

GSA - Test #1

Tayyaba Batool

01 - CSS24 - NOA - ISBI

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Question #1

(A)

Vaccine and Antibiotics

Vaccine:

Vaccine is weakened or attenuated pathogens or parts of pathogens like protein covering, administered to create immunity in the individual against that certain disease causing pathogen.

- Vaccines work by activating immune system and by creating memory in the immune system against a specific pathogen so that body can compete against the disease effectively whenever that pathogen enters the body.

Example:

Polio Vaccine, AstraZenca for Covid-19

Antibiotics:

Antibiotics are the class of medicines that are given to treat bacterial infections.

Function: Antibiotics function by rupturing the cell walls of the pathogenic bacteria or by stunting their reproductive growth.

Differences b/w Vaccine and Antibiotics

Factors	Vaccines	Antibiotics
• Purpose	Vaccines are used to prevent diseases. They are administered before the occurrence of the diseases.	Antibiotics are used to treat diseases. They are taken after the occurrence of disease.
• Mode of administration	Vaccines are administered through IV methods mostly. Polio vaccine is given orally though.	Antibiotics are taken orally as long as the patient is conscious.
• Types	<ul style="list-style-type: none"> - Attenuated pathogens - protein covering of the pathogen - RNA-protein vaccines 	<ul style="list-style-type: none"> - Broad spectrum antibiotics - Narrow spectrum antibiotics

(C)

Galaxy

• Definition:

Galaxy is gravitationally bound set of stars, stellar remnants, interstellar gas, dust and dark matter.

- According to one estimation, the universe has around 200 - 400 billion galaxies.

• Types:

Galaxies are classified on the basis of shapes. Galaxies can be

- Spiral
- Elliptical
- Irregular

• Examples:

Milky way and Andromeda are the examples of galaxy.

Our solar system is located in milky way galaxy. It has almost 200 Billion stars.

• Milky Way and Blackhole:

It is considered a fact that all the galaxies have a dense black hole at their centre which has an excessive pressure and doesn't let anything pass near it.

(B)

Cyclones, Tsunami and Typhoons
Cyclones, Tsunami and Typhoons are fundamentally similar, but have different names due to different locations of occurrence. All of these occur over warm oceans.

• Cyclones:

Cyclones are also known as tropical cyclones. It is a phenomena caused by low pressure and fast winds around the low pressure centre.

• Eye of the Cyclones:

All the cyclones have a central point of incidence which is called eye of the cyclone.

• Occurance:

Cyclones mostly occur around Ring of fire in Pacific ocean.

Tsunami

• Tsunami is a Japanese word which means Abnormal wave. Tsunami is an abnormal and massive wave of ocean that causes destruction when it hits the shore.

• Tsunami is caused by low pressure

centre and high speed winds around it moving in anticlockwise direction.

- Typhoons:

Typhoons are caused by closed low pressure phenomena over warm oceans that subsides naturally when it reaches the cold water, and causes damages to the property and lives if it hits the shoreline.

- Effects:

The effects of cyclones, tsunamis and typhoons are as follows:

- Rainfall:

They cause heavy rainfall around the region of occurrence.

- Floods:

Tsunamis can also cause massive floods on the areas around the shores. Heavy rainfalls can also cause flooding.

- High speed winds:

High speed winds as a result of these phenomena can cause damage to the property around

the region of occurrence.

Q - 2 (A)

Difference b/w Good fats and Bad fats

Fats:

Saturated lipids or fats are one of the major macromolecules required to body for its proper functioning. They are an essential component of nutrition.

Fats are undoubtedly important for body but excessive presence of solid state lipids or saturated fats can cause diseases like obesity, cardiovascular diseases and atherosclerosis.

Cholesterol:

The major type of fat occurring in body is in the form of cholesterol. It is formed by liver and is transported to where ever it is needed in the body.

It is further divided into HDL and LDL.

Moreover fats are broadly divided into saturated and unsaturated

fats.

Saturated Fats

- This type of fats are present in solid form.
- Present in ghee, meat, cheese etc. Coconut oil in raw form is also example of saturated fats.
- Difficult to digest and cause diseases if taken in excess.

Unsaturated Fats

- They are liquid in nature.
- Present in oils obtained from plant sources, olive oil etc. Fish oil is example of unsaturated fats.
- Easy to digest, do not pose threat to the health.

HDL

vs

LDL

- High density lipoproteins are ~~un~~ healthy type of cholesterol as they are easily transported and do not cause plaques in the arteries.

- Low density lipoproteins are unhealthy and can cause damages to arteries by blocking and forming plaques.
- Excessive presence in body can cause heart attack and stroke.

(B)

Uses of Vitamins

Vitamins:

Vitamins are organic compounds that are required by body to perform many chemical reactions in order to ensure proper body functioning.

Vitamins as Co-factor:

Vitamins are essential for the body as they act as co-factor in chemical reactions.

Uses:

i) B-Complex:

Vitamin B-complex includes B-1, B-2, B-3, B-5, B-6, B-7, B-9 and B-12. They have following uses:

- regulation of metabolic activity
- energy supply to the body
- proper muscle functioning
- help with effective neurons activity
- help with DNA synthesis and repair

ii) Vitamin E:

Vitamin E is fat-soluble vitamin and helps with

- proper neurological activity

- helps with eye health
- helps with skin health
- cardiovascular health

iii) Vitamin - D: (Fat-soluble vitamin)

Vitamin D helps with:

- Calcium absorption
- Bone health
- Mood stabilizer
- Brain health
- Better neurological activity

iv) Iron:

Iron is an important mineral for the body which is required for:

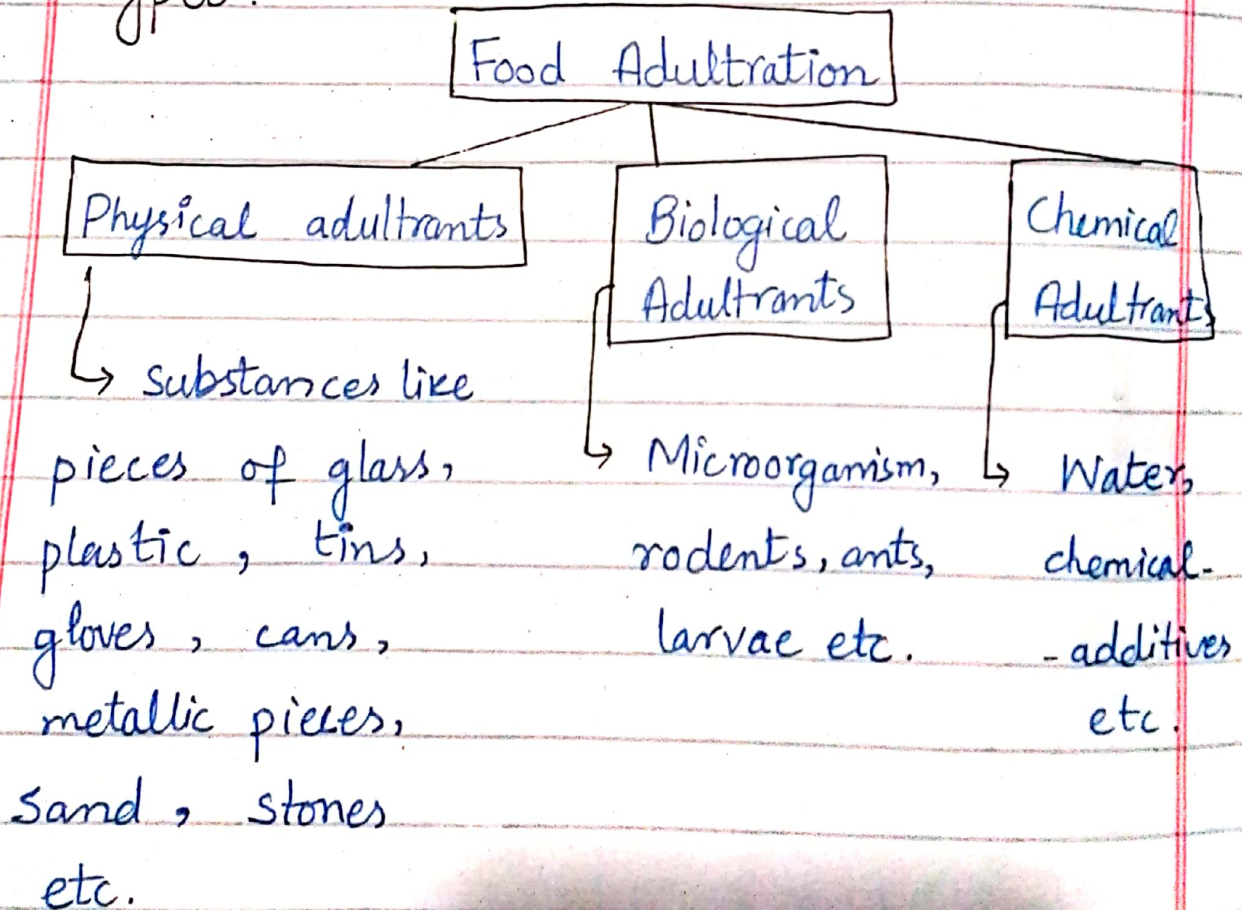
- Supply of oxygen
- maturation of red blood cells
- maintenance of energy level in the body

Food Adultration and Types

Definition:

Food adultration can be defined as intentional / unintentional mixing of inferior substances into the food, or harmful substances into the food that can compromise the quality of food or render it un-edible.

Types:



• Effects:

- Food adulteration may lower the quality of food by reducing its nutritional value.
- Adulteration may cause rancidity of the food.
- Adulteration can change color, smell or taste of the food.
- Biological adulteration can make food harmful for consumption.

• Solutions:

• Strict Quality Assurance:

Strict quality assurance measures should be taken before supplying the food for consumption.

• Biological Safety Measures:

Biological safety measures should be ensured while storing batches in the factories.

• Cleanliness of warehouses:

Cleanliness should be ensured while storing and packing food.

• Fines and Bans:

All those who digress should be fined by Quality Assurance authorities and factories should be banned.

(D)

Food Preservation and its methods

- Food preservation means storing food for long spans of time without spoiling it, and without compromising quality.
- Different methods are used to preserve food. Some of them are quite old while others are advanced.

Methods of Preservation:

1- Drying:

It is an age old method to preserve food. In this method all the water is removed from food which in turn doesn't allow bacteria to grow as it takes water out of bacterial body also.

- This method can be used to preserve meat for a long time.

2- Using salt / Sugar:

Salt and sugar are also used for food preservation. Fruits are stored in sugar water while meat is stored in saline water. The saline solution works by

drawing water out of bacteria due to difference in salt concentration, hence stunting bacterial growth.

- Freezing:

Freezing is a very good method of preserving foods for a long time without compromising its quality and without losing its nutritional value.

- Boiling:

Liquids can be purified from disease causing pathogens by boiling them and then storing them. Boiling liquids at high temperature leads to denaturing of bacterial proteins. Pasteurization is used for milk.

- Chemical Preservatives:

Chemical preservatives are used to increase shelf life of the food. Vitamic C is used in certain foods that provide acidic environment in the food where bacteria can not survive.