SESSION ENDING EXAMINATION – (2014-15)

Chemistry

CBSE CLASS – XI

Time: 3 Hrs. M.M: 70

General Instructions:

(i) Question 1 to 5 one mark.

(ii) Question 6 to 10 each two mark.

(iii) Question 11 to 22 each three mark.

(iv) Question 23 is value based question and carry four marks.

(v) Questions 24 to 26 each five mark.

Q1 What do you understand by "Limiting reagent".

Q.2 State Hiesenberg Uncertainty Principle.

Q.3 The value of Vander was constants a and b are as given for two gases:

Gases	$a(atm\,L^2\,mol^{-1})$	$b(mol^{-1})$
C02	3.6	0.043
S02	6.7	0.056

Out of these = two gases which gas molecules will possess largest magnitude to intermolecular forces of attraction?

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

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

Q.6 (i) How many subshells are associated with n=4?

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

Q.7 (i) Define electron gain enthalpy.

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

Q.8 (i). In what group of the periodic table the element will found having electronic configuration :

$[Xe]4f^{14}\ 5d^{4}6s^{2}$ [Xe] 4f 14 5d4 6s2

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

Q.9: Which out of NH_3 and NF_3 has higher dipole moment and why?

OR

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

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

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

Q.11 (i) $C0_2$ is a gas while Si02 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?

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 = $9.1\times10^{-31}kg$,Charge of electrons = $1.6\times10^{-19}C$

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 $1A^0$

$(h\ =6.6\times10^{-34}\ \ Kg\,m^2\ s^{-1})$

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

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

(iii) He_2 molecule does not exists. Why?

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

(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)

Q.15 Define the following terms:

(i) Hess's law

(ii) Standard enthalpy of atomization

(iii) Entropy

Q.16: For the reaction:

$$N_2(g)+3H_2(g)\rightarrow 2NH_3(g)$$

ΔH = 95.4 kj; ΔS = -198.3

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

Q17:(i) Given the standard electrode potentials

- K^+/K = -2.93V Ag^+/Ag = −0.80 V, Cr^{+3} /Cr = -0.74 V

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

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

$$Zn+2Ag^+(aq)\rightarrow Zn^{+2}+2Ag\ (s)$$

(a) Which of the electrode is negatively charged?

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