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## Question No. 1

Define vaccine and Antibiotics. Give differences between them.

### Vaccines

Vaccines are substances that are introduced into living organisms to make these immune to certain disease causing organisms.

Vaccines consist of certain parts of disease causing organisms or whole but their ability to create a full-fledge disease is lessened.

### Types of vaccines

- **Attenuated** - Measles, mumps, Rubella vaccines
- **Killed** - Inactivated polio vaccine (IPV)
- **Toxoid** - inactivated toxins produced by Bacterium
- **conjugate** - contain parts of bacteria combined with protein

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## Anti-biotics

These are substances which are employed to kill or deactivate disease causing microbes in the body of an organism

### Types

- Penicillin
- Cephalosporin
- Aminoglycoside
- Tetracycline
- Tetracycline
- Macrolides

## Difference b/w vaccine and

<u>Antibiotic</u>	Antibiotic	<u>vaccine</u>
Antibiotics	are small molecules used to treat infections caused by micro-organisms such as bacteria, fungi, protozoa	vaccines are dead or inactivated organisms or compounds that are used to provide immunity to a particular infection.



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## B. Differentiate b/w cyclone, Tsunami and Typhoon.

### a) cyclone

a cyclone is a large scale close air circulation system created due to difference of air pressure.

There are two types of cyclone

Tropical cyclone

(occurs in tropics)

mid-latitude cyclone

(occurs in other than tropics)

### b) Tsunami

Tsunami is a Japanese word which means harbor wave. It happens in ocean when it went through an earthquake, volcanic eruption

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or when any meteoroid or Asteroid  
hit in Ocean.

### Characteristic

- entire mass of water from sea bed must be in motion
- wave height must be above 1 meter
- considerable distance between crests or troughs

### c) Typhoon

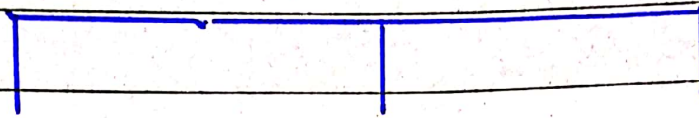
Typhoon is different name of cyclone which is used in Pacific and Indian ocean region. In the American continent this Typhoon is called cyclone.



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c) Write a short note on  
Galaxy

A galaxy is dense mass  
of interstellar stars, gases, and  
dust. It is present in three  
shapes



Spiral

Elliptical

Irregular

usually most of the galaxies have  
very dense centre that even  
light could not pass through  
that. This dense centre is called  
Black hole.

This universe consist of 100-  
200 Billion galaxies and formed  
13.7 Billion year ago by  
Big Bang phenomenon.

Examples

1) Andromeda

2) Milky way

Our solar system is part of milky

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galaxy. This galaxy is of 100,000 light years in diameter. Solar system is 30,000 light years away from the center.



D- Explain DRM

Q-2

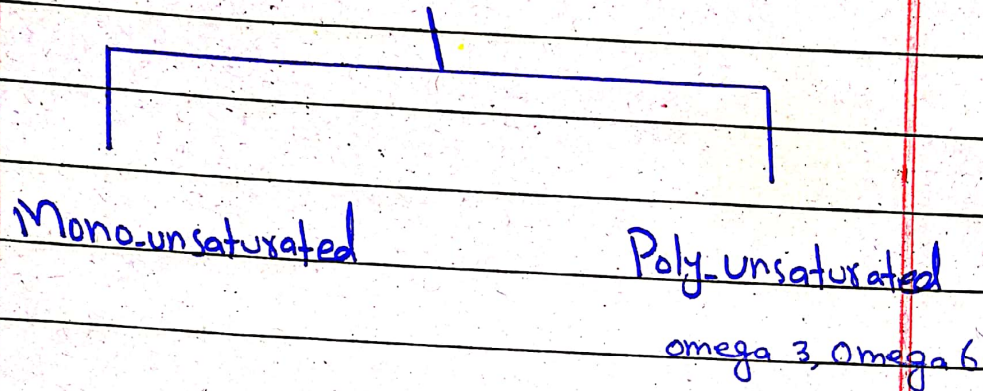
A- Differentiate b/w good fats and bad fats. Give Examples

### I - Good fats

These are the fats which are unsaturated at room temperature. These fats mostly obtained from plant sources like safflower, mustard, sunflower, Avocado. These contains higher amount of High density lipoproteins (HDL). These HDL help to remove plaques in arteries.

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Caused by LDL (Low density lipoproteins) There are two types of unsaturated fats



### II - Bad fats

Bad fats are fats which are saturated at room temperature. There are two examples of Bad fats

- i saturated fats
- ii Trans saturated fats

A diet should not contain more than 10% of these fats.

These cause Plaque in arteries and create cardiac diseases and Brain stroke.

### Examples:

Hydrogenated ghee etc



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B - Give five uses of each of the following

### Vitamin B-Complex

- i - work as co-enzyme
- ii - helps in nerve and
- ~~iii~~ heart function
- iii - used in cellular respiration
- iv - used in carbohydrate meta-
- bolism
- v - used in DNA Production

### Vitamin E

- i - work as anti oxidant
- ii - helps to avoid sterility
- iii - Prevent from anaemia
- iv - Prevents retinal infection

### Vitamin D

- i - necessary for bone formation
- ii - required to absorb calcium
- iii - helps to prevent bone de-  
-formation (rickets)
- iv - Prevent us from osteomalacia

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## Iron

i- It is used in the formation of

Hemoglobin

ii- Necessary for formation of

Folic acid

iii- It regulates energy metabolism



C) Explain Food Adulteration and give its types, effects, Solutions?

## Food Adulteration

Food adulteration is deliberate mixing of food with undesirable ingredients to lower its quality. This is done to enhance profit margins when supply does not meet demands or price is too much higher.

### Types of Food Adulteration

→ **Poisons** - a poison get mixed into food for preservation e.g. fumes of  $SO_2$

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→ Economical to a lower quality to make food affordable

→ Filth Food is contaminated or adulterated with filth like sand stone gravel

→ Biological: certain disease causing agents get mixed with food

→ Accidental - sometimes food is adulterated accidentally

## Effects

→ Health deterioration - cause infections as well as diet related diseases

→ No export demand A state where adulteration is practiced could not export it

→ Burden of National exchequer

Deteriorated public health means burden on national health infrastructure

## Solutions

Food adulteration can be redi

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#### Types of Food Adulteration

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Deteriorated public health means burden on national health infrastructure

## Solutions

Food adulteration can be redu

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reduced by employing following steps

- i. Government should empower regulatory authorities
- ii. Aware people to avoid process foods
- iii. Proper cleaning with running water of fruits and vegetables
- iv. Storage of food at tidy and hygienic places

←—————→

D. Explain any five food preservation methods?

Food is preserved by employing different methods to enhance its shelf life. Following are some methods that are commonly used.

### Heating

To kill disease causing micro-organism food is heated at  $121^{\circ}\text{C}$  for 15min in autoclave to

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kill all kind of disease causing elements. Milk is pasteurized at  $63^{\circ}$  for 30 min. Mostly bacteria operate at  $16-38^{\circ}$ .

## ii. Cold

Mostly by micro-organism operates at  $16-38^{\circ}$ . Lowering the temperature to a level that became unfavorable for functioning of these disease causing agents.

## iii. Salt and sugar

Some time food is treated with salt and sugar. These create an environment of high density gradient in which water became unavailable for microbes.

Example:- Pickles

## iv. Chemicals

Sometime food is preserved by introduction of preservatives which make environment unfavorable

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for microbes to operate

## V-Drying

Drying is an age old method. In this method, all the moisture in the food is dried so that all biological processes that are carrying out stopped.

