Class : 11

Register Number

FIRST MID TERM TEST - 2023

Time Allowed : 1.30 Hours]   **CHEMISTRY**   [Max. Marks : 50

PART - I

I. Choose the correct answer.   10x1=10

1) When 22.4 litres of H_2 (g) is mixed with 11.2 litres of Cl_2 (g), each at 273 K at 1 atm the moles of HCl (g), formed is equal to

   (a) 2 moles of HCl (g)   (b) 0.5 moles of HCl (g)

   (c) 1.5 moles of HCl (g)   (d) 1 moles of HCl (g)

2) Which one of the following represents 180g of water?

   (a) 5 Moles of water   (b) 90 moles of water

   (c) $6.022 \times 10^{23}/180$ molecules of water   (d) 6.022×10^{24} molecules of water

3) Which of the following contain same number of carbon atoms as in 6 g of carbon-12.

   (a) 7.5 g ethane   (b) 8 g methane   (c) both (a) and (b)   (d) none of these

4) Splitting of spectral lines in an electric field is called

   a) Zeeman effect   b) Shielding effect   c) Compton effect   d) Stark effect

5) What is the maximum numbers of electrons that can be associated with the following set of quantum numbers ? n = 3, l = 1 and m = –1

   a) 4   b) 6   c) 2   d) 10

6) The total number of orbitals associated with the principal quantum number n = 3 is

   a) 9   b) 8   c) 5   d) 7

7) The maximum number of electrons in a sub shell is given by the expression

   a) $2n^2$ b) 2l + 1   c) 4l + 2   d) none of these

8) The energy of an electron in the 3rd orbit of hydrogen atom is –E. The energy of an electron in the first orbit will be

   a) –3E   b) -E / 3   c) -E / 9   d) –9E

9) The temperatures 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

10) Maximum deviation from ideal gas is expected from (NEET)

   a) CH_4 (g)   b) NH_3 (g)   c) H_2 (g)   d) N_2 (g)

II Answer any FIVE .(18 is compulsory question)   5X2=10

11) Define mole.   kk/ 11 / Che / 1

12) What is the empirical formula of Fructose ($C_6H_{12}O_6$) ?

13) What is lattice energy?

14) For each of the following, give the sub level designation, the allowable m values and the number of orbitals i) n = 4, l =2, ii) n =5, l = 3 iii) n=7, l=0

15) State Boyle's law.

16) Explain the observation-The tyre of an automobile is inflated to slightly lesser pressure in summer than in winter

17) State the first law of thermodynamics.

18) How many radial nodes for 2s, 4p, 5d and 4f orbitals exhibit? How many angular nodes?

III. **Answer any FIVE. (Question no: 26 is compulsary)**   **5X3=15**

19) Calculate the molar mass of Sulphuric acid [H_2SO_4]

20) State and explain pauli exclusion principle.

21) Describe the Aufbau principle

22) State Gay Lusaac' law.

23) Distinguish between diffusion and effusion.

24) What is the usual definition of entropy? What is the unit of entropy?

25) Identify the state and path functions out of the following:

   a) Enthalpy   b) Entropy   c) Heat

   d) Temperature   e) Work   f) Free energy.

26) Define orbital? what are the n and l values for 3px and $4d_{x^2-y^2}$ electron?

IV   **Answer the following questions:**   **3X5=15**

27) (a) Calculate the empirical formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen?   (OR)

   (b) Write note on Quantum number.Which reveal information about the shape, energy, orientation and size of orbitals?

28) (a) i) Write Hund's Rule

        ii)Give the electronic configuration of Cu and Cr.

                          (OR)

   (b) Derive the values of critical constants in terms of van der Waals constants.

29) (a) State the various statements of second law of thermodynamic

                          (OR)

   (b) List the characteristics of Gibbs free energy.