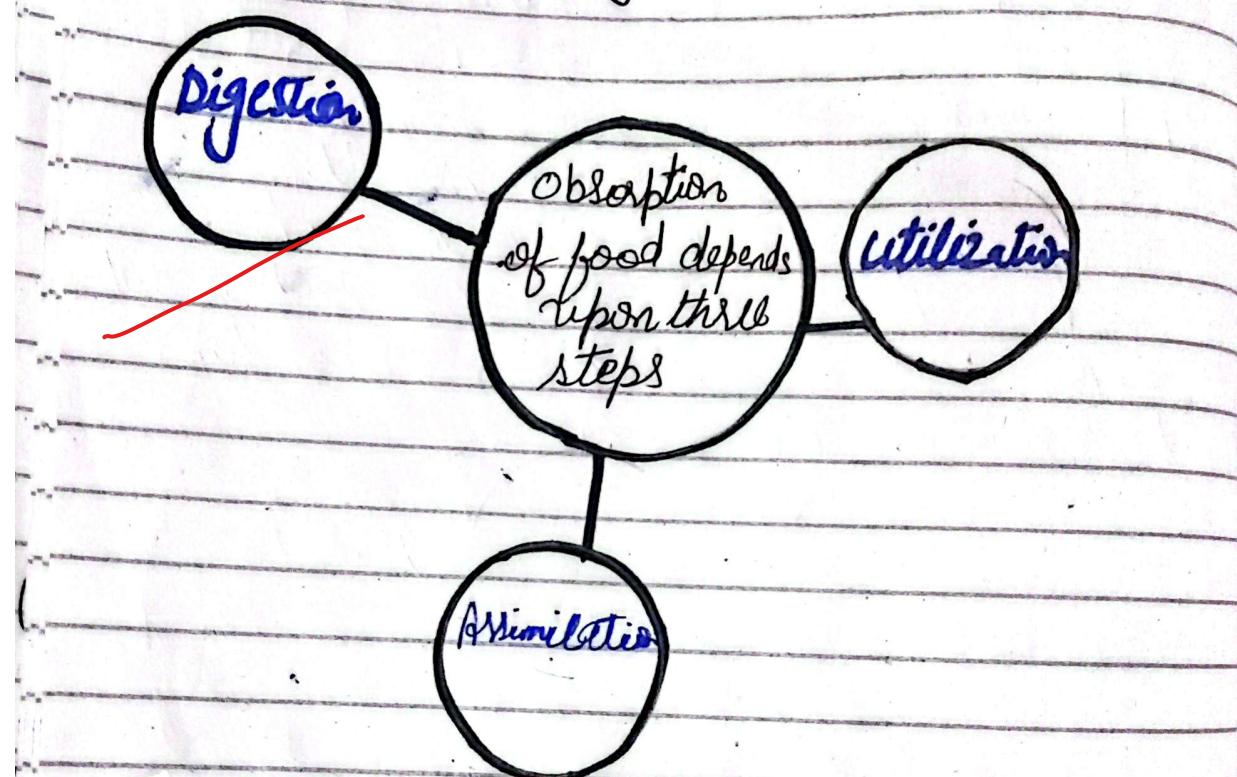


(a) write a note on bioavailability of food nutrients?

: Bio-availability of food:

- ① Bioavailability of food nutrients is measured as the amount of nutrients absorbed and utilized by body.
- ② It includes also availability of nutrients in food.

It depends upon absorbed of food in body.



Factors affecting of Bio availability:

- ① Bioavailability of food nutrient

in body depends upon digestion of food, absorption and enzymatic activity of food.

For example: Vitamin C is absorbed and uptake by body by the availability of Na^+ - dependent $\text{Co-Clamperter (Sda)}$

Bioavailability in frozen preserved food:

The frozen food preserved ~~caused~~ nutrient of food as fresh food.

But it deteriorate food texture, quality, appearance.

Method to increase Bioavailability of food nutrients

A pepper called pipeline increased bioavailability of nutrient up to 200%
(2) Carboxy-methyl cellulose present in food, which increases shelf life and nutrient

3/5

Q) Write a note of Food Preservation and method of food preservation.

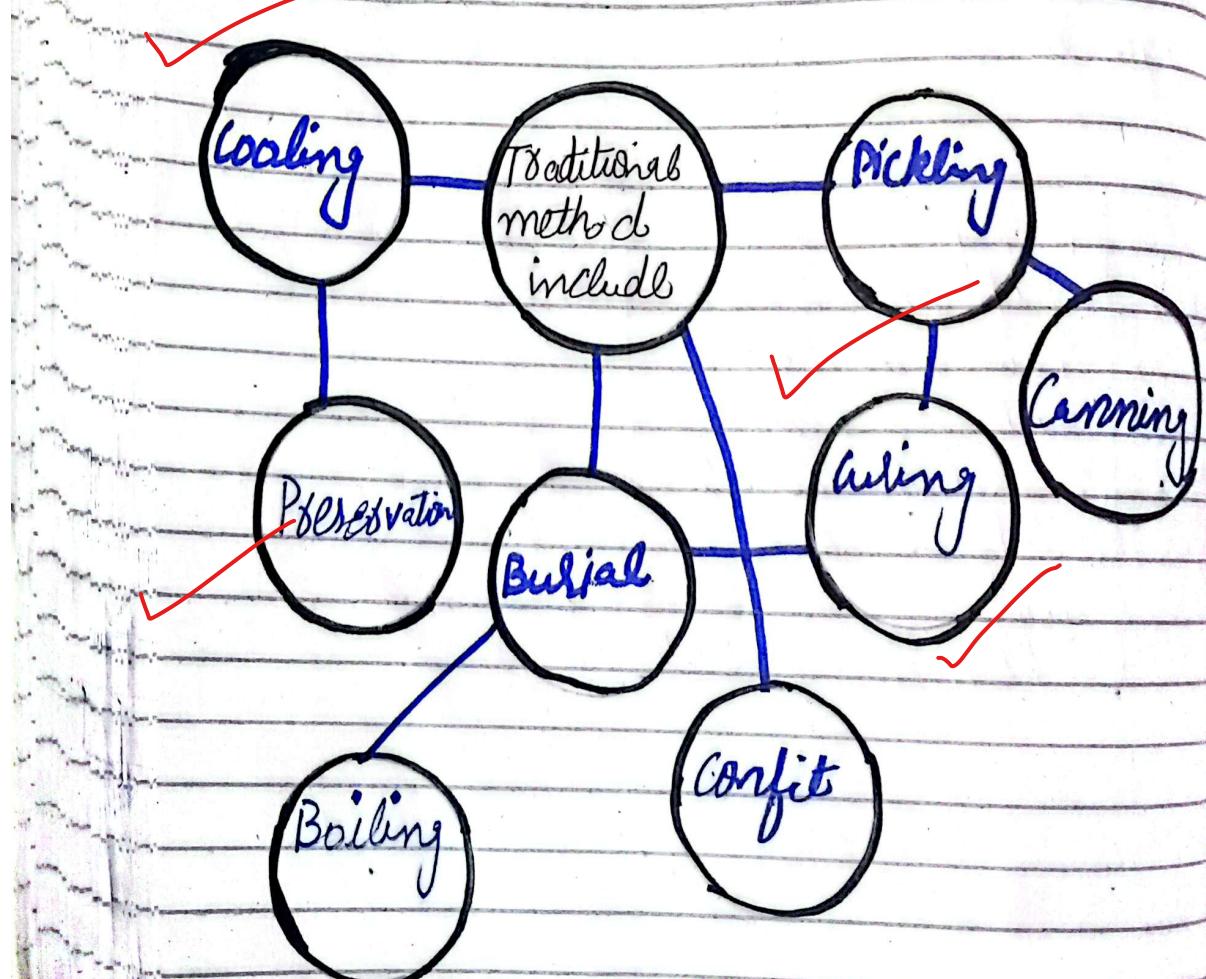
: Food Preservation:

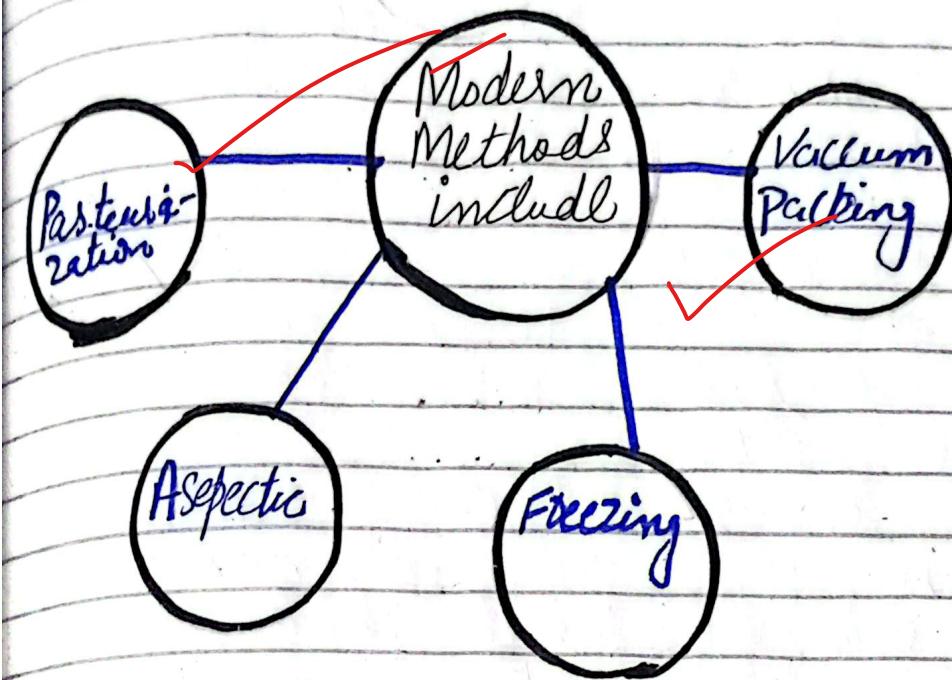
- It is refer as a preservation of food.
- It includes the method and technique for included for preservation of food.

2) Method of Food Preservation:

There are two method for food preservation.

- ① Traditional method of food preservation
- ② Modern method of food preservation





Traditional Methods Cooling / Freezing

It includes freezing of food to prevent them from deterioration, toxic substance and microbial growth.

2) Burial: It includes burial of food inside earth surface which contains lack of oxygen, and lack of sunlight which increases shelf life.

3) Boiling: For food preservation

Modern Methods Aseptic Method:

It includes the sterilization of meal preserved into sterilized cans and packs and in sterilize environment to increase shelf life and preserve them for microbial growth.

Vacuum Packing:

This technique is used to store

boiling is widely used. It kills bacteria. It is widely used to preserve water and milk for bacterial growth.

nuts. In these processes food store is very environment is air tight packaging which increase food shelf life.

Confit: It includes drying of Salting of food and soaking into sunlight for increasing shelf life. It was common before refrigerators.

Pasteurization

It is invented by Louis Pasteur in 1860.

It widely uses to preserve milk. First milk heated in 70-80° at 20-25 minutes then cool about 10 minutes for preventing microbial growth.

Canning: Used of sterilized cans for preserving of food.

Freezing:
Modern freezing method includes two techniques
① Modern freezing.
② Cryogenic freezing.

Curing: It includes drying and dehydration of food. Smoking and salting increase and improve this process.

Cryogenic freezing:

It is a quick freezing of food with help of frozen liquid nitrogen at -196°C .

3: | 5:

Food Additives

- It is the substance which is intentionally added to the food. It is used to enhance production, texture, taste of food, it could include antioxidant, dye, colour, enzymes, emulsifiers etc.
- There is no nutritional value of food additives.

There are two types of food additives

Direct food additives

Indirect food additives

1- Direct Food Additives: They are intentionally added to the food for enhancing their texture, taste, colour. For example: Xantham Gum is added in puffs, bakery, cakes which enhance its texture.

2- Indirect Additives: These are not directly added to food, however, they are added during packaging, handling procedure. For example: Plastic of packaging material added into food while handling and packaging.

Types of Food additives

Food additives can be used to enhance colour, nutrition and texture of food

Colour Dye is food additives without colour Dye. Cola cannot be brown, margarine cannot be yellow.

Some natural colour dyes include

- 1- Beta-carotene (Yellow to tan)
- 2- Grape skin juice (Red, green)
- 3- Annato-extract (Yellow,)
- 4- Dehydrated beets (red to orange)

FOOD ADDITIVES IN European UNION

ans is too long for 5 marks

reduce the detail

There are 2500 food additives in world. In European Union E is stand for food additives, like E-101 stand for vitamin B (Riboflavin).

① What is Food Quality and Food Safety?

A) Food QUALITY: It includes

the Safety of food and attributes which may effect

on Product Value.

2) **FOOD SAFETY:** It is refer as a hazardous of food which includes chronic and acute hazards, which may injurious to health.

Types of Quality Attributes

— **POSITIVE ATTRIBUTES**

— **NEGATIVE ATTRIBUTES**

2.1) **POSITIVE ATTRIBUTES:**

It includes origin, appearance, taste, texture of food, which increase product value.

2.2) **NEGATIVE ATTRIBUTES:**

It includes spoilage, contamination and de-coloration. It decrease quality and product value.

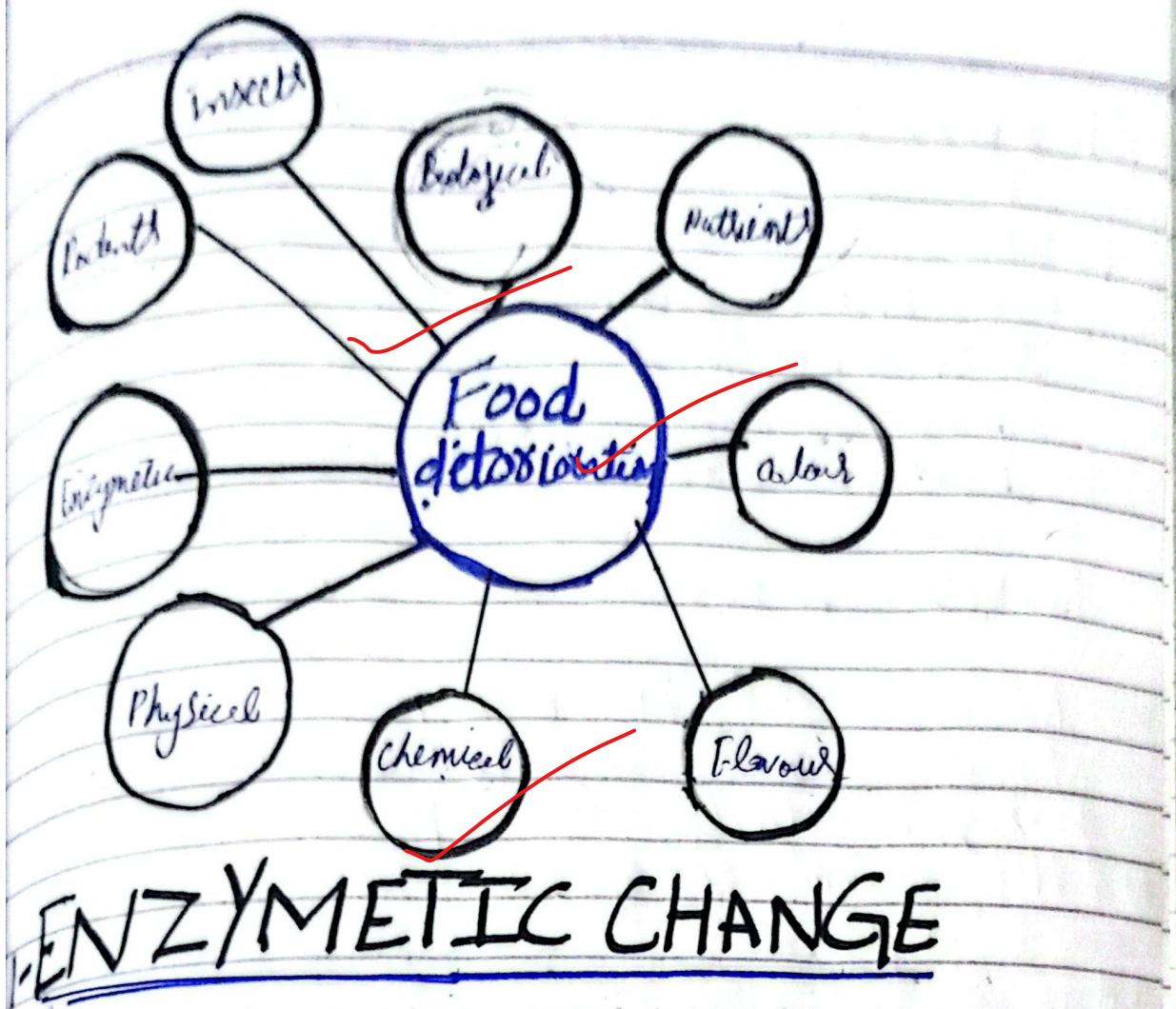
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Q) What are Food Deterioration?

FOOD DETERIORATION:

Food deterioration is particularly associated with deterioration of food which may influenced due to Enzymatic, ~~of~~ ~~nutritive~~, ~~for~~ colour, taste change of food

1) There are commonly 9 (nine) types of food deterioration.



ENZYMETIC CHANGE

Food is mainly deteriorate by enzymatic change

- ① Starch - Sugar conversion in plant tissue by enzymatic change / amylase.
- ② Oxidation of Phenolic tissue of plant.
- ③ Post - harvest methylation of plant tissue effectively quality and texture of food.

2. CHEMICAL CHANGE : This change

is due to chemical modification in food

- ① Unripe banana contain less amount of starch due to chemical change.

1) Time, time, chemical change influenced
by enzyme-induced oxidation of unsat'd
fats, being chemical change of
food, and effect ripening of fruits

3) FLAVOUR CHANGE:

Another deterioration is flavour change.
Ascorbic acid is highly sensitive for
change. When ascorbic acid during
packaging attach with packaging material
its flavour change.

4) COLOUR CHANGE:

Mostly chlorophyll change due
to deterioration.
Phenophlylation is a process
in which chlorophyll change.

5) Nutritional - Quality change:

Nutritional - quality change due
to physical and chemical change

Lipid oxidation of food due
to temperature & humidity effect
its nutrition quality.

PHYSICAL CHANGE:

Modification in food due to physical effect like environmental factors leads to bring physical change e.g dryness of food

on the factor of physical stability food is divided into three types

1. **Pershiable changes.**
2. **Semi-pershiable changes.**
3. **Non-pershiable changes**

Canned or sealed food consider as pershiable food

Dry fruits considered as semi-pershiable food

Meat, chicken, fish is considered as pershiable food without any processing

Bio logical changes:

Many biological factors involves to deteriorate food

Fungus cause white patches on bread due to its growth

Bacteria fastest growth within 20 minutes contaminate food and bring biological change

i) **Insecticides and Pesticides change**

many insects attack on fruits

or grains but in extreme

humidity and factors like 10°C below and above 35°C insects can't breed.

Q- RODENTS:

track of mouse contain bacteria such as ~~Salmonella~~ ~~which is associated with food -~~ ~~bone disease.~~

Q) Write a note on Food Adulteration?

A) Food Adulteration is defined as adulterating food, adding impurities in food which is harmful for health.

o Mixing of ~~dyes~~ pebbles, aegemon seeds in food for adulteration purposes.

o There are illegal practices

Food

1) Milk and curd.

Adulteration

Starch powder, sugar

Disorder

stomach disorder.

2) Ghee, cheese and butter

Starch, Vanispati

liver disorder, toxicity in body.

3) Grains

Pebbles, Yul +, Stones, straw

stomach and intestinal disorder.

Pulses

dyes and
artificial colours

stomach
disorders.

1) coffee

Chicory and tamarind
powder

diarrhoea.

2) Tea

Dyes, colours,
artificial dy ing
agent

liver disorder

3) Sugar

chalk, straw,
col stones

Gastric intestinal
issue, and
kidney stones.

4) Edible
oil

Argemone Seeds

toxicity in
body.

5) Turmeric
powder

Chalk, stones e.t.c
Straw, artificial
Colour dyes

central -

dear student
answers are fine
conclude answers
on max 3rd side

10) Pepper

Papaya seeds

harmful for
health.

• Safe Guards for Preventing
Food Adulteration:

work on
presentation skills
content is
satisfactory

1) Use of advanced biotechnological
techniques as a indicator to
prevent food adulteration

2) Grains should be proper store