CLASS XI

CHEMISTRY

FIRST TERMINAL EXAMINATION-2014

MM:70

TIME : 3 Hrs

ONE MARK QUESTIONS

1. State and Explain the law of constant composition.
2. Assign the position of the element having outer electronic configuration, $(n-1)d^2ns^2$ for n=4
3. What is meant by the abbreviation FGD?
4. Draw the lewis structure of CO_3^{2-}.
5. Name the species that will be isoelectronic with each of the following atoms or ions.
   - (i) Mg^{2+}
   - (ii) Rb^+

TWO MARKS QUESTIONS

6. What is the value of 1 mole of gas in terms of
   - (i) Volume
   - (ii) Mass
7. An ion with mass number 37 possesses one unit of negative charge. If the ion contains 11.1% more neutrons than the electrons, find the symbol of the ion.
8. (i) Calculate the number of electrons which will together weigh 1 gram.
   - (ii) Calculate the mass and charge of one mole of electrons.
9. Predict the shapes of the following molecules using VSEPR theory
   - (i) PH_3
   - (ii) $BeCl_2$
10. What is eutrophication? How does it threaten the development of fish?

THREE MARKS QUESTIONS

11. Write three differences between σ bond and π bond.
12. What are the frequency and wavelength of a photon during a transition from n=5 state to n=2 state in the He^+ ion.
13. (i) State Heisenberg uncertainty principle.
    - (ii) List the quantum numbers (m and l) for 3d orbitals
    - (iii) Write the electronic configuration of Cu^+ (Z=29)
14. Assign a reason for each of the following statements.
    - (i) First ionization enthalpy of boron (Z=5) is slightly less than that of beryllium (z=4).
    - (ii) Electron gain enthalpy of F is less negative than Chlorine.
    - (iii) The increasing order of reactivity among group I elements is Li< Na<K<Rb<Cs whereas that of group 17 is F> Cl> Br> I.
15. Which out of NH_3 and NF_3 has higher dipole moment and why?
16. Write short notes on:
    - (i) BOD
    - (ii) Photochemical smog
    - (iii) Ozone hole

17. A compound is composed of 74% C, 8.7% H, and 17.3% N. determine the empirical formula of the compound. If the molecular mass of the compound is 162, what is its molecular formula?

18. (i) How are 0.5mol Na_2CO_3 and 0.5 M Na_2CO_3 different?

(ii) How many subshells are present in M-shell?

19. (i) Write the general electronic configuration of f-block elements.

(ii) Write the IUPAC name and symbol of atomic number 119.

(iii) What is ionization enthalpy?

20. (i) State Pauli's exclusion principle.

(ii) Write the electronic configuration of Na and find out the number of unpaired electrons present in it.

21. (i) Calculate the molarity of oxalic acid in the solution prepared by dissolving its 2.52 gm in enough water to form 250 ml of the solution.

(ii) Round off the following in three significant figures

(a) 0.1239   (b)   0.01268

22. (i) Write the favourable factors for the formation of ionic bond.

(ii) Discuss the shape of BH_3 molecule using VSEPR theory.

FOUR MARKS QUESTION

23. At a sweet shop in Dilshad Nagar, Rahul bought some sweets. He requested the sales girl to put the sweet box in a polythene bag. The sales girl refused to do so, instead she kept the sweet box in a paper bag. After reading the above passage, answer the following:

(i) Why did the sales girl refuse to put the sweet box in a polythene bag?
(ii) As a student of chemistry, why would you advocate the use of paper bags instead of polythene bags?
(iii) Which value is promoted through the use of paper bag?
(iv) Suggest any one activity to promote these values.

FIVE MARKS QUESTIONS

24. (i) Calculate the molarity of solution of ethanol in water in which the mole fraction of ethanol is 0.040. If density of water is 1 g cm^{-3}.

- $CaCO_{3(s)} + 2 HCl_{(aq)} \rightarrow CaCl_{2(aq)} + CO_{2(g)} + H_2O_{(l)}$ What mass of $CaCO_3$ is required to react completely with 25 mL of 0.75 M HCl.

25. (i) What is the maximum number of emission lines when the excited electrons of a H atom in n=6 drops to the ground state?

(ii) What is the energy in joules required to shift the electron of the hydrogen atom from the first Bohr orbit to the fifth Bohr orbit and what is the wavelength of the light emitted when the electron returns to the ground state?

26. (i) Explain why cations are smaller and anions are larger in radii than their parent atoms.

(ii) What is the significance of the terms 'isolated gaseous atom' and 'ground state' while defining the ionization enthalpy and electron gain enthalpy?