

Day: \_\_\_\_\_ /

Date: \_\_\_\_\_

MJD Expert. Com

(Majid Ali)

Youtube:

MJD. Chemistry

(Notes, Test &  
Past Papers  
Are Available)

10<sup>th</sup> Chemistry Past Paper  
Day: Faisalabad Board (Group-1)

Name : Hira Khaliq

Class : 10<sup>th</sup> (A)

Roll no. 07

Subject : Chemistry

Submitted to : Sir Majid Ali

Annual Past Paper

2023

Day: \_\_\_\_\_

Date: \_\_\_\_\_

MJD Expert. Com

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MJD. Chemistry

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Chemistry

Faisalabad Board

Annual  
Paper 2023

Group : 01

Q.No.01

Choose the correct option:

- The most important oligosaccharide is:  
a) Sucrose                      b) Glucose  
c) Fructose                     d) Maltose
- Which is saturated hydrocarbon?  
a)  $C_2H_4$                         b)  $C_3H_6$   
c)  $C_4H_8$                         d)  $C_5H_{12}$
- The ability of carbon atoms to form chains is called:  
a) Isomerism                    b) Catenation  
c) Resonance                   d) Condensation
- Acetic acid is used for:  
a) Flavouring food            b) Making explosive  
c) Etching design              d) Cleaning metal

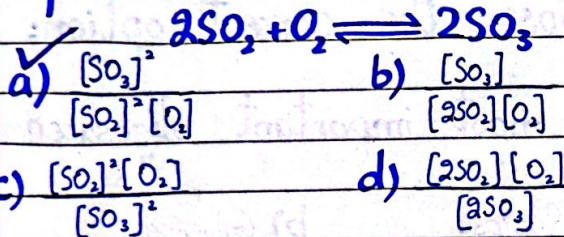
Day: \_\_\_\_\_

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5- Which is Lewis base?

- a)  $\text{NH}_3$                       b)  $\text{BF}_3$   
 c)  $\text{H}^+$                               d)  $\text{AlCl}_3$

6- The equilibrium constant expression for the reaction is:



7- Matte is a mixture of:

- a)  $\text{FeS}$  and  $\text{CuS}$                       b)  $\text{Cu}_2\text{O}$  and  $\text{FeO}$   
 c)  $\text{Cu}_2\text{S}$  and  $\text{FeS}$                       d)  $\text{CuS}$  and  $\text{FeO}$

8- Crude oil is heated in the furnace up to:

- a)  $300^\circ\text{C}$                               b)  $350^\circ\text{C}$   
 c)  $400^\circ\text{C}$                               d)  $450^\circ\text{C}$

9- Permanent hardness is removed by adding:

- a)  $\text{Na}_2\text{zeolite}$                       b)  $\text{NaHCO}_3$   
 c)  $\text{Ca}(\text{HCO}_3)_2$                       d)  $\text{CaSO}_4$

Day: \_\_\_\_\_

Date: \_\_\_\_\_

10- Specific heat capacity of water is:

- a)  $4.2\text{kJg}^{-1}\text{K}^{-1}$                        b)  $4.2\text{Jg}^{-1}\text{K}^{-1}$   
 c)  $2.4\text{Jg}^{-1}\text{K}^{-1}$                               d)  $2.4\text{kJg}^{-1}\text{K}^{-1}$

11- Just above the earth's surface is:

- a) Mesosphere                               b) Stratosphere  
 c) Thermosphere                               d) Troposphere

12- Normally rain water is weakly acidic because of \_\_\_\_\_ gas.

- a)  $\text{SO}_2$                                        b)  $\text{CO}_2$   
 c)  $\text{SO}_3$                                       d)  $\text{NO}_2$

==== (Part - I) ====

Short Answers

Question No. 02

==== (i) ====

Plants and animals exchange two important gases.

Write the names of gases.

Answer:

Plants and animals can exchange  $\text{CO}_2$  and  $\text{O}_2$  gas.

==== (ii) =====

Prove that  $K_c$  has not unit.

Answer:

$K_c$  has no units in reactions with equal number of moles on both sides of the equation.

This is because concentration units cancel out in the expression of  $K_c$ , e.g. for the reaction:



$$K_c = \frac{[\text{HI}]^2}{[\text{H}_2][\text{I}_2]}$$

$$\text{Units} = \frac{(\text{mol dm}^{-3})^2}{(\text{mol dm}^{-3})(\text{mol dm}^{-3})}$$

$$= \frac{(\text{mol dm}^{-3})^2}{(\text{mol dm}^{-3})^2}$$

= no units

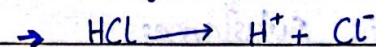
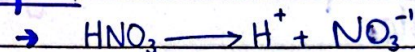
==== (iii) =====

Arrhenius concept of acids and bases has few limitations. state them.

Acid:

Acid is a substance which dissociates in aqueous solution to give hydrogen ions.

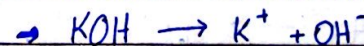
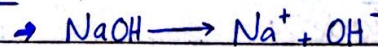
Example:



Base:

Base is a substance which dissociates in aqueous solution to give hydroxide ions.

Example:



Limitations:

1. This concept is applicable only in aqueous medium and does not explain nature of acids and bases in non-aqueous solution.

2- According to this concept, acids and bases are only those compounds which contain hydroxide and hydrogen ion, respectively. It can't explain the nature of compounds like  $\text{CO}_2$ ,  $\text{NH}_3$  etc, which are acids and bases respectively.

====(iv)====

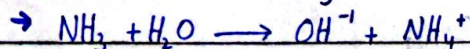
Define amphoteric and give example.

Amphoteric substance:

Such a substance that can behave as an acid, as well as, a base is called amphoteric.

Example:

Water is amphoteric species.



In first reaction water act as base and in 2nd reaction water act as acid.

====(v)====

Do you know about mineral acid? Write names.

Following acids are called mineral acids.

Hydrochloric acid ( $\text{HCl}$ )

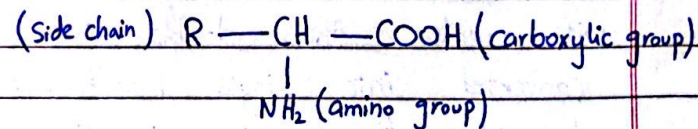
Sulphuric acid ( $\text{H}_2\text{SO}_4$ )

Nitric acid ( $\text{HNO}_3$ )

====(vi)====

Write the formula of ammonium cyanate.

General formula:



Side chain "R" is different from different amino acids.

(vii)

Differentiate between n-propyl and isopropyl.

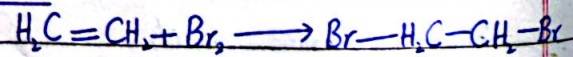
n-propyl	iso-propyl
Hydrogen atom is removed at one end	Hydrogen atom is removed at central atom.
$\text{CH}_3-\text{CH}_2-\text{CH}_2-$	$\begin{array}{c} \text{H} \\   \\ \text{CH}_3-\text{C}-\text{CH}_3 \\   \end{array}$

(viii)

Indicate the colour of bromine after performing the bromine water test.

When bromine is react with water then double bond is converted into single bond and the colour of bromine is discharged.

Reaction:



Question no. 93

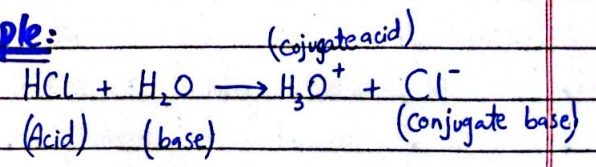
(i)

Define Bronsted-Lowry concept of base.

Base:

A base is a substance that can accept a proton from another substance.

Example:



(ii)

Write two physical properties of bases.

Physical properties:

- 1- They turn red litmus blue.
- 2- Their aqueous solution conduct electric current.

== (iii) ==

### Uses of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ):

- It is used for manufacturing of glass, detergents, pulp and paper and other chemicals.

== (iv) ==

### Write the characteristics of monosaccharides.

- Monosaccharides are white crystalline solid.
- They are soluble in water.
- They cannot be hydrolyzed.
- They have sweet taste.
- They are reducing in nature, therefore, they are called reducing sugars.

== (v) ==

### What do you mean by genetic code of life?

It passes these informations as instruction from generation to generation how to synthesize particular proteins from amino acids.

These instructions are "genetic code of life."

== (vi) ==

### Difference b/w soft water and hard water.

Soft water	Hard water
Soft water is that water which produce good lather with soap.	Hard water is that water which does not produce good lather with soap.
Soft water has not carbonate and chlorides of calcium and magnesium.	Hard water has carbonate and chlorides of calcium and magnesium.

== (vii) ==

### Define industrial effluents.

#### Industrial effluents:

All the industrial units discharge their wastes either to open ground or to water channels. This is

called industrial effluents.

==== (viii) =====

write about cholera.

### Cholera:

Cholera is an acute infection caused by the bacteria *Vibrios cholera*, which may be found in water contaminated by human faeces. Cholera causes severe diarrhea and can be fatal.

### Question NO.04

==== (i) =====

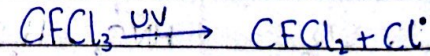
Write two effects of  $SO_2$ .

- $SO_2$  is a colourless gas having irritating smell. It causes suffocation, irritation and severe respiratory problems to asthmatic people.
- $SO_2$  forms sulphuric acid which damages building and vegetations.

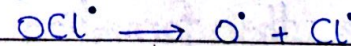
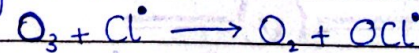
==== (ii) =====

How ozone layer being depleted by chlorofluorocarbons?

Ozone layer is depleted due to chlorofluorocarbons (CFCs). These compounds leak in one way or other escape and diffuse to stratosphere and cause for the depletion of ozone layer.



These free radicals are very reactive. They react with ozone to form oxygen as:



==== (iii) =====

How acid rain is formed?

Burning of fossil fuels produces oxides of sulphur and nitrogen in air. Rain water converts  $SO_2$  into  $H_2SO_4$  and  $NO_x$  to  $HNO_2$  and  $HNO_3$  and acid rain is formed.



Reactions:

- $\text{SO}_3 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4$
- $\text{NO}_x + \text{H}_2\text{O} \rightarrow \text{HNO}_3$

(iv)

Identify as primary or secondary air pollutants:  $\text{SO}_2$ ,  $\text{HNO}_3$ ,  $\text{NH}_3$ ,  $\text{H}_2\text{SO}_4$ .

Primary pollutants

$\text{NH}_3$ ,  $\text{SO}_2$

Secondary pollutants

$\text{HNO}_3$ ,  $\text{H}_2\text{SO}_4$

(v)

Describe the formation of petroleum.

Petroleum was formed by the decomposition of dead plants and animals buried. Due to bacterial decomposition at high temperature and pressure, dead plants and animals are converted into crude oil or petroleum. It is very slow process.

(vi)

What role is played by pine oil in the froth flotation process?

Froth flotation process:

Froth flotation process is based on the wetting characteristics of the ore and the gangue particles with oil and water, respectively.

Role of pine oil:

The ore particles are wetted by oil. Hence, oil coated ore particles being lighter come to the surface and ore is separated from mineral.

(vii)

What is principle of fractional distillation?

Fractional distillation:

The principle of fractional distillation is based upon separation of substances

depending upon their boiling points.

(viii)

Write two advantages of Solvay's process.

1- Less fuel consumption:

Consumption of fuel is very less since no solution is to be evaporated.

2- Pure Products:

Sodium carbonate of very high purity is obtained.

Part-II

Question no. 05

(a)

What are water born infectious diseases? Discuss any four water born infectious diseases.

Waterborn infectious diseases:

Diseases that spread because of drinking polluted water or eating food prepared with polluted water are called waterborn infectious diseases.

Examples:

- Flourosis
- Jaundice
- Dysentery
- Cholera.

Diseases:

Flourosis:

Flourosis is a disease caused by the consumption of excess flouride. Flourosis can cause

bones and teeth damage.

### Hepatitis:

It is liver inflammation commonly caused by one of five viruses called hepatitis A, B, C and D and E. Hepatitis A and E can be transmitted by contaminated water.

### Cholera:

Cholera is an acute infection caused by the bacteria *Vibrios cholera*, which may be found in water contaminated by human feces. Cholera cause severe diarrhea and can be fatal.

### Jaundice:

Jaundice is caused by an excess of bile pigments in the blood. Liver ceases to function and eyes turn yellow. Patient feels weakness and fatigue.

## == (b) ==

Define equilibrium constant and how it determines the extent of a chemical reaction?

### Equilibrium constant:

It is a ratio of product of concentration of products raised to the power of coefficients to the product of concentration of reactants raised to the power of coefficients as expressed in the balanced chemical equation.

### Representation:

It is represented by  $K_c$ .

### Formula:

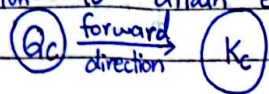
$$K_c = \frac{\text{Product of concentration of products raised to the power of coefficient}}{\text{Product of concentration of reactants raised to the power of coefficient}}$$

### Prediction of chemical reaction:

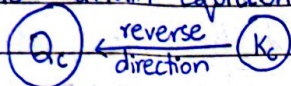
Direction of chemical reaction is determined by using the value of

$K_c$  and  $Q_c$ .

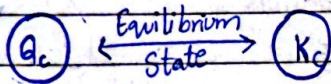
- If  $Q_c < K_c$ ; the reaction goes from left to right i.e., in forward direction to attain equilibrium.



- If  $Q_c > K_c$ ; the reaction goes from right to left i.e. in reverse direction to attain equilibrium.



- If  $Q_c = K_c$ ; forward and reverse reactions take place at equal rates i.e., equilibrium has been attained.



## Question No. 96

== (a) ==

Explain the process of smelting with reference to copper.

Smelting:

It is further heated of the roasted ore with sand flux and coke in the presence of excess of air in a blast furnace.

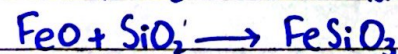
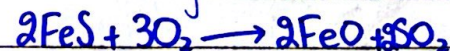
Explanation:

Small amount of coke is needed for this process because the reactions involve in this process are highly exothermic.

Reactions:

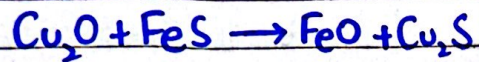
Ferrous sulphide react with oxygen and form ferrous oxide and sulphur dioxide gas.

Ferrous oxide is further react with sand and formed slag.

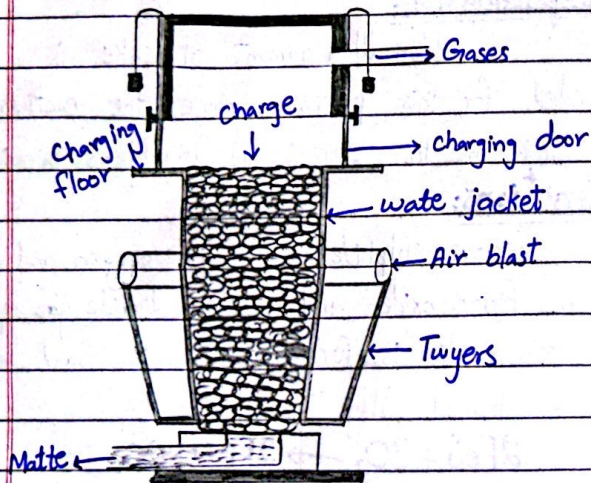


Slag is lighter in weight, It floats on the surface and removed.

Cuprous sulphide react with oxygen and form cuprous oxide and sulphur dioxide gas. Cuprous oxide further reacted with ferrous oxide and cuprous sulphide.



### Diagram:



## == (b) ==

Write two methods for the preparation of alkanes.

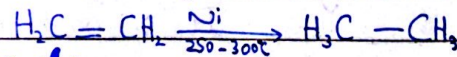
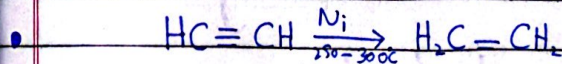
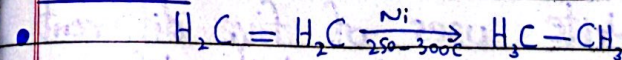
### Hydrogenation:

Addition of hydrogen in the presence of catalyst (Ni, Pt and Pd) at high temperature is called hydrogenation.

### Conditions:

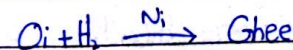
- Ni, Pt and Pd is used as a catalyst.
- Temperature should be  $250^\circ\text{C} - 300^\circ\text{C}$ .

### Reactions:



### Applications:

The above reaction is used to convert oil into ghee.



Reduction of Alkyl halide:

Addition of Na scent hydrogen is called reduction.

Conditions:

- Zn-HCl is used as a catalyst.

Reactions:

- $\text{CH}_3-\text{Br} + 2[\text{H}] \xrightarrow{\text{Zn-dil.HCl}} \text{CH}_4 + \text{HBr}$
- $\text{CH}_3-\text{CH}_2-\text{Br} + 2[\text{H}] \xrightarrow{\text{Zn-dil.HCl}} \text{CH}_3-\text{CH}_3 + \text{HBr}$

Question NO.07(a)

Write uses of five different bases in the daily life.

1- Sodium hydroxide:

It is used for manufacturing of soap.

2- Calcium hydroxide:

It is used for manufacturing of bleaching powder, softening of hard water and

neutralizing acidic soil and lakes due to acid rain.

3- Potassium hydroxide:

It is used in alkaline batteries.

4- Magnesium hydroxide:

It is used as a base to neutralized acidity in the stomach. It is also used for the treatment of bee's stings.

5- Aluminium hydroxide:

It is used as foaming agent in fire extinguishers.

6- Ammonium hydroxide:

It is used to remove grease stains from clothes.

(b)

What are essential and non-essential amino acids? Explain that amino acids are building blocks of proteins.

## Essential amino acids:

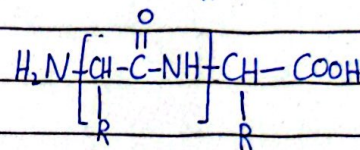
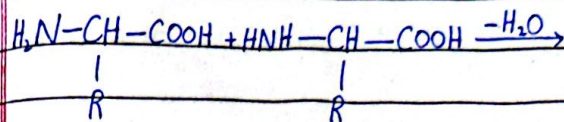
- Ten which cannot be synthesized by our bodies are called essential amino acids.
- These amino acids are taken through our diet.

## Non-Essential amino acids:

- Ten out of twenty amino acids can be synthesized by human body. These amino acids are called non-essential amino acids.
- There is no need to take through our diet.

## Amino acids are building blocks of Proteins:

Two amino acids link through peptide linkage. peptide linkage is formed by the elimination of water molecule between the amino group of one amino acid and carboxyl acid group of another such as:



Peptide Linkage

When thousands of amino acids polymerize they form proteins.