N.C. JINDAL PUBLIC SCHOOL

ASSIGNMENT

Term-2

Class – XI

Subject - Chemistry

QUESTIONS:

Q1 Which Quantum number tends to specify the orientation in space for an orbital?
Q2 Is CaF_2 linear or bent or neither of the two? Justify.
Q3 Melting point of MgO is greater than NaCl. Why?
Q4 What is the basic idea of VSEPR theory?
Q5 Predict which of the following molecules have higher dipole moment and why?

CS_2 or OCS

Q6 Which type of bond is present in HCl?
Q7 Define normality.
Q8 The first excited state refers to the electronic configuration with an energy closest to but higher than that of ground state. Write electronic configuration of the first excited state of (i) Carbon (ii) Nitrogen

Q9 What are paramagnetic and diamagnetic substances?
Q10 Write electronic configurations of the following species:
Cr and Cu
(Atomic numbers of Cr and Cu are 24 and 29 respectively)
Q11 Draw the orbital diagram of ethylene on the basis of hybridization involved.
Q12 What is Photoelectric effect? Which factors determine the energy and number of electrons in this phenomenon?
Q13 What are isoelectronic species? Arrange the following in the decreasing order of size.

Na^+, Mg^{2+}, Al^{3+} F^-, N^{3-}, O^{2-}

Q14 What do you mean by hardness of water? What are its types? How can we remove it?
Q15 Write elements of the second period of the periodic table and identify the one
(i) With largest atomic size
(ii) With smallest atomic size
(iii) With lowest ionization enthalpy
(iv) With highest electron gain enthalpy.
Q16 Give reasons:
(i) $AlBr_3$ is a poor conductor of electricity in molten state.
(ii) The solution of alkali metals in liquid ammonia is blue in colour.
Q17 Explain (i) common ion effect (ii) buffer solution.
Q18 In astronomical observations, signals observed from the distant stars are generally weak. If the photon detector receives a total of 3.15X10-18J from the radiation of 600nm, calculate the number of photons received by the detector.
Q19 What is atomic radius? What are its different types? Define each. Which one of them is largest and why?
Q20 What is Ionisation enthalpy? What are the factors which affect ionization enthalpy?
Q21 Give reasons:
(i) Ionisation enthalpy of Boron is found to be lower than Beryllium which is against the trend.
(ii) Second electron gain enthalpy of oxygen is positive.
(iii) Electron affinity of fluorine is lower than that of chlorine.
Q22 Write short note on the following:. (i) Markovnikovs rule (ii) peroxide effect (iii) Wurtz reaction.
Q23 Can an ionic compound behaves like a covalent compound? If yes, then what are the conditions? Explain.

Q24 The concentration of cholesterol ($C_{22}H_{46}O$) in normal blood is approximately 0.005 M. How many grams of cholesterol are in 750 ml of blood?

Q25 A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96g. What are its empirical and molecular formulas?

Q26 Ammonia gas is prepared by warming solid ammonium chloride with aqueous sodium hydroxide solution. $NH_4Cl + NaOH \rightarrow NH_3(g) + H_2O(l) + NaCl\ (aq)$

(i) How many grams of NH_4Cl are required for every 30 g NaOH used up?

(ii) How many moles of NaCl will be formed?

(iii) How many grams of ammonia will be evolved?

Q27 (a) Write at least four differences between orbit and orbital.

(b) Write the values of all the four quantum numbers for the orbital 5f.

(c) What is spectrum? Explain one of its types.

OR

(a) Write short notes on

(i) Quantum numbers (ii) Bohr's Model

(b) Define isotones and give examples.

Q28 (a) Write four properties of d block elements.

(b) What is electro negativity? How it changes in a period and in a group?

(c) What is electron gain enthalpy?

OR

(i) What transition in the hydrogen spectrum would have the same wavelength as the Balmer transition n=4 to n=2 of He^+?

(ii) Explain why Mg^{2+} is smaller than O^{2-} although both have same electronic configuration.

(iii) What are f block elements?

(iv) Predict the period and group of the element with atomic number 54.

Q29 (a) What is Hybridisation? Explain the shape of ammonia molecule.

(b) Write any four differences between sigma and pi bonds?

OR

(a) What is the basic idea of molecular Orbital Theory? Predict the bond order of the following species on the basis of molecular orbital theory.

N_2, N_2^+, N_2^-

(b) Predict the shapes of the following compounds on the basis of VSEPR theory:

(i) SF_4 (ii) H_2O

Q30 i) Why does benzene undergo electrophillic substitution easily and nucleophillic substitution with difficulty?

ii) Complete the followings:

a) $CH_3COOH + NaOH \rightarrow$

b) $CH_3CH=CHCH_3 \rightarrow$ (Ozonolysis and hydrolysis in presence of Zn)

c) $C_6H_6 + Cl_2 \rightarrow$ (in presence of sunlight)

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