CBSE Class 11 Chemistry Sample Paper Set 8

SUBJECT - CHEMISTRY

CLASS - XI

Time: 3:00 Hrs. M.M. 70 MARKS

GENERAL INSTRUCTIONS

1. All questions are compulsory.
2. Question no. 1 to 5 are very short answer questions and carry 1 mark each.
3. Question no. 6 to 10 are short answer questions and carry 2 marks each.
4. Question no. 11 to 22 are short answer questions and carry 3 marks each.
5. Question no. 23 is value based question and carry 4 marks.
6. Question no. 24 to 26 are long answer type questions and carry 5 marks each.
7. Use log table if necessary , use of calculator is not allowed.

,0.1: What do you understand by "Limiting reagent". (1)

,Q.2: State Hiesenberg Uncertainty Principle. (1)

0.3: The value of Vander waal's constants a and b are as given for two gases

Gases	a (Atm L^2 mol^{-2})	b (L mol^{-1})
CO_2	3.6	0.043
$S0_2$	6.7	0.056

Out of thes':1 two gases which gas molecules will possess largest magnitude of intermolecular forces of attraction ? (1)

Q.4: In Lasssaigne's test for detection of nitrogen in an organic compound , the blue colour appears due to the formation of ..... (1)

Q.5: For a reaction both enthalpy change and entropy change are positive.Under what conditions the reaction will be spontaneous ? (1)

,0.6.;/ (i) How many subshells are associated with n=4 ?

(ii) How many electrons will be present in the subshells having m_5 value of -1/2 for n=4 ? (1+1)

a.7: (i)..,, Define electron gain enthalpy .

ii) Why is the electron gain enthalpy of chlorine more negative than fluorine ? (1 + 1)

A.8: (i)◆ In what group of the periodic table the element will found having electronic configuration : [Xe] $4f_1^4$ Sd^4 $6s^2$

(ii) Why first ionization enthalpy of nitrogen is more than oxygen? (1+1)

/Q.9: Which out of NH_3 f1nd NF_3 has higher dipole moment and why ? (2)

OR

Draw the molecular orbital diagram of dioxygen and calculate bond order. (2)

Q.10:(i), Draw the structure of diborane .

$PbCl_4$ is less stable than $SnCl_4$ but $PbCl_2$ is more stable than $SnCl_2$. Why ? (1+1)

Q.11:(i) CO_2 is a gas while SiO_2 is solid at room temperature. Why?,

(ii) $SiCl_4$ can be easily hydrolysed but CCl_4 does not hydrolysed. Why?

(iii) Silicon shows a higher covalency than carbon. Why ? (1+1+1)

Q.12: An electron beam is accelerated by a potential difference of 10000 volts. What is the wavelength of the wave associated with the electron beam ?

(mass of electron = 9.1 X 10^{-31} Kg,

Charge of electron=1.6 X 10^{-19}C)

OR

Calculate the uncertainty in the velocity of a cricket ball of mass 150 g , if the uncertainty in its position is of the order of $1A^0$.
(h = 6.6 X 10^{-34} Kg m^2 s^{-1}) (3)

Q.13:(i),.. Draw the orbital structure of ethane .

——ii) Out of H_2O and H_2S which have high boiling point and why?

(iiiL,- He_2 molecule does not exists. why ? (1+1+1)

Q.14:(i) Define " Charles law ". (1)

(ii) Calculate the temperature of 4 mol of gas occupying 5 dm^3

at 3.32 bar pressure.

(R = 0.083 bar dm^3 /mol/k) (2)

Q.15: Define the following terms

(i) Hess's law

(ii) Standard enthalpy of atomization

(iii) Entropy (1+1+1)

Q.16: For the reaction

N_2 (g) + 3 H_2 (g)_____ 2 NH_3 (g)

ΔH = - 95.4 kj ; ΔS = - 198.3 j/k

Calculate the temperature at which Gibb's free energy change is equal to zero . Predict the nature of the reaction at this temp. and above it . (3)

Q.17:(i) Given the standard electrode potentials

--K7K = -2.93 V , Ag^+/Ag = +0.80 V , cr^{+3}/Cr = -0.74 V

Out of these electrode which will be the strongest reducing agent? (1)

(ii) Represent the Galvanic cell in which the reaction takes place:

n) + 2 Ag^+(aq)) zn^{+2} (aq) + 2 Ag (s)

(a) Which of the electrode is negatively charged ?

(b) What are the carriers of the current in the cell ? (1+1)

Q.18: Chlorophyll, the green colouring material of plants contains 2:6 % of magnesium by mass. Calculate the number of moles of magnesium and atoms in .OQ_ g of this complex. (Atomic mass of Mg=24) (2)

(i) Write the name and formula of the liquid substance.

(ii) Why this compound is stored in dark coloured bottles ?

(iii) How is the strength of the substance generally expressed ?

(iv) What values are associated with the chemistry teacher ?

(1+1+1+1)

Q.24(i) State Le-chateliers principle. (1)

(ii) Write conjugate base for the acids

HCO_3^-, H_2SO_4. (½ + ½)

(iii) What is the difference between solubility product and ionic product ? (1)

(iv) Calculate the PH of of a solution having [H_3O^+] of 10^{-3}. (2)

OR

(i) State " Common ion effect ". (1)

(ii) For a hypothecal reaction :

$2\ A + B \leftrightarrows C + D\ ;\ \Delta H = -x$ kj/mol

What will be the effect on the equilibrium with

(a) Decrease of temperature

(b) addition of Helium gas (1+1)

(iii) At 700 K , the equilibrium constant Kp , for the reaction

$2\ SO_2(g) \leftrightarrows 2\ SO_3(g) + O_2\ (g)$

is 1.8×10^{-3} k Pa. What is the numerical value in moles per litre of Kc for this reaction at this temperature ? (2)

Q.25:(a) Account for the followings (1+1+1)

(i) Be and Mg do not give flame colouration

(ii) Li is the strongest reducing agent.

(iii) Potassium carbonate can not be prepared by Solvay process

(b) In what ways Li shows similarities to Mg in its chemical behavior. (any two) (2)

OR

(a) Write three properties of Lithium which differ from the rest of the members of group 1.

(b) Arrange the following in order of the property mentioned :

$Mg(OH)_2$, $Sr(OH)_2$, $Ba(OH)_2$, $Ca(OH)_2$

increasing basic character

(c) Complete the reacti,on :

$Pb(NO_3)_2 \xrightarrow{heat}$ ..... + ... + ... (3+1+1)

Q.26:(a) Explain the following reactions :

(i) Wurtz reaction

(ii) Friedel crafts alkylation (1 +1)

(b) Convert :

(i) 1–bromopropane to propene

(ii) Sodium acetate to methane (1 +1)

(c) Melting point of cis–2–butene is lower than that of trans–2–butene. why ? (1)

OR

(a) Propanal and pentan-3-one are the products of reductive ozonolysis. What is the structure of the alkene ? (1)

(b) Explain Huckel's Rule. (1)

(c) Convert

(i) Benzene to nitrobenzene

(ii) Ethyne to ethanal (1 +1)

(d) Why the boiling points of n-alkanes are higher than their branched chain isomers ? (1)