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QUESTION 02

PART [a]

I- STRUCTURE OF UNIVERSE ACCORDING TO BIG BANG THEORY

II- INTRODUCTION

Big Bang theory is one of the most acceptable theories for explaining the origin and future of universe in a scientific way.

III POSTULATES OF THEORY AND STRUCTURE OF UNIVERSE

1- According to Big Bang theory, universe emerged from a small point, hotter than any thing ever.

2- The Bubble was referred as singularity.

3- The bubble erupted and started to cool down.

4- Overtime, the bubble expanded and is constantly expanding.

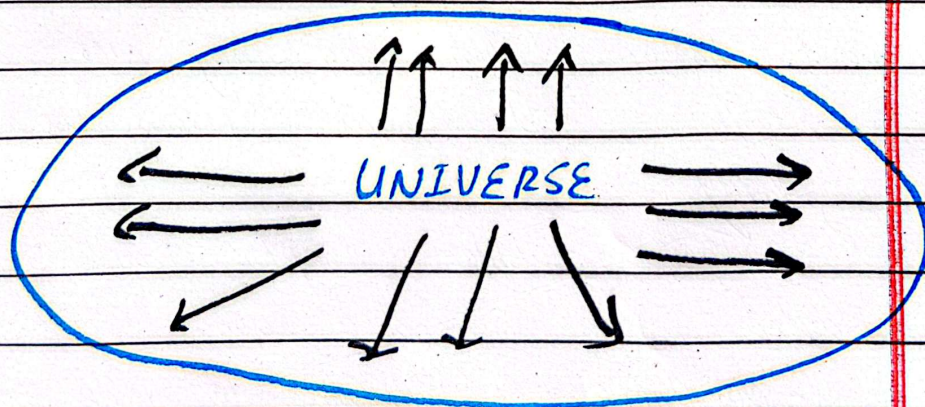
5- Coolness of temperature led to formation of proton and neutrons, which fused to form Hydrogen

nuclei.

6- According to this theory, further coarsness in temperature due to expansion led to formation of nuclei.

IV CONTINUOUSLY EXPANDING STRUCTURE OF UNIVERSE ACCORDING TO BIG BANG

According to big bang theory, universe is not a static structure but is continuously expanding. From very first moment to till date it is expanding and will continue to expand as per big bang.



"CONTINUOUSLY EXPANDING UNIVERSE
AS PER BIG BANG"

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VI- EVIDENCES FOR EXPANSION OF UNIVERSE'S STRUCTURE AS PER BIG BANG THEORY

A number of scientific evidences suggest that universe is expanding in all dimensions.

(i) RED SHIFT SPECTRUM AND UNIVERSE EXPANSION

The light coming from galaxies show that it corresponds to red spectrum, which is given when an object moves against or away from the reference. This red shift confirms the expansion of universe.

(ii) TELESCOPIC EVIDENCES FOR EXPANSION OF UNIVERSE

Likewise, the telescopic data like that obtained from hubble telescope suggests that universe is expanding as galaxies are going away from each other.

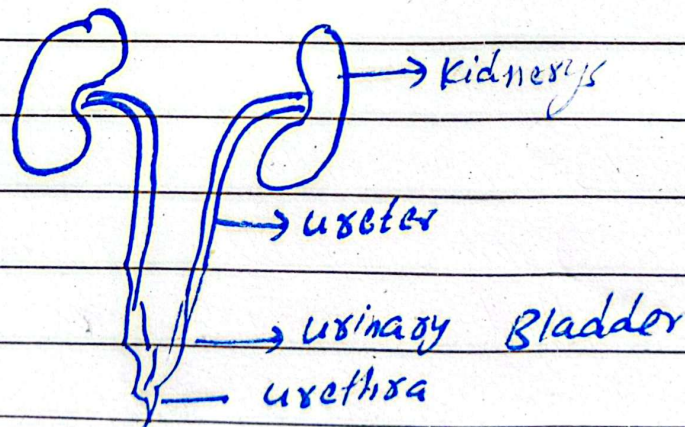
PART B

I- URINARY SYSTEM

Urinary system is an organ system in human body that is responsible for excretion of waste materials from human body.

II - ORGANS IN URINARY SYSTEM

- Kidneys
- Ureter
- Urethra
- Urinary Bladder



URINARY SYSTEM

III WORKING OF NEPHRON

Nephron is structural and functional unit of kidney. A kidney contains millions of nephrons. Nephrons are actual structures responsible for filtration of blood and making urine.

III - COMPONENTS OF NEPHRON

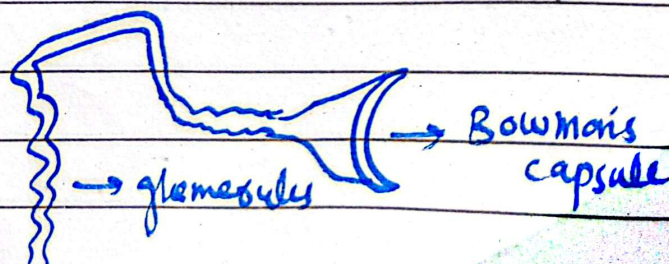
It has following components

(i) Bowman's capsule

It is responsible for filtration of blood. It is a cup like structure.

(ii) Glomerulus

It is a tube like structure responsible for reabsorption of nutrients.



STRUCTURE OF NEPHRON

V: NEPHRON FUNCTIONING

1- Blood from body enters the kidneys and in Bowman capsule of the kidneys.

2- Bowman capsule filters the waste materials and separate waste from the blood.

3- Blood then flows through the glomerulus.

4- Important nutrients like glucose are reabsorbed in blood stream through glomerulus.

5- Glomerulus pass the wastes to urinary bladder through ureter.

Blood $\longrightarrow$ Bowman Capsule
(Filtration)

↓
Waste Material $\longleftarrow$ Glomerulus
(Reabsorption)

↓
Ureter $\longrightarrow$ Urinary Bladder

↓
Excreted

PART C

I- UNBALANCE DIET

Unbalanced diet is a diet which lacks one or more essential nutrients in it.

→ An unbalanced diet lacks major nutrients like proteins, carbohydrates, fats, vitamins or minerals.

→ Deficiency of these essential nutrients lead to number of disorders in human body.

II- IMPACTS OF UNBALANCED DIET ON HUMANS

i- PROTEIN DEFICIENCY AND ASSOCIATED DISORDERS

If unbalanced diet lacks proteins it may lead to various disorders like

a- Marasmus

It is deficiency of proteins which cause bone and muscle disorders.

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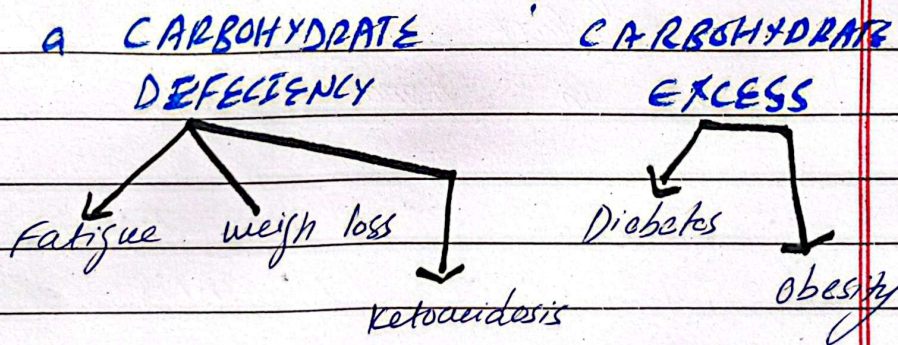
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6- KWASHIORKOR

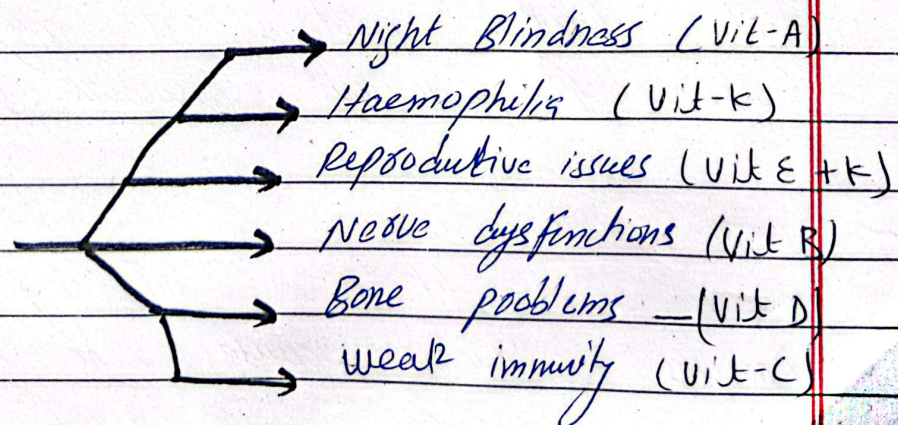
It is associated with muscle loss and fragile bones.

ii- CARBOHYDRATE IMBALANCE IN UNBALANCED DIET

Both the excess and deficiency of unbalanced diet leads to numerous issues in humans



iii- VITAMIN DEFICIENCY IN UNBALANCED DIET



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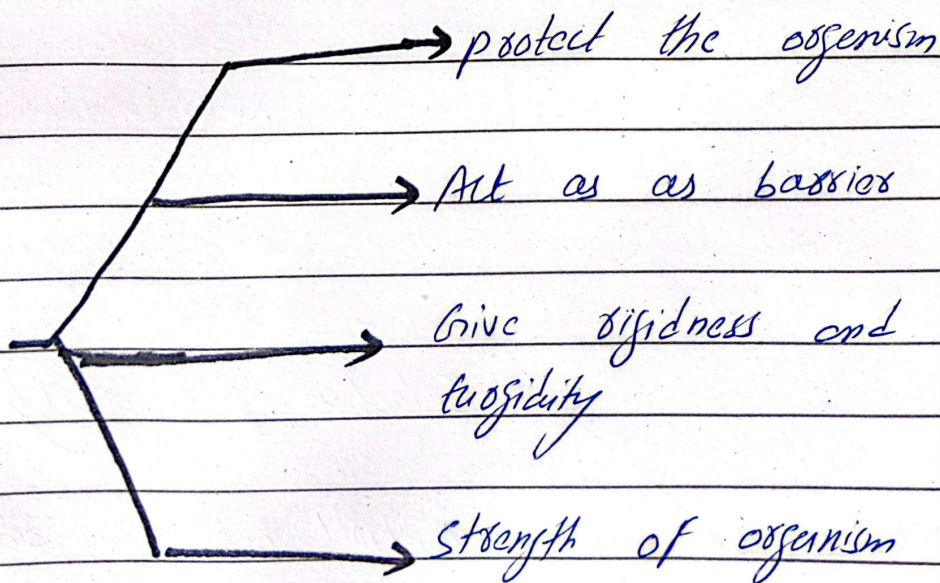
PART D

I- STRUCTURE AND FUNCTION OF CELL WALL

a- STRUCTURE OF CELL WALL

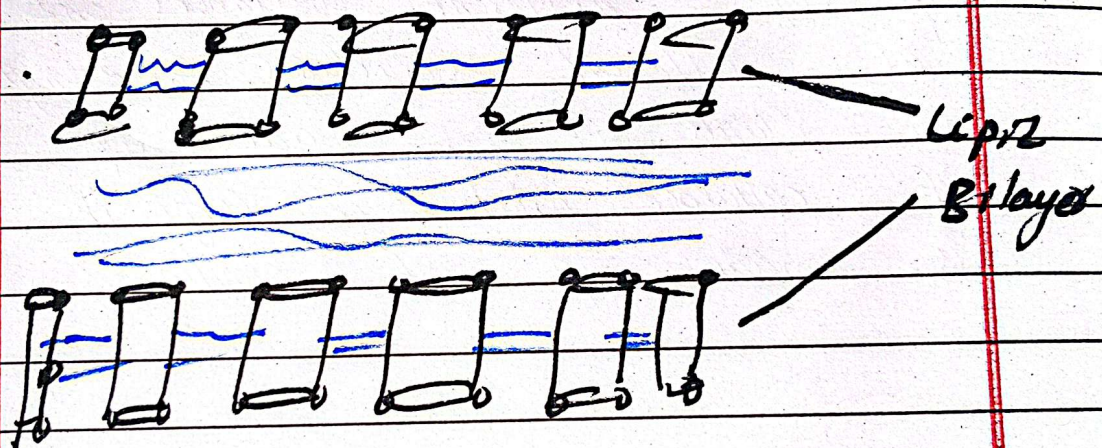
Cell wall in different organisms is made up of different substances and has different structures. For example in plants, it is made up of cellulose, while in fungi, it is made up of chitin.

b- FUNCTIONS OF CELL WALL



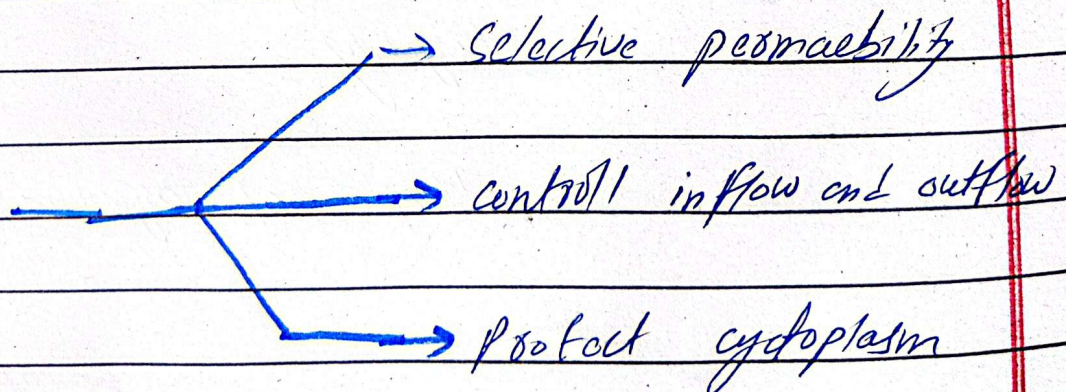
B- STRUCTURE AND FUNCTION OF CELL MEMBRANE

Cell membrane is made up of lipid bilayer in which two lipid layers sandwich the proteins as described by fluid mosaic model



FLUID MOSAIC MODEL OF CELL MEMBRANE

FUNCTIONS OF CELL MEMBRANE



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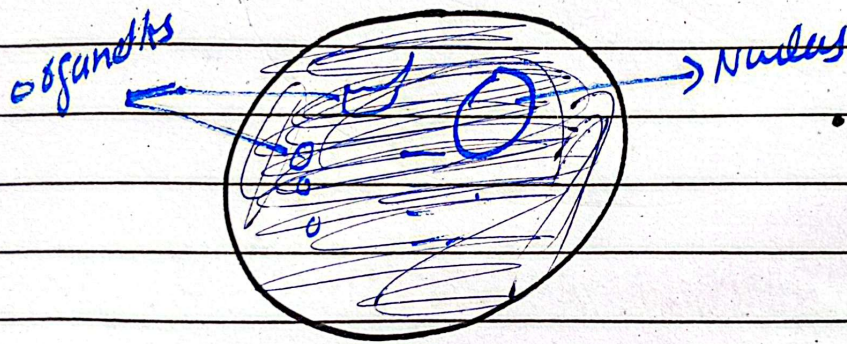
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C- STRUCTURE AND FUNCTION OF CYTOPLASM

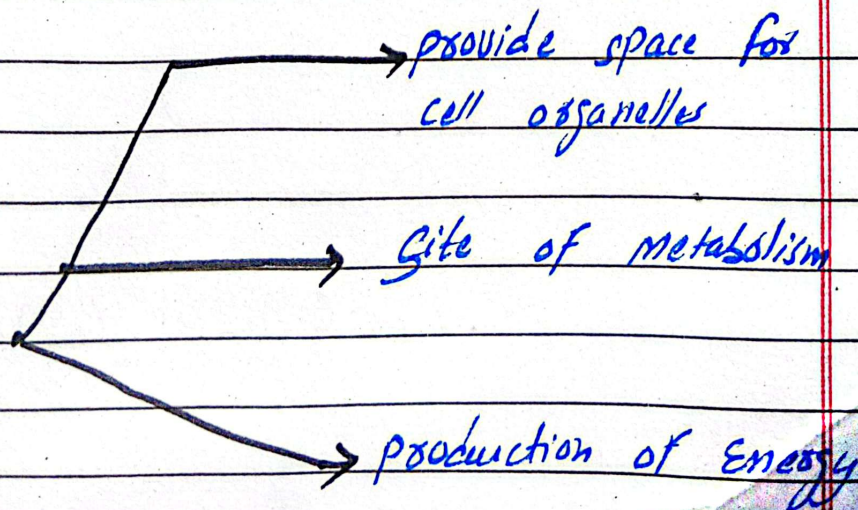
i- STRUCTURE

Cytoplasm is a transparent structure, filled with fluid and contain various cell organelles in it as



- STRUCTURE OF CYTOPLASM

ii- FUNCTIONS



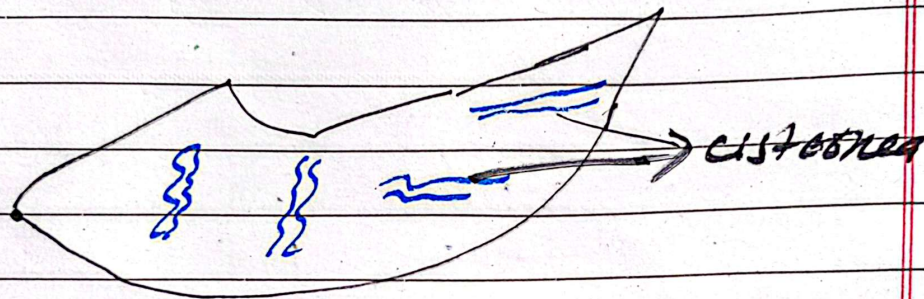
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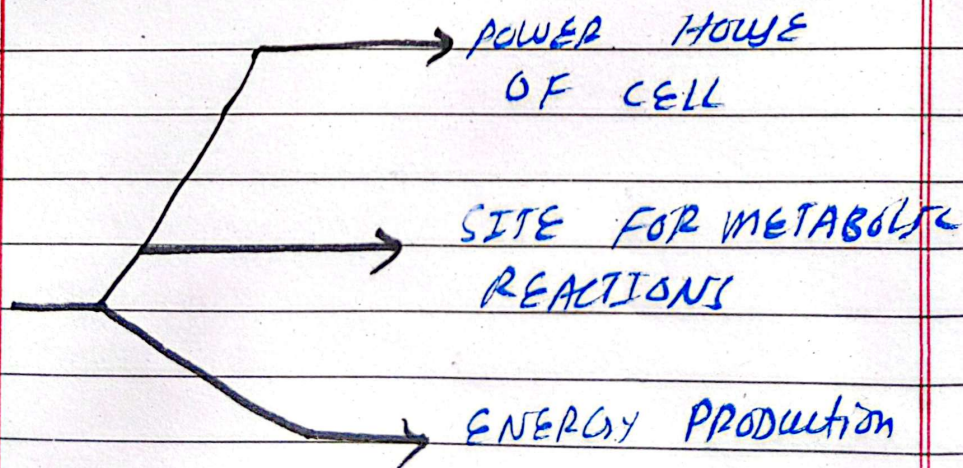
D. - STRUCTURE AND FUNCTION OF MITOCHONDRIA

Mitochondria is present inside the cytoplasm and is a shoe like structure. It contains internal channels known as cristae.



STRUCTURE OF MITOCHONDRIA

FUNCTIONS



QUESTION NO 05

PART A

I- DRM

DRM refers to disaster risk management. It is a process through which the risk of disasters are assessed, evaluated and monitored and planning is made to decrease risk and hazards associated with disasters to a minimum limit. It includes

1- PREPAREDNESS - It is advance planning to avoid the risks associated with disasters

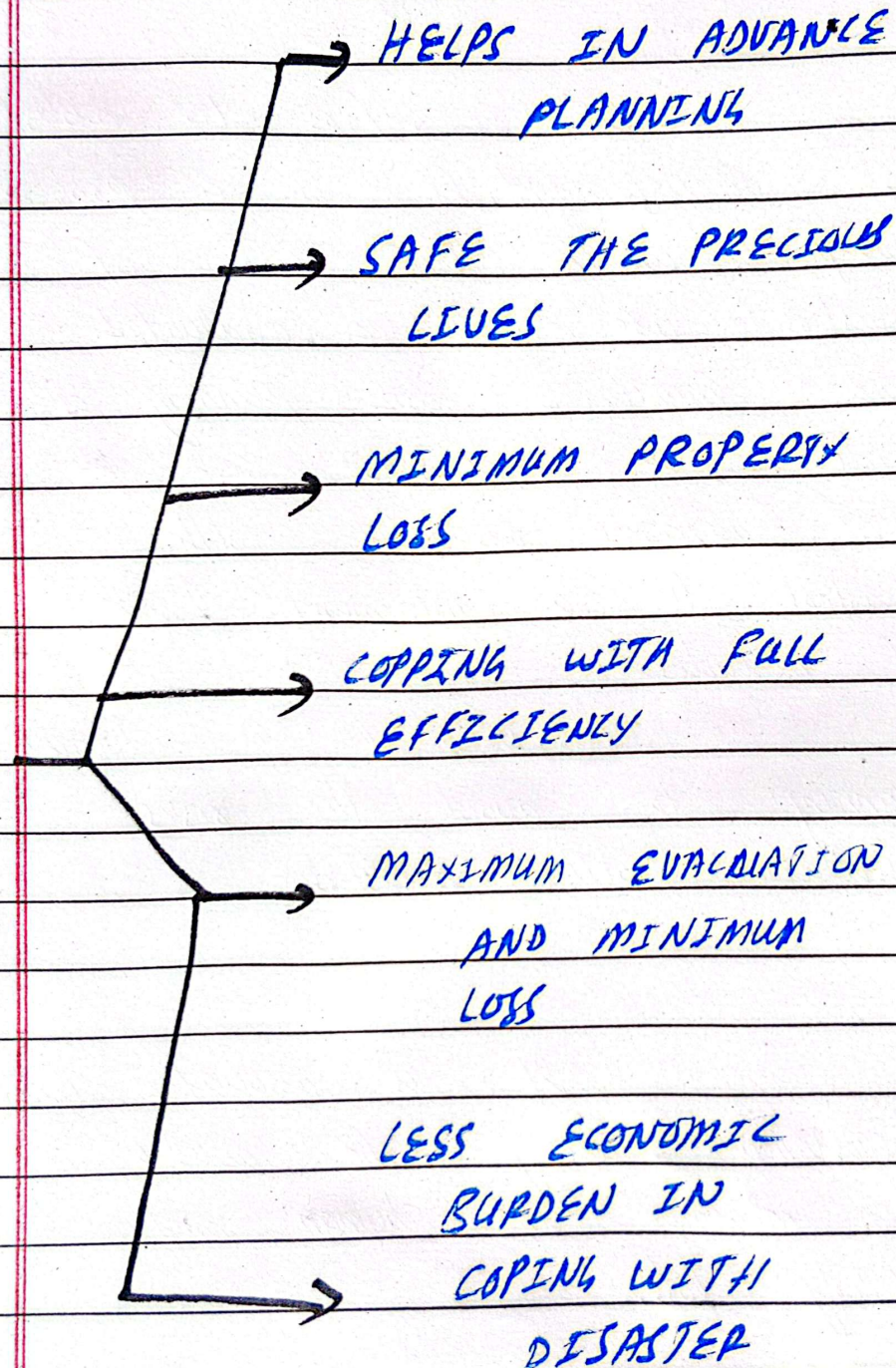
2- RESPONSE

It is associated with responsiveness during the disaster to minimize the human and property loss.

3- REHABILITATION

It refers to post disaster efforts to minimize the grievances of affected population

II- IMPORTANCE OF RISK ASSESSMENT IN DRM



PART B :

I-BIOFUELS

Biofuels refer to fuel made from organic matters like plants or animal waste. Plants and animal waste can be used to produce energy by producing methane and other combustible gas. Such a fuel is known as biofuel.

II- PRODUCTION OF BIODIESAL AND BIOGAS

1- Material are collected and dried

Materials are accumulated in a long container.

Pressure is set according to the requirement.

Temperatures are adjusted and heat is provided.

Organic matter decomposes producing biodiesel or biogas.

PART C

DIGESTIVE SYSTEM

→ Digestive system is an organ system in human body which converts large food particles to smaller one by using enzymes and then small food particles are assimilated in the blood stream.

→ Human food consist of large food particles in form of carbohydrates, proteins and lipids and these large food particles cannot enter the blood stream.

Digestive system breaks large food particles to smaller as

Proteins → Amino Acid

Lipids → Fatty Acid

Carbohydrates → Glucose/Maltose

COMPONENTS OF DIGESTIVE SYSTEM

Digestive system comprises the following organs

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- mouth
- oesophagus
- Stomach
- small Intestine
- Large Intestine

Likewise, liver also play a role in digestion by excreting digestive juices.

II- ROLE OF STOMACH

→ Stomach is a muscular sac like organ in the body that plays a crucial role in digestion of food.

→ Hydrochloric Acid in stomach digest the proteins and break down the food into small amino acids.

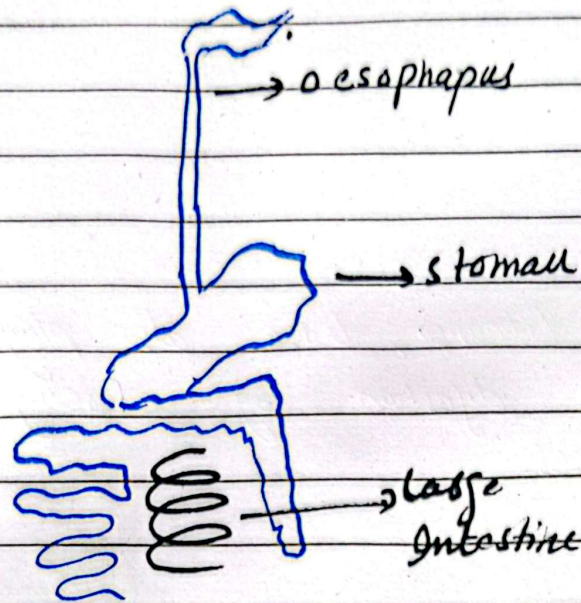
→ **PEPSIN** enzyme in stomach also digest proteins to smaller units (amino acids)

→ Acidic medium in stomach kill various microorganisms like virus and bacteria and protect human body from various diseases

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Digestive System of Human

ROLE OF INTESTINE

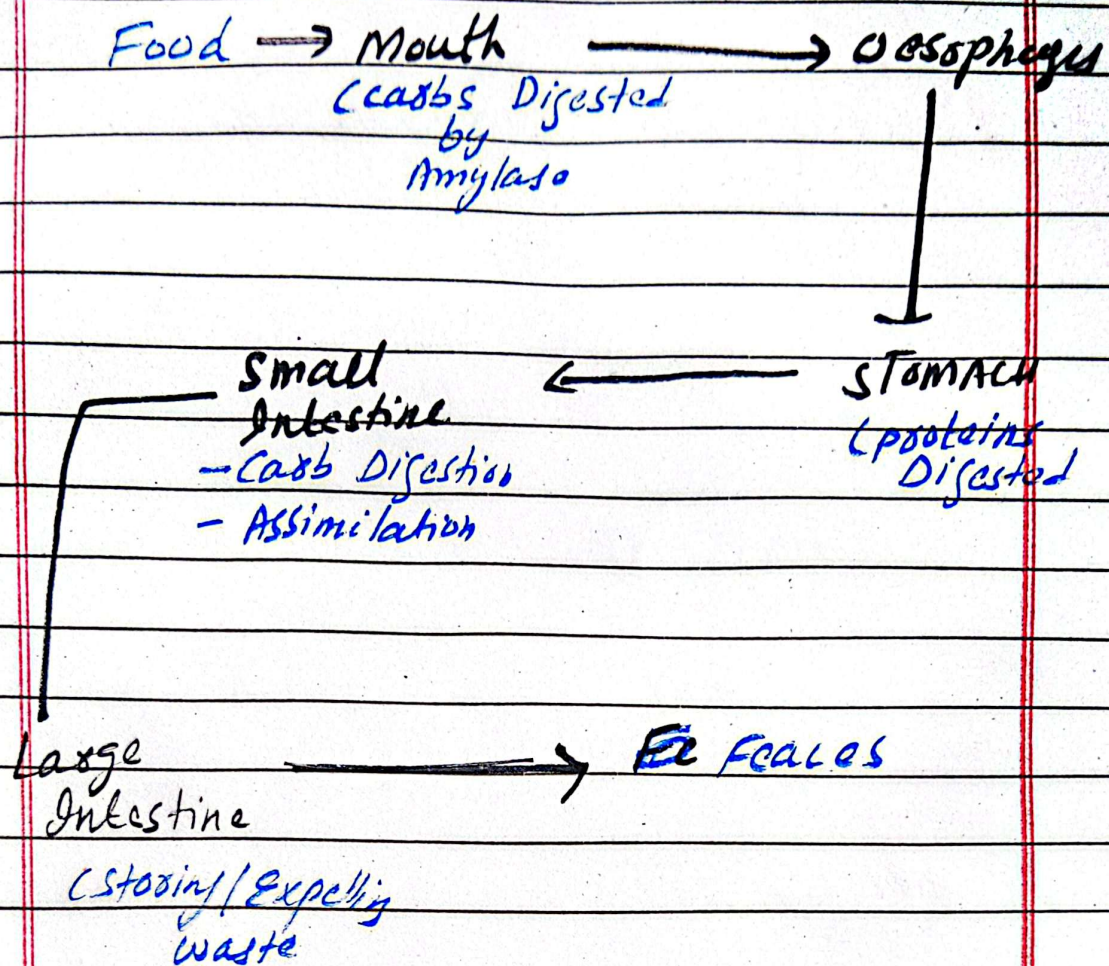
Intestine

plays a key role in digestion as

→ It helps in digestion of remaining carbohydrate

→ It is the actual site for assimilation of nutrients in the blood stream

→ Undigested food is passed to large intestine from where it is egested from the body



FLOWSHEET OF HUMAN DIGESTION

PART D

PLASTICS

Plastic are macromolecules made up of small organic monomers. They are widely used in daily life due to their properties.

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PROPERTIES OF PLASTICS

- Easy to shape/Reshape
- Easy to process
- Easily Available
- Temperature Resistance
- Economic

APPLICATIONS

- Home Appliance
- Electric wires
- Surgical Instruments
- Storage Containers.

ENVIRONMENTAL RISK

- 1- Non Biodegradable

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→ Land pollution

→ water pollution

→ Long Half life



QUESTION NO 7

PART (A)

GIVEN

$$40\% \text{ of a number} = \frac{40}{100}$$

$$\text{Two third of another number} = \frac{2}{3}$$

According to Question

$$\frac{40}{100} = \frac{2}{3}$$

or

$$\frac{4}{10} = \frac{2}{3}$$

Ratio of these number

$$\frac{4}{10} : \frac{2}{3}$$

Solving Number

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$$0.4 : 0.6$$

Converting to whole Number

$$\frac{0.4}{10} = \frac{6}{10}$$

Removing Fraction

$$\frac{10 \times 4}{10} = \frac{6 \times 10}{10}$$

$$\boxed{4 : 6}$$

PART CLet the age of son = x

According to Question

$$\text{Age of father} = x + 24$$

After 2 years

Son's Age ; Father age

$$x + 2$$

$$x + 24 + 2$$

$$x + 26$$

According to Question

$$2(x + 2) = x + 26$$

$$2x + 4 = x + 26$$

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$$2x - x = 26 - 4$$

$$x = 22$$

So present age of son = 22

PART D

$$\text{Working Rate of Rashid} = \frac{32}{6}$$

$$= 5.3$$

$$\text{Working Rate of Kamran} = \frac{40}{5}$$

$$= 8$$

Combine Rate

$$5.3 + 8 = 13.3$$

To Complete 110 pages

$$\frac{110}{13.3} = 7.4$$

So they will take approximate 7.4

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QUESTION NO 08

PART A

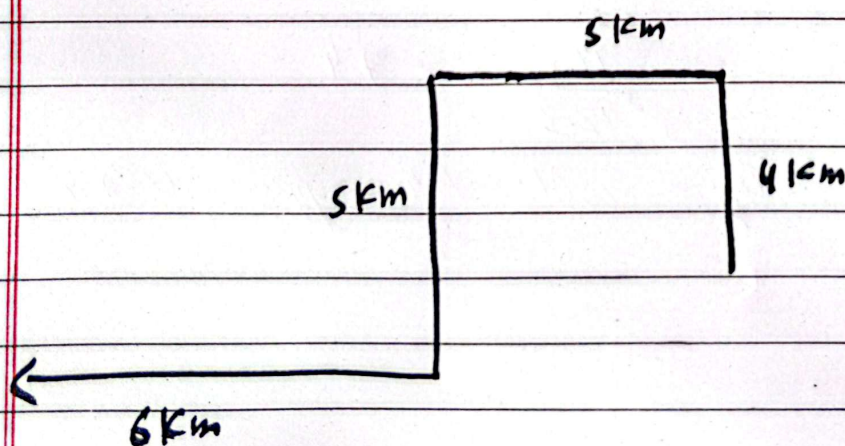
Arrangements according to
question

B D A E C

↳ So A is in middle

PART B

According to Question



(i) 10 km away from start

$$5 \text{ km} + 5 \text{ km} + 6 \text{ km} = 12 \text{ km}$$

(ii) Running in direction → West

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After second turn = toward south
From finish to start = will have
to move East

PART C

odd - THPSI

PART D

Triangles = 24

