

AssignmentChemistrySubmitted by:Eman AshfaqSubmitted to:Sir Majid AliAnnual Papers 2023Rawalpindi Board (Group-I)Paper No. 23MJD Expert, Com.

Rawalpindi Board

Paper no:- 23

Annual paper: 2023

* Tick the correct option:-

- i) Petroleum is refined by: ✓
 a) Destructive distillation. b) Fractional distillation
 c) Simple distillation. d) Dry distillation
- ii) Which one of these is saturated hydrocarbons:
 a) C_2H_4 b) C_3H_6
 c) C_4H_8 d) C_5H_{12}
- iii) One of the following vitamins is water soluble:
 a) Vitamin A b) Vitamin C ✓
 c) Vitamin D d) Vitamin E
- iv) Infrared radiation emitted by earth are absorbed by:
 a) CO_2 & H_2O ✓ b) N_2 & SO_2
 c) CO_2 & N_2 d) O_2 & CO_2
- v) One is a secondary pollutants:
 a) CH_4 b) SO_4
 c) SO_2 d) HNO_3 ✓

Day: _____

Date: _____

vi) Temporary hardness in water is because of:

- a) $\text{Ca}(\text{HCO}_3)_2$ b) CaCO_3
 c) MgCO_3 d) MgSO_4

vii) Disease caused by protozoa is:

- a) Dysentery b) Cholera
 c) Cryptosporidium d) Hepatitis.

viii) The formula of urea is:

- a) $\text{NH}_2\text{COONH}_4$ b) NH_2CONH_2
 c) $\text{NH}_2\text{COONH}_2$ d) NH_2CONH_2

ix) The nitrogen present in urea is used by plants to synthesize:

- a) Sugar b) Proteins
 c) Fats d) DNA

x) For a certain reaction between PCl_3 and Cl_2 to form PCl_5 the unit of K_c are

- a) mol dm^{-3} b) $\text{mol}^2 \text{dm}^{-3}$
 c) $\text{mol}^{-1} \text{dm}^3$ d) mol dm^3

xi) Acetic acid is used for:

- a) Flavouring of food b) Making explosive
 c) Etching design d) Cleaning metals.

Day: _____

Date: _____

xii) The pOH of 0.02M $\text{Ca}(\text{OH})_2$ is:

- a) 1.698 b) 1.397
 c) 12.31 d) 12.61

Section - I

Question no: 2

(i)

Define chemical equilibrium state.
Chemical equilibrium state:-

When the rate of forward reaction takes place at a rate of reverse reaction, the composition of the reaction mixture remain constant, it is called a chemical equilibrium state.

(ii)

Give characteristics of reversible reaction.

Characteristics of reversible reaction:-

Reaction in which the products can recombine to form reactants are called reversible reaction.

- Reversible reaction proceed in both directions.
- Reversible reaction are represented by double arrow.
- Reversible reaction are also known as incomplete reaction.

(iii)

How coal is formed?

Coal is formed by the decomposition of dead plants buried under the Earth's crust millions of years ago. Conversion of wood into coal is called carbonization.

It is very slow biochemical process. It take place in the absence of air under high pressure and temperature over a long period time.

(iv)

What is importance of natural gas?

Importance of natural gas:-

Natural gas is used as fuel in homes as well as in industries. It is used as fuel in automobile compressed natural gas (CNG). Natural gas is also used to make carbon black.

(v)

Justify organic compounds are used as food:-

Organic compounds are used as food:-

The food we eat daily include carbohydrates, proteins, lipids, enzymes and vitamins. these are all the component which we take in the food to get energy to perform different activities of life are all consist of basic units of organic compounds.

(vi)

How alkyl radicals are formed? Explain with an example.

Alkyl radicals are formed:

Alkyl radicals are formed by the removal of hydrogen atom of an alkane and both are represented by the letter "R". Their name is written by replacing "ane" of alkane with "yl". The general formula is C_nH_{2n+1} .

(vii)

Differentiate between saturated and unsaturated hydrocarbons.

Saturated hydrocarbons

The hydrocarbons in which all the four valencies of carbon atoms are fully satisfied by single bonds with other carbon atoms and hydrogen atoms are called saturated hydrocarbons.

- Alkanes are saturated hydrocarbons.

Unsaturated hydrocarbon

The hydrocarbons in which two carbon atoms are linked by a double or triple bond are called unsaturated hydrocarbon.

Alkenes and alkynes are saturated

hydrocarbons.

Example

- | | |
|-----------|-----------|
| • Methane | • Ethyne |
| • Ethane | • Propyne |
| • Propane | |

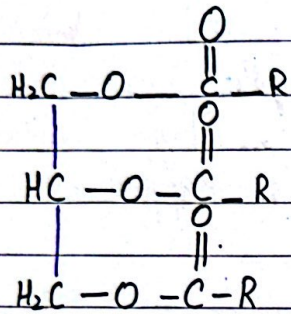
(viii)

Why are alkanes are called "paraffins"?

In alkanes all the bond of carbon atoms are single that mean valencies of carbon atoms are saturated. Therefore, they are least-reactive. That is the reason, alkanes are called paraffins (Para mean less and affins mean affinity and reactivity)

Question no:- 3(i)Formula of Lipids:-

Lipids are triglycerides and general formula of triglycerides is as follows:

(ii)

How is gelatin obtained?

Proteins are found in bones. When bones are heated they give gelatin. Gelatin is used to make bakery items.

(iii)

Write short note on dysentery?

Dysentery:-

Dysentery is an intestinal disease which is typically caused by certain bacteria or parasites.

It is characterized by severe bacteria

(iv)

What is leaching process?

leaching process:-

Cultivation of crops causes these chemicals from fertilizers and pesticides to seep into the ground water commonly called leaching process.

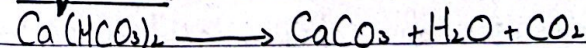
(v)

How temporary hardness is removed by boiling the water?

By boiling:-

Temporary hardness of water is removed by boiling water. On boiling calcium bicarbonate $\text{Ca}(\text{HCO}_3)_2$ decompose to produce insoluble calcium carbonate, which precipitates out of solution.

Equation:-



(vi)

What are indicators?

Indicators:

Indicators are organic compound. They give different colours to acidic and basic solutions.

For example:

- i) Litmus ii) Phenolphthalein

(vii)Why H^+ ions work as a Lewis acid?

According to Lewis acid is a substance which can accept a pair of electron. H^+ can accept a pair of electron therefore, it acts as a Lewis acid.

(viii)

Give uses of calcium oxide (CaO).
Uses of calcium oxide:

- CaO is used as a drying agent for gases and alcohols.
- It is used as water treatment.

Question no: 4(i)

How many industrial units were present in India and Pakistan in 1947?

There were total 921 industrial units in India and Pakistan.

(ii)

Define minerals:-

Minerals:-

The solid natural materials, found beneath the earth surface, which contain compound of metals in the combined state along with earthy impurities, are called minerals.

(iii)

Write raw materials used in manufacturing of urea.

Ammonia (NH_3) gas

Carbon dioxide (CO_2) gas.

(iv)

Write two uses of diesel oil.

Uses of diesel oil:-

Diesel oil is used as fuel for busses, trucks, railway engines, tube well engines and other heavy vehicles.

(v)

How many non-polar compounds are soluble in water?

Non-polar compounds are soluble in water:-

Due to hydrogen bonding water can even dissolve non-ionic polar compounds.

(vi)

Define boiler scales. How they are removed?

Boiler scales:-

Hard water is unfit used in boiler because insoluble calcium and magnesium salts are deposited inside which is called Boiler scales.

Removed by:-

They are removed by ion exchange method.

(vii)

How do pesticides cause water pollution?

Pesticides:-

Run-off from the agricultural land enters into pond, streams and rivers. This water contains nitrate and phosphate salts. This substance results in rapid growth of algae floating over the surface of water. They prevent the sunlight and air to reach

upto aquatic life. When algae dies consumes bacteria oxygen of water for decomposition of algae. As a result oxygen depletes in water. Aquatic animals feel suffocation and ultimately die due to insufficient supply of oxygen.

(viii)

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

Section-II

Question No: 5

(a)

What is a waterborne if infectious disease? Write about any two waterborne disease.

Waterborne disease:-

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

Two diseases caused by drinking polluted water:-

Cholera:-

Cholera is an acute infection caused by the bacteria vibriosis cholera, which may be found in water contaminated by human faeces. 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 feel weakness and fatigue.

(b)

Write microscopic characteristics of forward and reverse reaction.

Forward reaction

- It is a reaction in which reactants react to form product.
- It takes place from left to right
- At initial stage, the rate of forward reaction is very fast.
- It slows down gradually.

Reverse reaction

- It is a reaction in which ^{product} react to produce reactants
- It takes from right to left.
- In the beginning, the rate of reverse reaction is negligible
- It speeds up gradually.

Question No: 6

(a)

Write down the five advantages of solvay's process.

Advantages of solvay's process:-

i) Cheap process:-

It is a cheap process as a raw materials are available at very low prices.

ii) Recovery of gases:-

Carbon dioxide and ammonia are recovered and reused.

iii) Pollution free:-

Process is pollution free because, the only waste is calcium chloride solution.

iv) Pure product:-

Sodium carbonate of very high purity is obtained.

v) Less fuel consumption:-

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

(b)

Write a note on halogenation of alkanes.

Halogenation of alkane:-

Halogenation:-

Introduction of halogen in alkane is called halogenation.

Substitution reactions:-

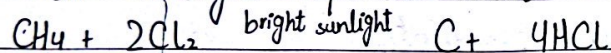
A reaction in which one or more hydrogen atoms of a saturated compound are replaced with some other atoms is called a substitution reaction.

Reaction in dark:-

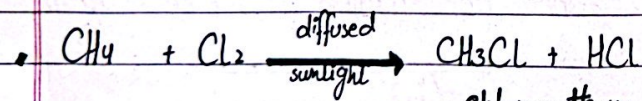
There is no reaction in dark.

Reaction in sunlight:-

In sunlight explosion occurs.

Reaction in diffused light:-

The reaction between methane with chlorine in diffused light occurs in series of steps.



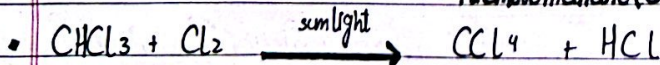
Chloromethane



Dichloromethane



Trichloromethane (Chloroform)



Tetrachloromethane (Carbon tetrachloride)

Question no: 7

(a)

Give uses of five different acids.

i) Uses of acids:-i) Sulphuric acid:-

Sulphuric acid is used to manufacture fertilizers, ammonium sulphate, calcium superphosphate, explosives, paint, dyes, drugs. It is also used as an electrolyte in lead storage batteries.

ii) Nitric acid:-

Nitric acid is used in the manufacturing of fertilizer (ammonium nitrate), explosives, paints, drugs and etching designs on copper plates.

iii) Hydrochloric acid:-

It is used for cleaning metals, tanning and in printing industries.

iv) Benzoic acid:-

It is used for food preservation.

v) Acetic acid:

It is used for flavouring food and food preservation. It is also used to cure the sting of wasps.

(b)

Describe the sources, uses, symptoms of deficiency of fat soluble vitamins.

Fat soluble vitamins:-

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

Examples:-

Vitamin A, D, E and K.

Disadvantages of fat soluble vitamins:-

- If these vitamins are taken in large quantities, they accumulate in the body cause disease.

Source:-

- Dairy products, egg, oil, fats and fish.

- It can also be obtained from the beta-carotene found in green vegetables, carrots and liver.

Uses:-

- Maintain the health of epithelium.
- It act on the retina dark adaptation mechanism.