

MJD Expert. Com

(Majid Ali)

Youtube:

MJD. Chemistry

(Notes, Test &

Past Papers

Are Available)

Punjab Board - 2023
(Group - I)

Assignment:

Chemistry

Submitted to:

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Submitted by:

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Past Papers 2023

Youtube Channel:

MJD chemistry

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MJD Chemistry

(Notes, Test &
Past Papers
Are Available)

Chemistry

Gujarat Board

(Annual Paper :

2023)

Paper II

Group : I

(Objective)

Question no-1

Multiple choice Questions:-

1. A reversible reaction is one:

- which proceeds from left to right
- in which reactants react to form products
- which slows down gradually
- which speeds up gradually

2. The conjugate acid of HPO_4^{2-}

is:

- PO_4^{3-}
- $\text{H}_2\text{PO}_4^{2-}$
- H_2PO_4^-
- H_3PO_4

Day: _____

Date: _____

3. Chemical formula of sulphuric acid is:

- a) H_2SO_4 ✓
- b) HCl
- c) HNO_3
- d) $NaCl$

4. In laboratory urea was prepared by:

- a) Wohler ✓
- b) Rutherford
- c) Berzelius
- d) Dalton

5. Oxidation of alkenes produces:

- a) glyoxal
- b) glycol ✓
- c) oxalic acid
- d) formic acid

6. The most important oligosaccharide is:

- a) sucrose ✓
- b) glucose
- c) fructose
- d) maltose

7. The structure of iron and steel is damaged by:

- a) carbon monoxide
- b) sulphur dioxide ✓
- c) methane
- d) carbon dioxide

Day: _____

Date: _____

8. Just above the Earth's surface is:

- a) mesosphere
- b) stratosphere ✓
- c) thermosphere
- d) troposphere

9. Temporary hardness of water is because of:

- a) $Ca(HCO_3)_2$ ✓
- b) $CaCO_3$
- c) $MgCO_3$
- d) $MgSO_4$

10. A disease cause bone and tooth damage is:

- a) fluorosis ✓
- b) hepatitis
- c) cholera
- d) jaundice

11. The nitrogen present in urea is used by plants to synthesize:

- a) sugar
- b) proteins ✓
- c) fats
- d) glucose

12. Formula of urea is:

- a) NH_2COONH_2
- b) NH_2CONH_2 ✓
- c) NH_2CONH_4
- d) NH_2CONH_2

SubjectivePart IQuestion no. 2

Define law of Mass Action.

Answer:

Law of Mass Action:
Guldberg and

Waage and 1869 published

this law. According to

law the rate at which

a substance reacts is directly

proportional to its active

mass and rate of reaction

is directly proportional to

the product of active

masses of the reacting

substances.

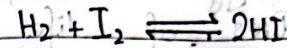
Write down equilibrium

constant expression for

given reaction



Answer:



• Rate of forward reaction of
this reaction:

$$R_f = k_f [\text{H}_2] [\text{I}_2]$$

• Rate of reverse reaction of
this reaction:

$$R_{rev} = k_r [\text{HI}]^2$$

• The equilibrium constant of this
reaction is:

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

Justify that organic compounds
are used as food.

Answer:

The food we eat
daily include carbohydrates,
proteins, lipids, enzymes and
vitamins, these are

The components which we
take in form of food
to get energy to perform
different activities of life
are all consist of
basic unit of organic
compounds.

(iv)
Define functional group with
the help of an example.

Answer:

Functional group:

An atom or
group of atoms or presence
of double or triple bond
which determines the
characteristic properties of
an organic compound is
known as the functional
group.

Example:

-OH group is the

functional group of alcohols.
Which gives characteristics
properties of alcohols.

(v)
Write down the two
characteristics of homologous
series.

Answer:

1. All members of a series
can be represented "by"
a general formula for
example general formulae
of alkanes, alkenes and
alkynes are C_nH_{2n+2} ,
 C_nH_{2n} and C_nH_{2n-2}
respectively.

2. They have similar chemical
properties because they
contain the same functional
group.

(vi)
Aldehydes are

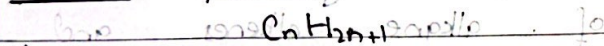
How are alkyl radicals formed? Give an example.

Answer:

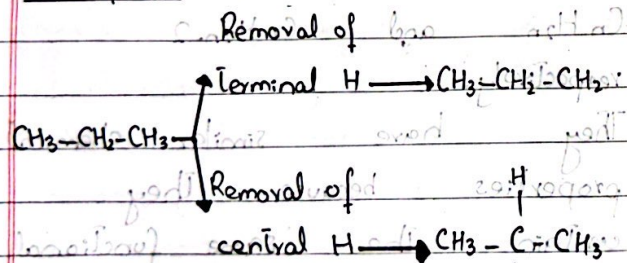
Alkyl radicals are formed by removal of one of the hydrogen atoms of an alkane and are represented by a letter "R". Their name is written by replacing the "ane" of alkane with

"yl".

General formula:



Example:



(vii)

Why hydrocarbons are soluble in organic solvents?

Answer:

Because all the hydrocarbons have non-polar nature. According to the rule like dissolves like. The non-polar hydrocarbons are soluble in non-polar organic solvents.

(viii)

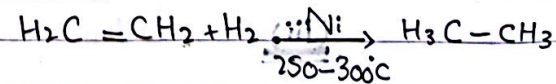
What do you know about hydrogenation of alkenes?

Answer:

Hydrogenation of alkenes:

Hydrogenation means the addition of molecular hydrogen to an unsaturated hydrocarbon in the presence of a catalyst (Ni, Pt) to form a saturated compound.

Equation:



Question no. 3

(ii)

What is soda lime? Where is it used?

Answer:

Soda lime:

A mixture of CaO and NaOH is called soda lime.

Used:

It is used to remove carbon dioxide and water vapour from air.

(iii)

Which acid is present in the following?

a) Vinegar b) Ant sting

Answer:

a) Vinegar: Acetic acid

b) Ant sting: Formic acid

(iii)

Give a chemical reaction between an acid and a base.

Answer:



(iv)

Write down two types of vitamins.

Answer:

Vitamins are divided into two types.

1. Fat soluble vitamins:

The vitamins which dissolve in fats are called fat soluble vitamins.

Example

vitamin D, vitamin A etc.

2. Water soluble vitamins:

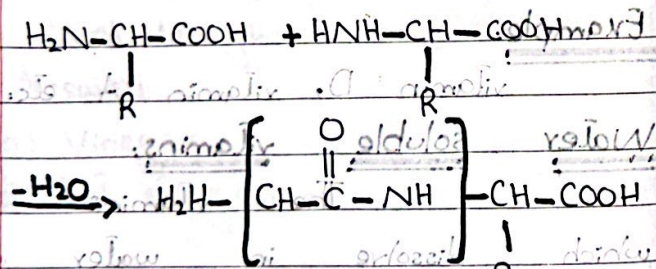
The vitamins which dissolve in water are called water soluble vitamins.

Example: Vitamin B complex and vitamin C.

(v)
How are proteins formed?

Answer:
Amino acids link through peptide linkage. Peptide linkage is formed by elimination of water molecule between the amino group of one amino acid and the carboxyl group of another.

Equation:



(vi)
Why are pesticides used?

Answer:
Pesticides are used either directly to kill or control the growth of pests. Pests may be weeds, herbs, insects, fungi, viruses etc.

(i)
(vii)
How does water rise in plants?

Answer:
Transpiration pull is the process by which water rises up to from the roots of land plants to leaves. This process is vital for the survival of land plants.

(viii)
Briefly discuss the diseases fluorosis.

Answer:

(iv)

Fluorosis is a disease which is caused by over use of fluorides. It damages the bones and teeth.

Question No. 4

(i)

What is the difference between atmosphere and environment?

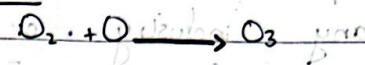
Answer:

<u>Atmosphere</u>	<u>Environment</u>
The envelope of different gases around the Earth.	It is the sum of all social, biological and physical factors of surrounding of living things.

(iii)

Write down reaction occurring in mid-stratosphere.

Answer:



(iii)

Write down two sources of oxides of /or carbon.

Answer:

Sources of oxide of carbon:

Sources:

oxide of carbon as follows:

i) Volcanic eruption:

Both of these gases are emitted due to volcanic eruption and decomposition of organic matter naturally.

ii) Combustion of fossil fuels:

However, the major sources for emission of these gases is combustion of fossil fuels. Fossil fuels are used in combustion engine of any

Type of automobile, kiln, or
of any industry, or
open air fires emit
 CO_2 and CO .

Write down (iv)
two effects
of SO_2 .

Answer:

1) Suffocations:

SO_2 is a
colourless gas having
irritating smell. It causes
suffocation, irritation and
severe respiratory problems
to asthmatic people.

2) Formation of sulphuric acid:

SO_2 forms
sulphuric acid which damages
buildings and vegetations.

(v)
Define: minerals.

Answer:-

Minerals:

The solid natural
minerals found beneath the
Earth's surface which
contains compounds of
metals in combined state
along with earthly
impurities called
minerals.

(vi)
Write down flotation
process.

Answer:-

Flotation process:

Flotation
process is based on
the wetting characteristics
of ore and gangue
particles with oil
water respectively. The
particles are preferentially
welled by oil and gangue

particles by water. The whole mixture is agitated with compressed air. Hence, oil coated ore particles being lighter come to the surface in the form of froth that can be skimmed.

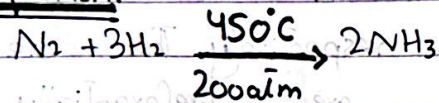
(vii)

How is ammonia prepared for synthesis of urea.

Answer:

Preparation of ammonia:

Ammonia prepared by the "Haber's process". One volume of nitrogen into three volume of hydrogen is passed over iron catalyst at 450°C and 200 atm pressure.

Equation:

(viii) Write the difference between crude oil and residual oil.

Answer:

<u>Crude oil</u>	<u>Residual oil</u>
Crude oil has fraction of petroleum as petroleum ether, gasoline, kerosene, oil, diesel oil and fuel oil.	Residual oil has mixture obtained above 400°C from fractionating tower during refining of petroleum.

(Part II)(Long Questions)Question No. 5

a) Explain any five water borne diseases.

Answer:

Five water borne diseases are given below:

• Dysentery: (iivv)
Dysentery is an intestinal disease which is typically caused by certain bacteria or parasites. It is characterized by severe diarrhea that may be accompanied by blood or mucus.

• Fluorosis:
Fluorosis is a disease caused by the consumption of excess fluoride. Fluorosis can cause bone and teeth damage.

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

• Cholera: (no: hoo: brauro:)
Cholera is an acute infection caused by the bacteria *Vibrio cholerae*, which may be found in water contaminated by human feces. Cholera causes 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) Write / Describe macroscopic characteristics of forward and reverse reaction.

Answer:
Q) Explain the following steps

- Forward reaction:
- 1- It is a reaction in which reactants react to form products.
 - 2- It takes place from left to right.
 - 3- At initial stage, the rate of forward reaction is very fast.
 - 4- It slows down gradually.

- Reverse reaction:
- 1- It is the reaction in which products react to form reactants.
 - 2- It takes place from right to left.
 - 3- In the beginning, the rate of reverse reaction is negligible.
 - 4- It speeds up gradually.

Question no. 6

- a) Explain the following steps

of Solvay's process with the help of equation.

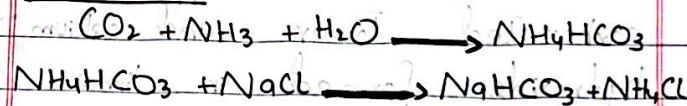
(a) Carbonation (b) Calcination
(c) Ammonical recovery

Answer:

- 1) Carbonation of ammonical brine:

Ammonical brine is fed into carbonating tower and carbon dioxide is passed through it.

Reactions:

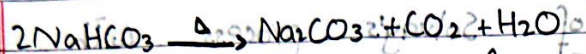


The temperature of mixture is lowered to 15°C and precipitates of NaHCO₃ are obtained.

2) Calcination:

Sodium bicarbonate is heated to get sodium carbonate.

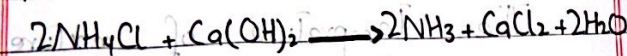
Reaction:



CO_2 is again used in the Tower. It is about half of CO_2 needed in the process.

3) Ammonia recovery Tower:

Ammonia is recovered in this Tower from ammonium chloride solution produced in the carbonated Tower and calcium hydroxide formed in lime kiln.



In fact, all ammonia is recovered in this Tower and is reused in the process. There are minor losses of ammonia in the process which are compensated by using some fresh ammonia.

b) Describe uses of acetylene.

Answer:

• Uses of acetylene:

1) Acetylene produces oxy-acetylene

flame with oxygen. It is a highly exothermic reaction.

Heat released is used for welding purposes.

2) Acetylene is used to

prepare other chemicals,

such as alcohols, acetaldehyde and acids.

3) It is used for ripening of fruits.

4) It is used for manufacture of polymer products like polyvinyl chloride, rubber like neoprene.

5) It is polymerized to form benzene, which is used as a raw material to form a variety of organic compounds.

Question No. 7

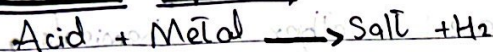
a) Describe five chemical properties of acids.

Answer:

i) Reaction with metals:

When acid reacts with metal it forms salt and hydrogen gas.

General equation:



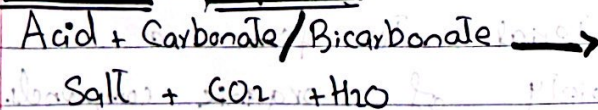
Examples:



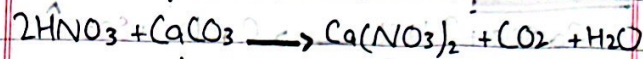
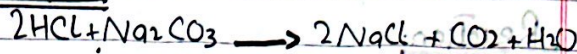
ii) Reaction of acid with carbonate and bicarbonate:

When acid reacts with carbonate and bicarbonate it forms salt, carbon dioxide and water.

General equation:



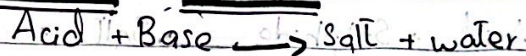
Examples:



iii) Reaction of acid with base:

The reaction between acid and base produce salts and water. This reaction is called neutralization reaction.

General equation:



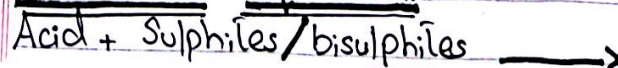
Examples:



iv) Reaction with sulphites and bisulphites:

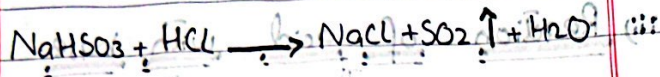
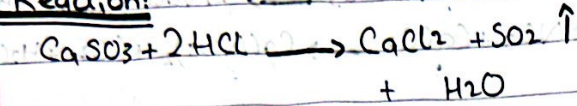
Acid reacts with sulphites and bisulphites to form salt and sulphur dioxide gas and water.

General equation:



Salt + sulphur dioxide + water

Reaction:



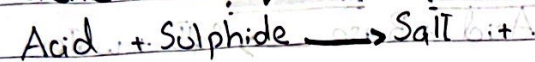
v) Reaction with sulphides:

Acid reacts with

metal sulphides to liberate

hydrogen sulphide gas.

General equation:



Hydrogen sulphide gas

Examples:



b) Explain: amino acids are

building blocks of proteins.

Answer:

Two amino acids

link through peptide linkage.

Peptide linkage is formed

by elimination of water.

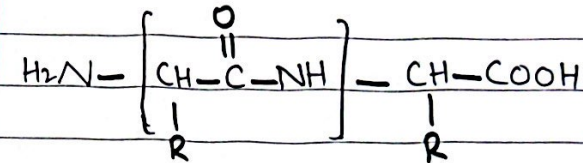
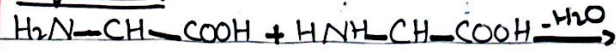
molecules between the amino

group of one amino

acid and carboxyl acid

group of another.

Equation:



When thousands of amino

acids polymerize they

form proteins.