

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

Subject : Chemistry
Class : XI

Max Marks :70
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} ($h=6.626 \times 10^{-34}$) .
- 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 K_c 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



- 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 ($R=0.083\text{ bar dm}^3\text{ K}^{-1}\text{ mol}^{-1}$)
- 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 sulphate .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

$$2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$$
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 $\text{CO}_{(g)}$, $\text{CO}_{2(g)}$, $\text{N}_2\text{O}_{(g)}$ and $\text{N}_2\text{O}_{4(g)}$ are -110 , -393 , 81 and 9.7 kJ/mol respectively . Find the enthalpy of the following reaction

$$\text{N}_2\text{O}_{4(g)} + 3\text{CO}_{(g)} \rightarrow \text{N}_2\text{O}_{(g)} + 3\text{CO}_{2(g)}$$
- 22 1) Depict the galvanic cell in which the following redox reaction takes place.

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

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

$$\text{MnO}_4^- + \text{I}^- \rightarrow \text{MnO}_2 + \text{I}_2 \text{ (basic medium)}$$
- 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 Aufbau 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) Convert 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 Gallium 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 sodium carbonate 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 .