

Question: 2 (A)

Food adulteration is the mixing of a low quality or some harmful ingredient with a drink or food that is intended to be sold. On the other hand contamination of food can be caused due to a natural process. Food contamination can be resulted from physical, chemical or biological reaction to food.

Difference b/w food adulteration and Contamination

Food Adulteration	Food contamination
1- It refers to a maliciously motivated act.	1- It is an unintentional act.
2- It is deliberate addition.	2- It is natural

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3- It is the intentional addition, alteration or dilution of an expected ingredient with less expensive one

3- It occurs due to the failure of manufacturing or quality control process.

4- An ~~con~~ adulterant is a pharmacologically active ingredient.

4- A contaminant is a by product of manufacturing process.

5- Eg Addition of melamine into milk.

5- Eg Milk curdling

Controlling measures of food adulteration

1- Awareness to people:

Mostly common people are not aware of the process of adulteration. Thus, it is necessary to educate people about this issue.

Date: _____

2- Strict Law Enforcements:

There is a lack of proper food laws. Imposing laws about food adulteration \neq their strict regulation can ~~not~~ reduce this prevailing problem.

3- Government Initiatives:

The Government must introduce special initiatives to conduct regular checking of ~~total~~ food intended to be sold.

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Question 3 (b)

Balanced Diet:

A diet that contains proper proportion of all the nutrients that are protein, carbohydrates, fats, water, mineral, vitamins & fibres necessary to maintain good bodily health.

The proportion can vary from person to person as every individual has a different metabolic rate.

Nutrients	Source	Functions
Protein	eggs, fish	Growth & repair
Lipids	Butter, Meat	Provides energy
Carbohydrates	potato, wheat	Provides energy
Minerals	Fruits & vegetables	Metabolism regulation
Vitamins	Fruits & vegetables	Growth and regulation.
Water	water & fruits	maintain body functions

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Merits of Balanced Diet:

1- Regulation of Proper Functioning of Body:

A diet in accurate proportion helps the body to regulate all the functions properly and in balanced manner.

2- Prevention from malnutrition.

Balanced diet prevents from over or under nutrition. It contains every food component in an optimum amount.

3- Protection against disease:

Balanced diet prevent dietary disorders. It also protects the body from the diseases which cause due to excess of a component or lack of another component such as from excess of fats or lack of vitamins.

Question 3(d)

Carbohydrates:

Carbohydrates are the organic compounds made up of Carbon Hydrogen & Oxygen in the ratio of 1:2:1. It is the primary source of energy to living organisms.

Classes of Carbohydrates:

Monosaccharides
Disaccharides
Polysaccharides

1- Monosaccharides:

Monosaccharides are the simplest sugars. They are soluble and have sweet taste. They are made up of one sugar molecule.

Examples:

Glucose

Fructose

Galactose.

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2- Disaccharides:

Disaccharides are formed by the combination of two monosaccharides by glycosidic linkage. They are also sweet in taste and soluble in water.

Example:

Sucrose

Maltose

Lactose.

3- Polysaccharides:

Polysaccharides are complex sugar molecules. They are insoluble and unsweetened.

Example:

Starch

Cellulose

Glycogen.

Sources of Carbohydrates:

1- Cereal Crops

Wheat, Rice, Barley

2- Legumes:

Beans, Chickpeas

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3- Vegetables.

potato, sweet potato

4- Fruits

orange, Apple.

5- Sugary Food:

Honey, candies.

Functions of Carbohydrates:

i- Energy source:

Carbohydrates are the primary source of energy in the body.

ii- Storage:

Carbohydrate store energy in the form of glycogen in animals & starch in plants.

iii- Structural component

Carbohydrate is the chief structural component of the plant cell-wall in the form of cellulose.

Date: _____

iv. Support in fat & protein metabolism:

Carbohydrate spare fats & protein in the energy production process to use them for other purposes such as growth & repair.

v. Cell-Communication.

Carbohydrates located on the surface of cell-membrane help in cell-recognition & cell communication.

Question 2 (c)

Fats are the organic compounds that make a major component of food. Fats are made up of fatty acids which can vary in their chemical structure and sources where they are found. According to these variations fats can be saturated or unsaturated.

Difference b/w Saturated & Unsaturated Fats:

Saturated Fats	Unsaturated Fats
1- They have single bond.	1- They contain double bond.
2- They are solid at room temperature.	2- They are liquid at room temperature.

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3. Excessive consumption can cause heart diseases.

3. Their use in moderate quantity do not cause serious illnesses.

4. They are found in animal such as Butter & meat & a plant fat i.e coconut oil.

4. They are found in plants such as

5. Palmitic acid
Milk fat,

5. Eg: Olive oil
sunflower oil.
Linoleic acid

Importance of Fats:

Fats or lipids are the major dietary component. They are engaged in various functions of body.

1. Energy Production:

Fats contain a huge amount of energy which is more than carbohydrates & proteins. It contains 9 calories per gram.

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2- Structural Component:

Fats are the principle element of cell membrane in the form of phospholipids.

3- Energy Storage:

Unlike protein & carbohydrates, fats can store a large amount of energy for a longer duration.

4- Thermal Insulation:

Fats store heat & provide thermal insulation in cold weather.

5- Absorption of vitamins:

Vitamins A, D, E & K are fat soluble. They need fats in small intestine lining to dissolve & then transport to the body cells.

Question 2 (D)

Water Soluble Vitamins:-

Vitamins are organic compounds, required by the organisms in a very small quantity to regulate the body functions.

The water soluble vitamins are Vitamin B & Vitamin C. The sources, deficiency diseases and uses of water soluble vitamins are as under.

Vitamin	Source	Disease	Use
Vit : C	Citrus fruits	Scurvy	Regulation of metabolism
Vit : B ₁	Nuts & fruits	Beri-Beri	convert food into energy
Vit : B ₁₂	Spinach leafy veg	Pernicious Anemia	Formation of RBCs.