1to1 GURU
Learn to Lead, Learn to Succeed

Date :-17/02/2022 **Time :-120 Minutes** **Exam Name :-1to1Guru-TestSeries#2** **Mark :- 200**

CHEMISTRY

1. The IP_1, IP_2, IP_3, IP_4, and IP_5 of an element are 7.1, 14.3, 34.5, 46.8, 162.2 eV respectively. The element is likely to be:

(a) Na **(b)** Si **(c)** F **(d)** Ca

2. 6.4 g of SO_2 at 0°C and 0.99 atm pressure occupies a volume of 2.241 L. Predict which of the following is correct?

(a) The gas is ideal

(b) The gas is real with intermolecular attraction

(c) The gas is real without intermolecular repulsion

(d) The gas is real with intermolecular repulsion greater than intermolecular attraction

3. Which one of the following arrangements represents the correct order of electron gain enthalpy (with negative sign) of the given atomic species? (2005)

(a) $S < O < Cl < F$ **(b)** Cl $< F < S < O$

(c) $F < Cl < O < S$ **(d)** $O < S < F < Cl$

4. The double bonds between the two carbon atoms in ethylene consists of:

(a) Two sigma-bonds at right angles to each other.

(b) One sigma-bond and one pi-bond

(c) Two pi-bonds at right angles to each other

(d) Two pi-bonds at an angle of 60° to each other

5. The ground state term symbol for an electronic state is governed by

(a) Heisenberg s principle **(b)** Hund s rule

(c) Aufbau principle **(d)** Pauli exclusion principle

6. A balloon filled with methane CH_4 is pricked with a sharp point and quickly plunged into a tank of hydrogen at the same pressure. After sometime, the balloon will have

(a) Enlarged **(b)** Collapsed

(c) Remained unchanged in size

(d) Ethylene (C_2H_4) inside it

7. Density of a 2.05 M solution of acetic acid in water is 1.02g/mL. The molality of the solution is:

(a) 1.14 mol kg^{-1} **(b)** 3.28 mol kg^{-1}

(c) 2.28 mol kg^{-1} **(d)** 0.44 mol kg^{-1}

8. A gas can expand from 100 mL to 250 mL under a constant pressure of 2 atm. The work done by gas is

(a) 30.38 J **(b)** 25 J **(c)** 5 kg J **(d)** 16 J

9. According to IUPAC nomenclature, a newly discovered element has been named as Uun. The atomic number of the element is

(a) 111 **(b)** 112 **(c)** 109 **(d)** 110

10. For the formation of covalent bond, the difference in the value of electronegativities should be:

(a) Equal to or less than 1.7 **(b)** More than 1.7

(c) 1.7 or more **(d)** None of the above

11. Calculate the pOH of asolution at 25^0C that contains $1 \times 10^{-10}M$ ofhydronium ions, i.e. H_3O^+ (2007)

(a) 4.000 **(b)** 9.000 **(c)** 1.000 **(d)** 7.000

12. 50 mL of hydrogen diffuses through small hole from a vessel in 20 min. Time taken for 40 mL of oxygen to diffuse out under similar conditions will be

(a) 12 min **(b)** 32 min **(c)** 8 min **(d)** 64 min

13. The Joule-Thomson coefficient for a gas is zero at:

(a) Inversion temperature **(b)** Critical temperature

(c) Absolute temperature **(d)** Below 0°C

14. A gaseous mixture of 2 moles of A , 3 moles of B , 5 moles of C and 10 moles of D is contained in a vessel. Assuming that gases are ideal and the partial pressure of C is 1.5 atm, total pressure is

(a) 3 atm **(b)** 6 atm **(c)** 9 atm **(d)** 15 atm

15. An electron beam is accelerated through a potential difference of 10,000 volt. The de-Broglie wavelength of the electron beam is

(a) 0.123 A° **(b)** 0.356 A° **(c)** 0.186 A°

(d) 0.258 A°

16. Which of the following is non-permissible?

(a) $n = 4, l = 3, m = 0$ **(b)** $n = 4, l = 2, m = 1$

(c) $n = 4, l = 4, m = 1$ **(d)** $n = 4, l = 0, m = 0$

17. Which of the following oxides is most acidic in nature?

(a) BeO **(b)** MgO **(c)** CaO **(d)** BaO

18. Uncertainty in position of a particle of 25 g in space is 10^{-5}m . Hence, uncertainty in velocity (ms^{-1}) is (Planck s constant $h = 6.6 \times 10^{-34}$Js)

(a) 2.1×10^{-28} **(b)** 2.1×10^{-34} **(c)** 0.5×10^{-34}

(d) 5.0×10^{-24}

19. The number of water molecules is maximum in (2015)

(a) 1.8 gram of water **(b)** 18 grams of water

(c) 18 moles of water **(d)** 18 molecules of water.

20. One litre N_2, $\frac{7}{8}$ litre O_2 and 1 litre CO are taken in a mixture under indentical conditions of P and T. The amount of gases present in mixture is given by:

(a) $w_{N_2} = w_{O_2} > w_{CO}$ **(b)** $w_{N_2} = w_{CO} > w_{O_2}$

(c) $w_{N_2} = w_{O_2} = w_{CO}$ **(d)** $w_{CO} > w_{N_2} > w_{O_2}$

21. The empirical formula of a compound is CH_2. One mole of this compound has a mass of 42 g. Its molecular formula is

(a) C_3H_6 **(b)** C_3H_8 **(c)** CH_2 **(d)** C_2H_2

22. What is the maximum number of electrons in an atom that can have the following quantum numbers $n = 4, m_1 = +1$?

(a) 4 **(b)** 15 **(c)** 3 **(d)** 6

23. For the reaction,
$Na_2CO_3 + 2HCl \rightarrow NaCl + H_2O + CO_2$ Equivalent weight of Na_2CO_3 is

(a) $\frac{M}{2}$ **(b)** M **(c)** $2M$ **(d)** $\frac{M}{4}$

24. The orbital cylindrically symmetrical about x -axis is:

(a) p_z **(b)** p_y **(c)** p_x **(d)** d_{xz}

25. The temperature at which real gases obey the ideal gas laws over a wide range of pressure is called

(a) Critical temperature **(b)** Boyle temperature

(c) Inversion temperature

(d) Reduced temperature

26. The tenth elements in the Periodic Table resembles with the

(a) First period **(b)** Second period

(c) Fourth period **(d)** Ninth period

27. A certain mass of gas occupies a volume of 300 cc at 27°C and 620 mm pressure. The volume of this gas at 47°C and 640 mm pressure will be

(a) 400 cc **(b)** 510 cc **(c)** 310 cc **(d)** 350 cc

28. An electron is moving in Bohr s fourth orbit. Its de-Broglie wavelength is λ . What is the circumference of the fourth orbit?

(a) $\frac{2}{\lambda}$ **(b)** 2λ **(c)** 4λ **(d)** $\frac{4}{\lambda}$

29. Based on kinetic theory of gases following laws can be proved

(a) Boyle s law **(b)** Charles law

(c) Avogadro s law **(d)** All of these

30. Valency means:

(a) Combining capacity of an element

(b) Atomicity of an element

(c) Oxidation number of an element

(d) None of the above

31. The mass of one mole of electron is:

(a) 0.55 mg **(b)** 0.008 mg **(c)** 1.008 mg

(d) 0.184 mg

32. Carnallite in solution in water shows the properties of

(a) K^+, Mg^{2+}, Cl^- **(b)** $K^+, Cl^-, SO_4^{2-}, Br^-$

(c) K^+, Mg^{2+}, CO_3^{2-} **(d)** K^+, Mg^{2+}, Cl^-, Br^-

33. Which species has lone pair on central atom?

(a) CCl_4 **(b)** CH_4 **(c)** NH_4^+ **(d)** H_2O

34. The electronic configuration of C r^{3+} is

(a) $[Ar]3d^4 4s^2$ **(b)** $[Ar]3d^3 4s^0$ **(c)** $[Ar]3d^2 4s^1$

(d) $[Ar]3d^5 4s^1$

35. 10 g each of CH_4 and O_2 are kept in cylinders of same volume under same temperatures, give the pressure ratio of two gases

(a) 2 : 1 **(b)** 1 : 4 **(c)** 2 : 3 **(d)** 3 : 4

36. Matter is anything which occupies . . . A . . . and has . . . B . . . . Here A and B are

(a) Density and mass **(b)** Volume and mass

(c) Space and mass **(d)** None of these

37. In two vessels of 1 L each at the same temperature 1 g of H_2 and 1 g of CH_4 are taken, for these

(a) V_{rms} values will be same

(b) Kinetic energy per mol will be same

(c) Total kinetic energy will be same

(d) Pressure will be same

38. A certain gas takes three times as long to eff use out as helium. Its molecular mass will be (Mains 2012)

(a) 27 u **(b)** 36 u **(c)** 64 u **(d)** 9 u

39. The molecule having largest dipole moment among the following is

(a) CHl_3 **(b)** CH_4 **(c)** $CHCl_3$ **(d)** CCl_4

40. The electronic configuration of most electronegative elements is

(a) $1s^2, 2s^2, 2p^5$ **(b)** $1s^2, 2s^2, 2p^4, 3s^1$

(c) $1s^2, 2s^2, 2p^6, 3s^1, 3p^1$ **(d)** $1s^2, 2s^2, 2p^6, 3s^2, 3p^5$

41. If two molecules of A and B having mass 100 kg and 64 kg and rate of diffusion of A is 12×10^{-3}, then what will be the rate of diffusion of B?

(a) 15×10^{-3} **(b)** 64×10^{-3} **(c)** 5×10^{-3}

(d) 46×10^{-3}

42. If 250 mL of a solution contains 2.7 g of H_3PO_4 , the normality of the solution is:

(a) 4.0 **(b)** 0.33 **(c)** 0.4 **(d)** 0.1

43. The pH of an aqueous solution containing

(a) 2.523 **(b)** 3.0 **(c)** 2.471 **(d)** None of these

44. At what temperature will most probable speed of the molecules of the second number of alkyne series be the same as that of SO_2 at 527°C ?

(a) 347°C **(b)** 227°C **(c)** 800°C **(d)** 254°C

45. Bond energy of covalent O H bond in water is:

(a) Greater than bond energy of hydrogen bond

(b) Equal to bond energy of hydrogen bond

(c) Less than bond energy of hydrogen bond

(d) None of the above

46. The maximum energy is possessed by an electron, when it is present

(a) In nucleus **(b)** In ground state

(c) In first excited state

(d) At infinite distance from the nucleus

47. Which of the following oxides is not expected to react with sodium hydroxide?

(a) BeO **(b)** B_2O_3 **(c)** CaO **(d)** SiO_2

48. Equimolar solutions of the following substances were prepared separately. Which one of these will record the highest pH value? (2012)

(a) $BaCl_2$ **(b)** $AlCl_3$ **(c)** $LiCl$ **(d)** $BeCl_2$

49. A reversible chemical reaction is having two reactants, in equilibrium. If the concentration of the reactants are doubled then the equilibrium constant will

(a) Bo doubled **(b)** Become one fourth

(c) Be halved **(d)** Remain the same

50. Number of g-atoms of an element in one atom are:

(a) 6.023×10^{23} **(b)** 1.66×10^{-24} **(c)** 2×10^{23}

(d) None of these