

GISA - Test-1

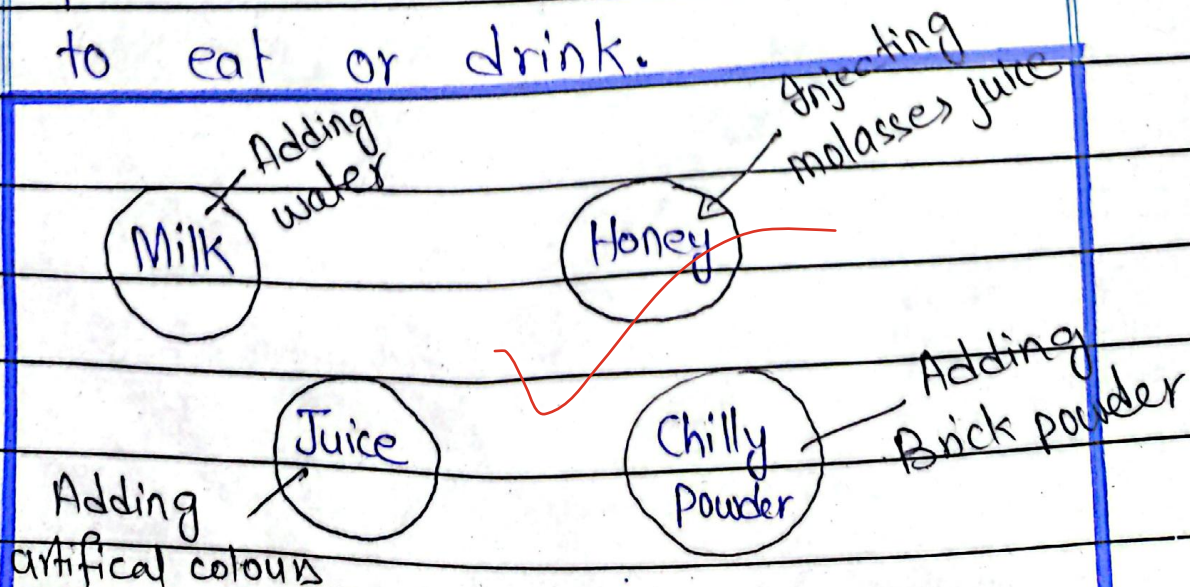
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Question 1:

(a)

Difference Between  
Food Adulteration and ContaminationFood Adulteration;

Food adulteration is a artificial man-made process through which certain chemicals are added in the food to enhance its taste or colour. This process is usually done for profit gains. This procedure might contaminate food and makes it unhealthy to eat or drink.



## Methods;

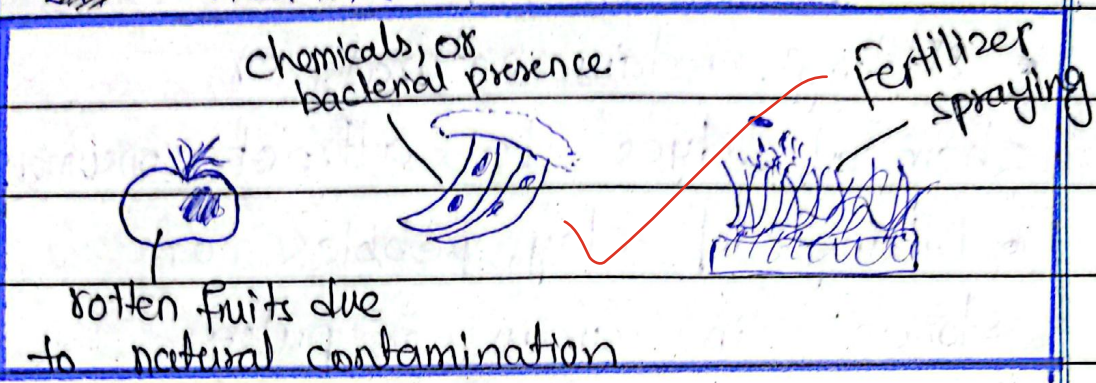
- Adding certain chemicals for faster ripening of food
- Adding certain natural or chemical dyes to attract consumers
- Mixing of clay, pebbles or stones in grain or pulses.
- Mixing of decompose fruits and vegetables with fresh ones.

## - Food Contamination -

### Definition;

Food contamination is a natural process that adds unwanted substances into the food and also adds impure substances within it. This process is mainly introduced by environment through humidity, heat, water content or soil. Food contamination

also includes harmful substances that can seriously impacts health.



### Methods;

- Adding fertilizers on soil and farms
- Natural bacteria start decomposing food
- Presence of contaminated water in fields.

### Controlling Measures of Food Adulterations;

- Here are the certain tips to prevent food adulteration
- Avoid dark coloured, junk and other processed foods.

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- Make sure to clean and store grain and pulse.
  - Using freezing method to prevent food contamination and adulteration
  - Wash fruits thoroughly in running water before use.
  - Check if the seal is valid or not before buying packaging foods.
  - ~~● Always check if the seal is valid or not before~~
  - Only buy and check those products having an FSSAI-validated label, along with licensed numbers, manufacture date and its expiration.

Questio

## (Part B)

# Food Preservation Methods

## Introduction;

Food is an important part of our life. Without food, no one can survive as food provides us energy to live. However, there are many natural and artificial phenomena due to which our food may contaminate and become harmful for us.

For this purpose there are various food preservation methods that can be employed to preserve food.

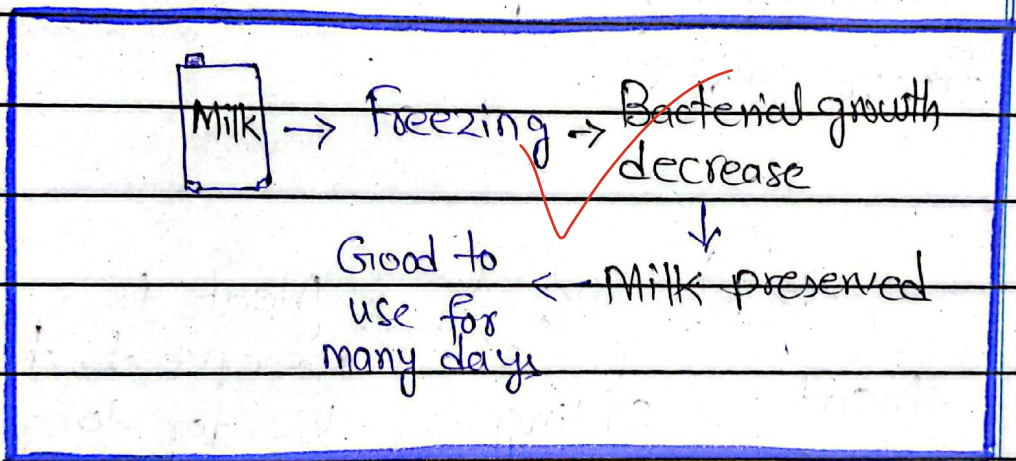
## Methods to Preserve Food;

### 1. Freezing;

Freezing is one of

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the common methods that are used to preserve food. This method slow down bacterial growth because in low temperature and freezing environment bacteria cannot work properly

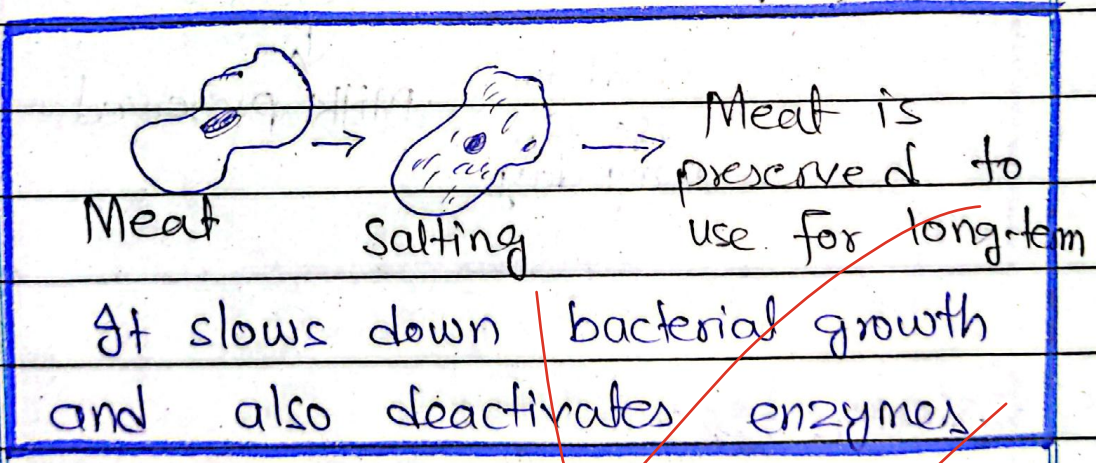


## Examples;

- When milk is freezeed it may use for two or three days without fear of being spoiled.
- Freezing meat can also stops bacteria to decompose meat.

## 2- Salting;

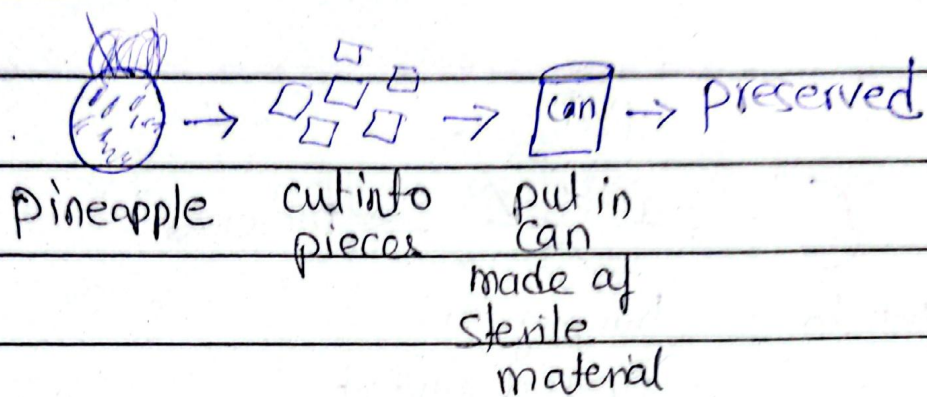
Salting is another food preservation process which is considered as a traditional process to preserve food. Salting is still used in many areas where there is less availability of resources to freeze food.



## 3- Canning;

Cans made of sterile materials or sterilizing materials are also used for preserving food. It protects food from contaminating and also

prevent humidity and other  
toxic substances to mix  
in foods.



### Example;

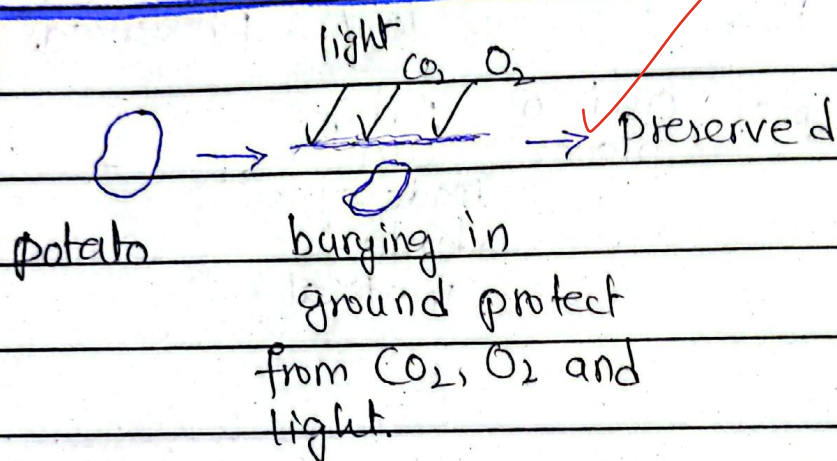
- Many fruits which are sent for imports/exports are preserved through canning.
- Meat is also preserved through canning process.

### 4- Burying in Ground;

In the past, foods were also preserved by burying them into grounds after



Salting. This process protects foods from light,  $\text{CO}_2$ , oxygen and from also discourage growth of micro-organisms.



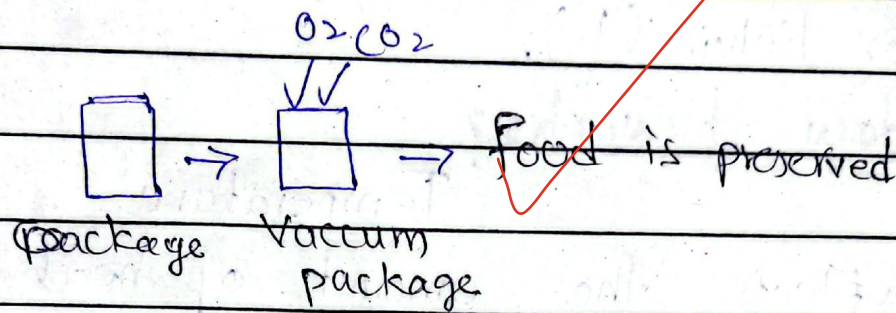
### Example;

- Potatoes and some other vegetables are preserved through this method.

### 5- Vacuum Packaging;

Vacuum packaging is a food preservation technique that involves removing air from a package and sealing

it to create a vacuum. This process helps in preventing spoilage organisms from growing



### Example;

- Sea food is preserved through vacuum packaging.
- Preservation of 'Dry fruits', nuts, baked goods is also done through this process.

### (Part - C)

### Weather Variables

### Temperature;

The term temperature

refers to the measure of warmth of coldness of the atmosphere. It is usually measure in Fahrenheit (F) or Celsius (C<sup>o</sup>) or Kelvin (K).

### How it works?

Temperature reflects the amount of heat energy in the air mostly influenced by sunlight, geographic location, time of day and season.

### Role of Temperature in Weather;

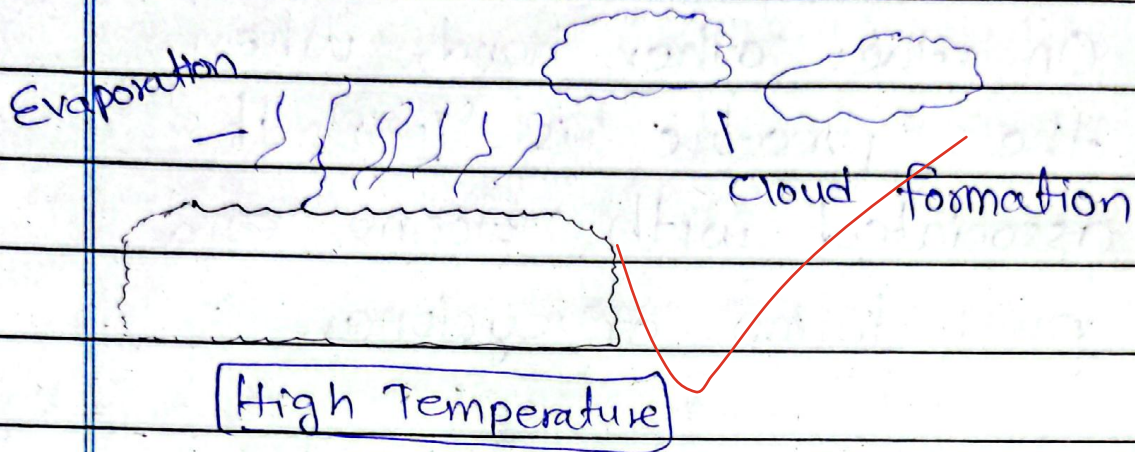
Temperature is one of the weather variable that play important role.

- When temperature is high it may result in high evaporation cloud formation and can also cause storms.

- When temperature is low then it may result in snow,

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frost or stable atmospheric conditions.



## 2. Pressure;

Pressure is the amount of force exerted by air on above a surface. It is measured in millibars (mb) or inches of Mercury (Hg).

### How it works?

Pressure varies with altitude, temperature, and the density of air.

### Role in Weather;

Pressure plays a crucial role in weather. When

Pressure is 'High' it generally brings clear, stable weather.

On the other hand, when the pressure is 'low' it is associated with storms and precipitation or cyclones.

### 3- Humidity;

Humidity refers to the amount of water vapour present in the air.

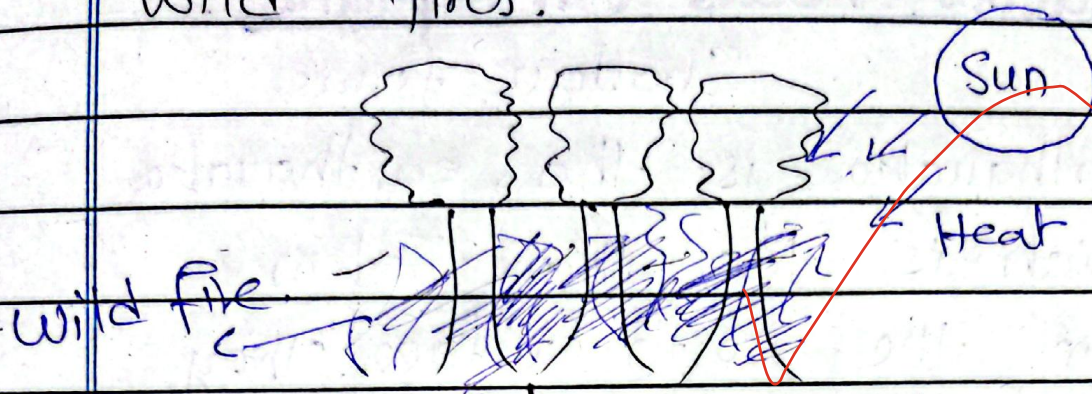
### Role in weather;

Humidity plays crucial role in weather conditions.

- When humidity is 'high' it may lead to cloud formation and precipitation.

- When humidity is 'low' it may lead to dry conditions and can also cause

wild fires.



↓ Low Humidity can result in wild fire.

(D)

## Earthquake

### Definition;

Earthquake in simple words is the shaking of earth. Earthquake is a natural phenomenon. It usually happens when the energy release from the crust in the form of seismic waves.

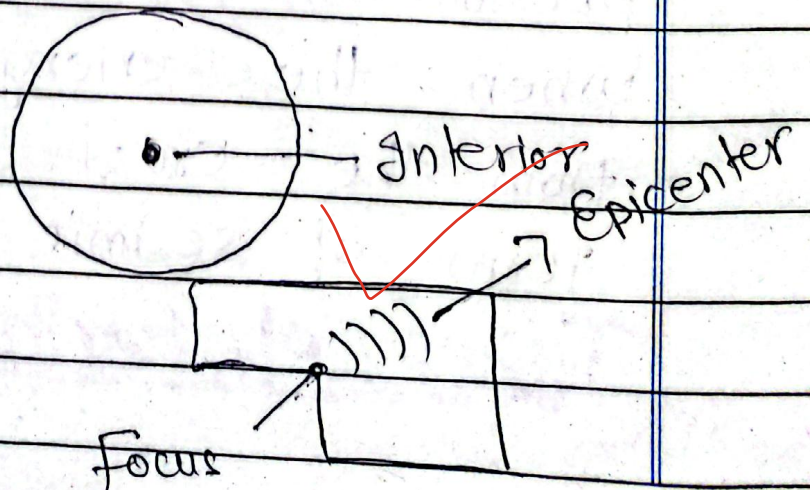
### Types of Earthquake;

## Shallow - Focus Earthquake;

Shallow focus earthquake is the earthquake which is less than 70km from the earth surface. They are quite random and majority of them are of smaller magnitude.

## Deep-Focus Earthquake;

The earthquake are more than 70km from earth surface. It happens due to tectonic movements or collision between plates. It does not cause much damage.



# Causes of Earthquake;

## 1- Tectonic Movements;

The earth tectonic plates moves due to the convection currents in the earth mantle. When plates collide, slide past or move apart, stress builds up plate boundaries. When these boundaries stress release, it causes an earthquake.

## 2- Volcanic Activity;

Magma movements beneath the earth can cause seismic activity. This may also cause ~~the~~ earthquake.

## 3- Human Activities;

Human activities like mining, reservoir induced



seismicity like Dam, and  
nuclear explosions can also  
trigger earthquake. E.S

## Question 3

(Part a)

### Vaccines

#### Definition;

Vaccines are the inactivated, partially or fully dead micro-organisms or toxins which are injected into human bodies or bodies of organisms to develop immunity against particular diseases or virus.

#### Vaccination;

It is a process

which is carried out to make a person immune from viral or bacterial diseases.

## Types of Vaccines;

### 1- Inactivated;

Vaccines in which the micro-organisms are fully dead are injected in human body.

E.g;

- flu
- Hepatitis
- Polio

### 2- Live-attenuated;

Those vaccines which are ~~weak~~ composed of weak form of disease causing germs.

E.g;

- Measles

• Small Pox

3- M-RNA;

This kind of vaccines gives message to RNA to produce immunity

E.g; Corona Virus vaccine

4- Conjugated Vaccines;

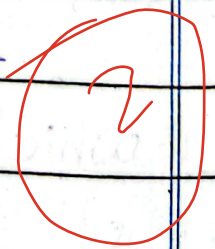
These vaccines composed of capsid, protein content or sugar to develop immunity in the body.

5- Toxoid;

Toxoid vaccines are part of the body germ which is injected in human body to produce immunity.

Part-(b)

Balanced Diet



## Definition;

A balanced diet is refers to the meal plan that includes all essential nutrients - carbohydrates, fats, vitamins, minerals, proteins, fibers and water in the right proportion to maintain overall health and well-being.

## Components of Balanced Diet;

### 1- Carbohydrates;

Carbohydrates provides energy. Its sources includes;

- ~~Meat~~
- ~~Fish~~
- ~~Eggs~~

- Whole grain
- Rice
- Bread

### 2- Proteins;

Proteins are essential for muscle development and growth. Its sources includes.

- Meat
- Fish

- Eggs
- Beans

### 3- Fats

Fats provides energy to the body and also provides support to cell functioning.

Its sources are;

- Nuts
- Seeds
- Oils

### 4- Vitamins and Minerals;

Vitamins and minerals also helps in proper functioning of bodies.

These are not present in produced by the body and only obtained through balanced diet. Vitamins and minerals

sources are;

- Fruits
- Vegetables
- Nuts

### Merits of Balanced Diet;

#### 1. Optimal Functioning of Body;

Balanced diet helps in optimal functioning

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of the body. It help body to function properly.

## 2- Enhance Physical Health

Balanced diet helps in enhancing physical health and prevents malnutrition.

## 3- Promote Mental Health

Mental health is necessary for optimal life. A balanced diet provide all essential nutrients to brain.

## 4- Prevention of Chronic Disease

Some of the disease are usually caused due to absence of nutrients and vitamins.

## 5- Promote Growth and Development

Balanced diet help in growth and development of human body.

## 6- Longevity;

It promotes long and healthy life of a person.

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## (Part C)

# Disaster Risk Management System of Pakistan

## Introduction;

In the past few decades, Pakistan has faced several disaster due to the climate change. It is still among top 10 countries which are at high risk due to climate induced disaster. However, its Disaster Risk Management (DRM) still remains weak and seen as inefficient in dealing with emerging threats.

## Weakness in the DRM;

### 1- Lack of Comprehensive Planing;

The DRM frameworks

lacks comprehensive planning and a unified and efficient system. It largely emphasize post-disaster settlement rather than pre-disaster management and preparedness.

## 2- Weak Institutional Capacity;

DRM framework shows poor coordination among federation and const federating units. NDMA and PDMA's are often understaffed and lacks sufficient funds.

## 3- Insufficient Early warning system;

The framework lacks the usage of modern technology and modern equipments to deal with the disaster and to give early warning.



#### 4- Weak Community Involvement

Communities are not adequately educated on disaster preparedness.

DRM is failed to properly involve in community and educate them about potential risks.

(Part-d)

### Carbohydrates

#### Definition:

Carbohydrates are one of the main macro-nutrients essential for human body. They are organic compounds composed of Hydrogen, Oxygen, and Carbon. They are found in starch, sugar and fibres.

# Types of Carbohydrates;

## 1- Monosaccharides;

These are simpler form of sugar and carbohydrates. They are water soluble and sweet in taste.

- For example;
- Glucose
  - Fructose
  - Galactose

## 2- Disaccharides;

Disaccharides are consist of two monosaccharides units. They are less sweet in taste and are less water soluble.

- For example;
- Sucrose
  - Lactose
  - Maltose

## 3- Polysaccharides;

These carbohydrates

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consist of more than two units of monosaccharides. They are tasteless and are insoluble in water.

for example;

- Starch
- Glycogen
- Cellulose

#### 4. Functions of Carbohydrates;

##### • Energy Source;

Carbohydrates are good source of energy for the body.

##### • Support Brain Functioning;

Carbohydrates improves brain functioning by providing energy.

##### • Regulates Digestive Health;

Fibres helps in improving gut health and thus regulates digestive system.

(2)