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Assignment

Chemistry

2<sup>nd</sup> Half Book Test

Chp # 13 to 16

Class:

10<sup>th</sup>

Submitted by:-

Fahmeeda +

Hadiya

Submitted to:-

MJD Chemistry

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# 10<sup>th</sup> Chemistry Past Paper Solutions

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Chp 13 to 16

Paper No 010

2nd Half Book Test

Objective Type

Q1 Encircle the correct answer.

1) When glucose and fructose combine they produce.

(A) starch (B) Cellulose (C) Sucrose

(D) None of these

2) The formula of stearic acid is:

(A)  $C_{17}H_{35}COOH$  (B)  $C_{17}H_{33}COOH$  (C)  $C_{17}H_{31}COOH$

(D)  $C_{15}H_{31}COOH$

3) Night blindness is because of deficiency of:

(A) vitamin A (B) vitamin C (C) vitamin D

(D) vitamin D

4) Infrared radiations emitted by the Earth are absorbed by:

(A)  $CO_2$  and  $H_2O$  (B)  $N_2$  and  $O_2$  (C)  $CO_2$  and  $N_2$

(D)  $O_2$  and  $CO_2$

5) Global warming causes rising of the sea level. The cause of global warming is:-

(A)  $CO_2$  gas (B)  $SO_2$  gas (C)  $NO_x$  gases

(D)  $O_3$  gas

6) Carbon monoxide is harmful to us because:-

- (A) it paralyses the lungs  
 (B) it damages lungs tissues  
 (C) it reduces oxygen carrying ability of haemoglobin  
 (D) it make the blood coagulate.

Repeat Carbon monoxide is harmful to us because

- (A) it paralyses the lungs  
 (B) it damages lungs tissues  
 7) The oceans contain about of total world's water:-  
 (A) 91% (B) 93% (C) 95% (D) 97%

8) Which one of the following diseases causes liver inflammation?

- (A) typhoid (B) jaundice (C) cholera  
 (D) hepatitis

9) A disease that causes bone and tooth damage is:

- (A) fluorosis (B) hepatitis (C) cholera  
 (D) jaundice

10) Concentration of the copper ore is carried out by:

- (A) Calcination (B) Roasting (C) Distillation

(D) Froth floatation

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

- (A) Sugar (B) Proteins (C) fats  
 (D) DNA

12) Formula of copper Glance is:

- (A)  $CuFeS_2$  (B)  $CuS$  (C)  $CuS_2$   
 (D)  $Cu_2S$

## Subjective Type Part - I

### Short Answers

Answer No. 2

(i)

Q Describe the uses of carbohydrates.

Ans Uses of Carbohydrates:-

- 1) They regulate the amount of sugar level in our body. Low sugar level in body results in hypoglycemia.
- 2) They provide essential nutrients for bacteria in intestinal tract that helps in digestion.

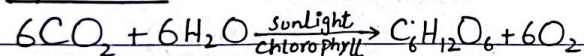
- 3) Dietary fibre helps to keep the bowel functioning properly
- 4) Carbohydrates protect our muscles from cramping.

\_\_\_\_\_ (ii) \_\_\_\_\_

- **What do you mean by photosynthesis?**

A process in which carbohydrates are formed, from carbon dioxide and water, in the presence of sunlight and green pigment chlorophyll by plants.

Equation:-



\_\_\_\_\_ (iii) \_\_\_\_\_

- **What are polysaccharides? Give an example.**

- Polysaccharides:-

Polysaccharides are macromolecular carbohydrates consisting of hundreds to thousand of monosaccharides.

Examples:-

Starch

\_\_\_\_\_ (iv) \_\_\_\_\_

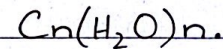
- **Define Carbohydrates. Write its general formula.**

- Carbohydrates:-

Carbohydrates are macromolecules. They are polyhydroxy aldehydes or ketones. They provide us energy. \*

- General formula:-

The general formula is



\_\_\_\_\_ (v) \_\_\_\_\_

- **How is gelatin obtained?**

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

\_\_\_\_\_ (vi) \_\_\_\_\_

- **How margarine is prepared?**

- Margarine is produced by adding

hydrogen to vegetable oil at 200°C in the presence of catalyst. Greater the amount of hydrogen is added the margarine becomes.

•————(vii)————•

- ♦ Write uses and sources of animal fats.

**Ans** Animal fats are found in adipose tissue cells.

Animals secrete milk from which butter and ghee is obtained.

Butter and ghee are used for cooking and frying of food, for preparing bakery products and sweets. Animal fats are used in soap industry.

•————(viii)————•

- ♦ What are fatty acids? Given one example.

Fatty acids are building blocks of lipids. These are long chain

Saturated or unsaturated carboxylic acid.

Example:-

Palmitic acid ( $C_{15}H_{31}COOH$ )

Stearic acid ( $C_{17}H_{35}COOH$ )

•————(i)————•

Difference b/w

Primary Pollutants

Primary pollutants are the waste or exhaust products driven out because of combustion of fossil fuels and organic matter.

Secondary Pollutants

Secondary pollutants are produced by various reactions of primary pollutants.

Examples

➤ Oxides of sulphur ( $SO_2$  and  $SO_3$ )

➤ Oxides of carbon ( $CO_2$  and  $CO$ )

➤ Sulphuric acid

➤ Carbonic acid

(ii)

- Write down two sources of sulphur compounds.

Ans: Naturally occurring sulphur containing compounds are emitted in bacterial decay of organic matter, volcanic gases, forest fires.

(iii)

- How aquatic life is affected by acid rain?

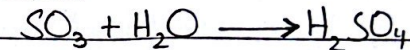
Ans Acid rain on soil and rocks leaches heavy metals (Al, Hg, Pb, Cr etc) with it and discharges these metals into rivers and lakes. Aquatic life present in lakes also suffers because of high concentration of these metals. Especially high concentration of aluminium metal clogs the fish gills. It causes suffocation and ultimately death of fish.

(iv)

- How acid rain is formed?

Ans Burning of fossil fuels produces oxides of sulphur and nitrogen in air. Rain water converts  $\text{SO}_2$  into  $\text{H}_2\text{SO}_4$  and  $\text{NO}_x$  to  $\text{HNO}_3$  and acid rain is formed.

- Reactions:-



(v)

- Why are plants dying day by day? Explain.

Acid rain increases the acidity of the soil. Many crops and plants cannot grow properly in acidic soil. It also increases the toxic metals in the soil that poison the vegetation. Even old trees are being affected due to

acidity of soil. Their growth is retarded. They get dry and die.

• \_\_\_\_\_ (vi) \_\_\_\_\_.

- Point out two serious effects of ozone depletion.

Ans: 1. It can change the life cycle of plants disrupting food chain.

- 2. Skin Cancer:-

Depletion of ozone enables ultraviolet radiations of sun to reach to the Earth, that can cause skin cancer to human beings and other animals.

• \_\_\_\_\_ (vii) \_\_\_\_\_.

- Ozone:

Ans Definition:-

Ozone is an allotropic form of oxygen consisting of

three oxygen atoms. It is found in stratosphere in 25km to 30km.

- Ozone hole:

The region in which ozone layer depletes is called "ozone hole".

• \_\_\_\_\_ (viii) \_\_\_\_\_.

- Write down chemistry of swimming pool.

Swimming pools are cleaned by chlorination process. It is the addition of chlorine solution in swimming pools. Chlorine kills bacteria and other microorganisms. Chlorine itself does not kill bacteria rather it dissociates water to form hydrochlorous acid and hydrochloric acid.

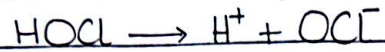


HOCl further ionizes to produce

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hypochlorite and proton.



Both the products HOCl and  $\text{OCl}^-$  kill bacteria and microorganism.

Q No 4

(i)

- Define hydrogen bonding.

The attractive force present between hydrogen atom and a highly electronegative atom like P, O and N is called hydrogen bonding.

(ii)

- How detergents make the water unfit for aquatic life?

The detergents remain in the water for a long time and make the water unfit

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for aquatic life. The phosphate salts present in detergents cause rapid growth of algae in water bodies.

Which floats over the surface of the water. These plants ultimately die and decay.

Decaying plants being biodegradable consume  $\text{O}_2$  present in water.

Thus, depletion of  $\text{O}_2$  results in death of aquatic life.

(iii)

**What are pesticides used?**

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



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• ————— (iv) ————— •

What are 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.

• ————— (v) ————— •

Write a note on cryptosporidium

The microorganisms are produced by water. That causes Gastrointestinal illness such as diarrhea and vomiting. These small germs are present in surface water sources such as ponds, lakes and rivers.

• ————— (vi) ————— •

What is difference b/w

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Diesel Oil

It is used as fuel for buses, trucks, railway engines, tubewell engines and other heavy vehicles.

⇒ 250 to 350°C

⇒ C<sub>13</sub> - C<sub>15</sub>

Fuel Oil

It is used in ships and industries to heat boilers and furnaces.

⇒ 350 to 400°C

⇒ C<sub>15</sub> - C<sub>18</sub>

• ————— (vii) ————— •

Name of four fractions obtained by the fractional distillation of residual oil.

- Ans 1) Lubricants  
 2) Paraffin wax  
 3) Asphalt  
 4) Petroleum coke

• ————— (viii) ————— •

Difference b/w

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### Crude Oil

Crude oil has fractions of petroleum gas, petroleum ether, gasoline, kerosene oil, diesel oil and fuel oil.

### Residual oil

Residual oil has four fractions as lubricants, paraffin wax, asphalt and petroleum coke.

## Part - II

### Long Answers

#### Question No. 5

• (a) •

Write a note on mono-saccharid

#### Monosaccharides:-

Monosaccharides are the simplest sugar which cannot be hydrolyzed.

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### ♦ Properties of monosaccharides:-

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

• (b) •

Write down the uses of carbohydrates for our body.

#### ♦ Uses:-

- 1) They regulate the amount of sugar level in our body. Low sugar level in body results in hypoglycemia.
- 2) They provide essential nutrients for bacteria in intestinal tract that helps in

digestion.

- 3) Dietary fibre helps to keep the bowel functioning properly.
- 4) Fibre helps in lowering of cholesterol level and regulates blood pressure.
- 5) Carbohydrates protect our muscles from cramping.

Q No 6

(a)

→ Explain that amino acids are building blocks of proteins.

• Fatty Acids:-

Fatty acids are building blocks of lipids. They are long chain saturated or unsaturated carboxylic acids.

Examples:-

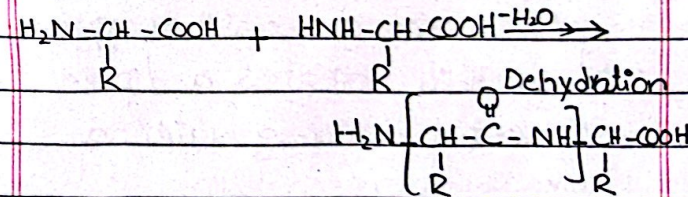
→ Palmitic acid  $C_{15}H_{31}COOH$

→ Stearic acid  $C_{17}H_{35}COOH$

(a)

Ans: 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

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acids polymerize they form protein.

(b)

**How polarity of water molecule plays its role to dissolve the substances?**

⇒ The polarity of water molecule plays a crucial role in dissolving substances. Here's how:-

• **Water Molecule Polarity:-**

A water molecule has a slightly positive charge on the hydrogen atoms and a slightly negative charge on the oxygen atom. This creates a dipole moment, making water a polar molecule.

• **Dissolution Process:-**

When a substance is added to water, the polar

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water molecules interact with the substance's molecules. The positive and negative charges on the water molecules attract and surround the substance's molecules, helping to break the intermolecular forces holding them together.

• **How Polarity Helps Dissolution:-**

1) **Hydrogen bonding:-**

Water's positive hydrogen atoms form hydrogen bonds with negatively charged atoms in the substances, pulling them apart.

2) **Dipole-dipole interaction:-**

Water's dipole moment allows it to interact with other polar molecules, disrupting their intermolecular forces.

3) **Ion-dipole interactions:-**

Water's polar molecules

surround and stabilize ions, making it easier for them to dissolve.

**Examples:-**

**1) Salt (NaCl):-**

Water's polarity helps break the ionic bonds between sodium and chloride ions.

**2) Sugar**

Water's hydrogen bonding disrupts the intermolecular forces holding sugar molecules together.

**3) Acid and Bases**

Water's polarity facilitates to dissociation of acid-base molecules.

---

**Q.N.Q.T**

(a)

⇒ Explain four important water-borne diseases. How can these be prevented?

**1) Cholera:-**

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

**2) Fluorosis:-**

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

**3) Hepatitis:-**

It is liver inflammation commonly caused by one of

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surround and stabilize ions, making it easier for them to dissolve.

**Examples:-**

1) **Salt (NaCl):-**

Water's polarity helps break the ionic bonds between sodium and chloride ions.

2) **Sugar**

Water's hydrogen bonding disrupts the intermolecular forces holding sugar molecules together.

3) **Acid and Bases**

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**QnQn**

(a)

⇒ Explain four important water-borne diseases. How can these be prevented?

1) **Cholera:-**

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

2) **Fluorosis:-**

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

3) **Hepatitis:-**

It is liver inflammation commonly caused by one of

five viruses called hepatitis

A, B, C, D and E.

#### 4) 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.

#### ⇒ Prevention of Waterborne diseases:-

##### i) Provision of safe water:-

Drinking water must be properly treated and purified.

##### ii) Disposal of sewage:-

There must be adequate sanitary disposal of sewage. Any type of waste must not be thrown or discharged directly in water supplies or reservoirs.

#### iii) Control of toxic Chemicals:-

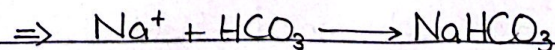
Chemical contamination can cause acute illness but often toxic contaminants are slow poisons and carcinogens. There must be a strict control over the use of pesticides and other chemicals.

#### ————— (b) —————

#### ⇒ Write a detailed on Ammonia Solvay process.

Principle of Solvay's process lies in the low solubility of sodium bicarbonate at low temperature i.e. at  $15^{\circ}\text{C}$ . When  $\text{CO}_2$  is passed through an ammonical solution of  $\text{NaCl}$  called ammonical brine only  $\text{NaHCO}_3$  precipitates.

#### Reaction:-



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## • Basic Reactions:-

The process consist of the following steps:-

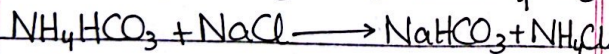
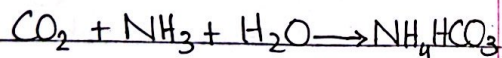
### i) Preparation of Ammonical Brine:-

First of all ammonical brine is prepared by dissolving ammonia gas in sodium chloride solution (brine).

### ii) Carbonating of Ammonical Brine:-

Ammonical Brine is fed into carbonating tower and carbon dioxide is passed through it. Following reactions take place in the carbonating tower:-

Reaction:-



→ The temperature of the mixture is lowered to 15°C and precipitates of NaHCO<sub>3</sub> are obtained.

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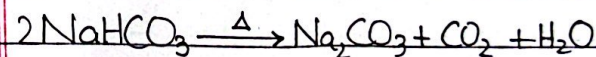
### iii) Filtration of precipitates:-

The milky solution from the carbonating tower is filtered to get sodium bicarbonate. It is used as a baking soda.

### iv) Calcination:-

Sodium bicarbonate is heated to get sodium carbonate.

Reaction:-



CO<sub>2</sub> is again used in tower.

It is about half of CO<sub>2</sub> is needed in the process.

### v) Preparation of CO<sub>2</sub> and slaked lime:-

CO<sub>2</sub> is prepared by heating limestone in a lime kiln. Then it is carried to carbonating tower



Quick lime formed in time



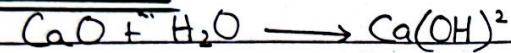
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kiln is slaked with water.

Then it is pumped to the ammonia recovery tower.

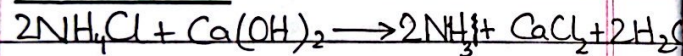
• Reaction:



vi) 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.

• Reaction:-



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.

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