocity.**

   C. Zero viscocity   D. Not related with viscocity.

37. The SI unit of surface tension is _____

   A. Newton per meter   B. Joule per second   C. Dyne per cm   D. Poise per cm

38. The determination of surface tension in capillary rise method is based on the formula,

   A. $2\gamma = hrdg$ B. $2\gamma = h^2dg$ C. $2\gamma = mhrdg$ D. $2\gamma = \pi hr^2dg$

39. Viscosity of the liquid is a measure of _____

A. repulsive forces between the liquid molecules   **B. Frictional resistance**

C. intermolecular forces between the molecules   D. Hydrogen bonding

40. The reciprocal coefficient of viscosity of the liquid is_____

   A. internal friction   B. surface tension   **C. fluidity of the liquid**   D. temp. coeff.

41. Generally viscosity of liquid _____ with temperature.

   A. Decreases   B. Increases   C. Doubles   D. Independent

42. The liquid with high intermolecular forces have _____ viscosity

   A. Higher   B. Lower   C. Moderate   D. Zero

43. The viscosity of hot groundnut oil is _____ than cold groundnut oil.

   A. Higher   **B. Lower**   C. not related   D. same

44. Liquid of high molecular weight always have _____ viscosity.

   A. Lower   **B. Higher**   C. Double   D. Multiple

45. The unit of coefficient of viscosity is _____

   A. dyne.cm^{-2}.sec   **B. poise**   C. Newton per meter   D. dyne.cm^{-1}

46. The study of flow of heat or any other form of energy into or out of system undergoing physical or chemical change is called,

   A. thermochemistry   B. thermo kinetic   **C. thermodynamics**   D. photochemistry

47. Thermodynamics is applicable to _____
   A. microscopic system   **B. macroscopic system**
   C. homogeneous system only   D. heterogeneous system

48. A process which takes place on its own accord is called_____ process.
   A. reversible   B. irreversible   **C. spontaneous**   D. non-spontaneous

49. Mixing of two or more gases is a _____process.

   A. reversible   B. irreversible   **C. spontaneous**   D. non-spontaneous

50. All the spontaneous processes are_____
   A. unidirectional and instantaneous   B. reversible and slow
   C. accompanied by external source   D. occurred with heat energy

51. Entropy is measure of _____ of the molecules in the system.
   A. concentration   B. velocity   C. zig-zag motion   **D. randomness or disorder**

52. The unit of entropy is_____
   A. $cal.K^{-1}.mole^{-1}$ B. $JK^{-1}mol^{-1}$ C. entropy unit   **D. all of these**

53. The SI unit of entropy is _____
   A. $cal.deg^{-1}$ **B. joule per degree kelvin**   C. $erg.deg^{-1}$ D. $lit.atm.deg^{-1}$

54. During spontaneous process, entropy of the system_____
   A. increases   B. decreases   C. remain same   D. fluctuates

55. For exothermic reaction, entropy is _____
   A. positive   **B. negative**   C. zero   D. constant

56. Entropy of the system is_____ property
   A. extensive   B. intensive   C. chemical   D. thermo chemical

57. Entropy change for isothermal reversible process is always_____
   A. positive   B. negative   **C. zero**   D. constant

58. Entropy change for isothermal irreversible process is always_____
   A. positive   **B. negative**   C. zero   D. constant

59. The entropy change in isothermal reversible process is obtained by_____
   A. $\Delta S = nR\ln (V_1/V_2)$ B. $\Delta S = nR\ln (V_2/V_1)$
   C. $\Delta S = nRT \ln(P_1/P_2)$ D. $\Delta S = nRT \ln (T_1/T_2)$

60. The entropy change in isobaric process is given by_____

A. $\Delta S = nC_v \ln (T_2/T_1)$ B. $\Delta S = nC_p \ln (V_2/V_1)$

C. $\Delta S = nC_p \ln (T_2/T_1)$ D. $\Delta S = nC_v \ln (V_2/V_1)$

61. The entropy change in isochoric process is given by_____

A. $\Delta S = nC_v \ln (T_2/T_1)$ B. $\Delta S = nC_p \ln (V_2/V_1)$

C. $\Delta S = nC_p \ln (T_2/T_1)$ D. $\Delta S = nC_v \ln (V_2/V_1)$

62. Physical transformation always occurs at_____

A. constant volume   B. constant pressure   **C. constant temperature**   D. None

63. Entropy of the system increase in the order of_____

A. gas < liquid < solid   **B. solid < liquid < gas**

C. gas < solid < liquid   D. liquid < gas < solid

64. Entropy of mixing of two or more gases mainly depends on _____

A. pressure of the gases   B. volume of the gases

C. mole fraction of the gases   D. nature of the gases

65. Entropy change during fusion is_____ to fusion temperature of the system.

A. directly proportional   **B. inversely proportional**

C. equal   D. twice multiple

66. Entropy change during transition and heat of transition are_____

A. Equal   B. reverse to each other   **C. directly proportional**   D. inversely proportional

67. Which of the following statements is true.

A. All ores are minerals   **B. All minerals are ore**

C. All mineral cannot be an ore   D. An ore cannot a mineral

68. The impurities in the mineral are called_____

A. Flux   B. alloy   **C. gangue**   D. slag

69. In thermite process, the reducing agent is _____
   A. C   B. Zn   C. Na   **D. Al**

70. Electrolyte reduction process is used for the extraction of _____
   A. alkali metals   B. alkaline earth metals   C. aluminium   **D. all of these**

71. Leaching is a process of_____
   A. reduction   B. refining   **C. concentration**   D. roasting

72. The main function of roasting is _____
   A. to remove volatile impurities   B. oxidation   C. reduction   D. to make slag

73. The process of converting hydrated alumina into anhydrous alumina is called_____
   A. roasting   B. smelting   C. dressing   **D. calcination**

74. Froth floatation process is based on_____
   A. specific gravity of the ore particles   B. magnetic property of the ore particles
   C. wetting property of the ore particles   D. electrical property of the ore particles

75. Auto reduction process is used in the extraction of _____
   A. Cu and Hg   B. Zn and Hg   C. Cu and Al   D. Fe and Pb

76. In the roasting process, the ore is heated_____
   A. for removing moisture and volatile matter   **B. below its melting point**
   C. in the presence of flux to remove impurity   D. none of these

77. Which of the following is used as a foaming agent in froth floatation process
   A. pine oil   B. sodium cyanide   C. copper sulphate   D. KCN

78. The function of flux during the smelting of the ore is _____
   A. to make the ore porous   **B. to remove gangue**

C. to facilitate reduction   D. to facilitate oxidation

79. Metallurgy is the process of _____

A. concentrating the ore   B. roasting the ore

C. extracting the metal from the ore   D. adding carbon

80. Froth floatation process is used for the concentration of _____

A. oxide ores   **B. sulphide ores**   C. chloride ores   D. amalgams

81. The substance which is mixed with the ore for removal of impurities is termed as_____

A. slag   B. gangue   **C. flux**   D. catalyst

82. Which of the fluxes is used to remove acidic impurities in metallurgical process?

A. silica   **B. lime stone**   C. sodium chloride   D. sodium carbonate

83. Auto reduction process is in the extraction of

A. Cu   B. Al   C. Zn   D. Mn

84. In alumino-thermite process, Al is used as_____

A. oxidizing agent   B. flux   **C. reducing agent**   D. solder

85. Difference in the specific gravity/ density of the metallic ore and impurity particles is the basis

of _____

A. gravity separation   B. magnetic separation

C. molecular attraction   D. froth floatation

86. Thermite process is used for the extraction of metals, whose oxides are

A. fusible   **B. not easily reduced by carbon**

C. not easily reduced by hydrogen   D. strongly basic

87. Which one of the following is not a basic flux

A. $CaCO_3$ B. CaO   **C. SiO_2**   D. MgO

88. Liquation process of refining of metals is used for the refining of,

A. low melting metal   B. high melting metal   C. less fusible metal   D. infusible metal

89. The distillation process is used for the purification of volatile metals like,

A. Pb   **B. Hg**   C. Cu   D. Na

90. The process of extracting the metal from its ore is called,

A. Refining   B. Leaching   **C. Metallurgy**   D. Concentration

91. The purification method for impure metal based upon the electrolysis is called_____

A. Electrolytic refining   B. Liquation   C. Distillation   D. Hydro metallurgy

92. What is the general electronic configuration of group IV A element ?

A. ns^2np^4 **B. ns^2np^2**   C. ns^2np^6 D. ns^2

93. In ground state, each carbon atom has _____ unpaired electrons.

A. 2   B. 3   C. 4   D. 5

94. In graphite, each carbon atom is_____ hybridized.

A. sp^2   B. sp^3 C. dsp^2 D. sp

95. Carbon atoms in diamond are bonded with each other in a _____configuration.

A. Linear   B. Planar   **C. Tetrahedral**   D. Octahedral

96. The number of empty orbitals in the valance shell of phosphorus is,

A. 5   B. 3   C. 2   D. 0

97. Diamond is hard because,

A. All four valance electrons are bonded to each carbon

B. It is a giant molecule.

C. It is made of 2 carbon atoms.

D. It cannot be burnt.

98. Which form of the carbon has two-dimensional sheet like structure?

   A. Diamond   **B. Graphite**   C. Coal   D. Coke

99. Red phosphorus is less reactive than white phosphorus, because

   A. Its colour is red   **B. It is highly polymerized**   C. It is tetratomic   D. It is hard

100. Which of the following element shows allotropy?

   A. N   **B. P**   C. Sb   D. Bi