INTERNATIONAL INDIAN SCHOOL -- DAMMAM
MODEL EXAMINATION 2012 --2013
SET -A

Subject : Chemistry **Max Marks :70**
Class : XI **Time : 3hrs**

General Instructions

1. *All questions are compulsory*
2. *Questions 1 to 8 are very short answer questions and carry one mark.*
3. *Questions 9 to 18 are short answer questions and carry two marks.*
4. *Questions 19 to 27 are short answer questions and carry three marks.*
5. *Questions 28 ,29,30 are long answer questions and carry five marks.*
6. *Use log tables if necessary*

1 What are the values of n and l for 4f orbital ?

2 Name the neutral species which is isoelectronic with Cl^- .

3 State Dalton law of partial pressures .

4 Why the second ionization enthalpy of alkali metals is high ?

5 What is the product obtained when n-heptane is heated with Al_2O_3 at 773K and 20atm pressure?

6 Which out of O_2 or N_2 posses higher value for most probable speed .Why?

7 Write the conjugate base of H_2SO_4 and NH_4^+

8 What is the basic principle of chromatography ?

9 **1.**Write the IUPAC name and symbol of the element with atomic number 124 .
2.Give the electronic configuration of d-block elements .

10 Find the wavelength of a ball of mass 0.1 kg moving with velocity of 10 ms^{-1}($h=6.626\times10^{-34}$) .

11 1. Butan-2-one and Butanal shows isomerism . Name the isomerism and define .
2. Define electromeric effect .

12 Derive the relation between K_p and Kc for a gaseous equilibrium

OR

State Le Chatlier's principle .What is the effect of decrease in pressure and increase in temperature on the following reaction

$$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)} + 92.4\ KJ$$

13 Draw the structures of the following
a) 2 methyl cyclopent 1,4 diene b) 3 chloro 4 oxo hexanal

14 Arrange benzene , n-hexane and ethyne in the decreasing order of their acidic character. Give reason for the arrangement

15 Calculate the total pressure in a mixture of 8 g of dioxygen and 4 g of dihydrogen confined in a vessel of 1dm^3 at 27°C (R=0.083 bar dm^3 K^{-1} mol^{-1})

16 1) What are carbonium ion ?
2) In the estimation of sulphur by Carius method 0.468g of organic compound gave 0.668g of barium suphate .Find the percentage of sulphur in the organic compound ?

17 An alkene on ozonolysis gives a mixture of propanal and ethanal.Write the structure and IUPAC name of alkene along with equation.

18 Oxygen is prepared by the catalytic decomposition of $KClO_3$ by the reaction given below

$$2KClO_3 \rightarrow 2KCl + 3O_2$$

Calculate the amount of $KClO_3$ required to produce 2.4 mole of oxygen .
(K=39,Cl=35.5,O=16)

19 1)How is the enthalpy of formation reaction is different from enthalpy of a reaction ? Illustrate with the help of examples .
2)State the third law of thermodynamics .

20 A compound contains 4.07% hydrogen , 24.27%carbon and 71.65% of chlorine .Its molar mass is 98.96g . Find the empirical formula and molecular formula of the organic compound.

21 1)What is the sign change in entropy when water changes into water vapour.Why ?
2)Enthalpies of formation of $CO_{(g)}$, $CO_{2(g)}$, $N_2O_{(g)}$ and $N_2O_{4(g)}$ are – 110 , -393 , 81 and 9.7 kJ/mol respectively . Find the enthalpy of the following reaction

$$N_2O_{4(g)} + 3\ CO_{(g)} \rightarrow N_2O_{(g)} + 3CO_{2(g)}$$

22 **1)** Depict the galvanic cell in which the following redox reaction takes place.

$$2Ag^+_{(aq)} + Cu_{(s)} \rightarrow Cu^{2+}_{(aq)} + 2Ag_{(s)}$$

2) Balance the following redox reaction by ion-electron method

$MnO_4^- + I^- \rightarrow MnO_2 + I_2$ (basic medium).

23 **1)** Hydrogen Peroxide is used to restore the colour of old paintings containing PbS.Write the balance equation for the reaction that take place in the process.

2) What you understand by the following.

a) Electron rich hydrides **b)** Water gas shift reaction

24 1)Why are half filled and completely filled orbitals stable ?
2)State Afbau principle.
3)What is photoelectric effect ?

25 1)The p^H of blood is 7.35 .What are H^+ and OH^- concentrations ? Find the p^{OH} of blood .
2) What are polyprotic acids ? Give one example .

26 **1)** Why dry air is heavier than humid air ?

2) Distinguish between classical smog and photochemical smog.

27 **1)** Covert the following

a) Benzene to m-Chloro nitro benzene.

b) 1 chloro pentane into pent-1-ene.

2) Find the number of sigma bonds and pi bonds in Cyclohexene.

OR

Write short notes on the following reactions

1)Wurtz reaction

2)Kolbes electrolysis

2)Draw the resonating structures of aniline

28 **1)** Explain the formation of SF_6 molecule with diagram .

2) Draw the molecular orbital diagram of nitrogen molecule .

3) Which out of BF_3 and NF_3 is polar , why ?

OR

1)Account for the following

1) Melting point of cis but-2-ene is more than trans but-2-ene .

2) PCl_5 is a reactive molecule.

2)Draw the lewis structure of nitrite ion .

3)Distinguish between sigma and pi bonds .

29 **1)** Write the chemical reaction of the following

a) Silicon dioxide is treated with hydrogen fluoride .

b) Silicon is heated with methyl chloride at high temperature in presence of copper

2) What happens when diborane is treated with trimethyl amine ?

3) Distinguish between the properties of diamond and graphite on the basis of their structures

OR

Give reasons

1) Atomic radius of Galium is less than Aluminium

2) Concentrated nitric acid can be transported in Aluminium containers

3) $PbCl_4$ is less stable than $PbCl_2$.

4) $SiCl_4$ gets hydrolysed while CCl_4 cannot be hydrolysed .

5) White fumes appear around the bottle of anhydrous aluminum chloride .

30 **1)**Write four similarities between beryllium and aluminium.

2)What happens when

a) sodium metal is dropped in water.

b)chlorine is passed through lime water .

3)Why is $BeCl_2$ soluble in organic solvents ?

OR

1)Explain the preparation of sodiumcarbonate by Solvay process ?

2) Why alkali metals and their salts imparts colour to flame ?

3)Which one of the alkaline earth metal carbonate is least stable .Why ?

4)Write one use of Plaster of Paris .