

GENERAL KNOWLEDGE: PAPER-I

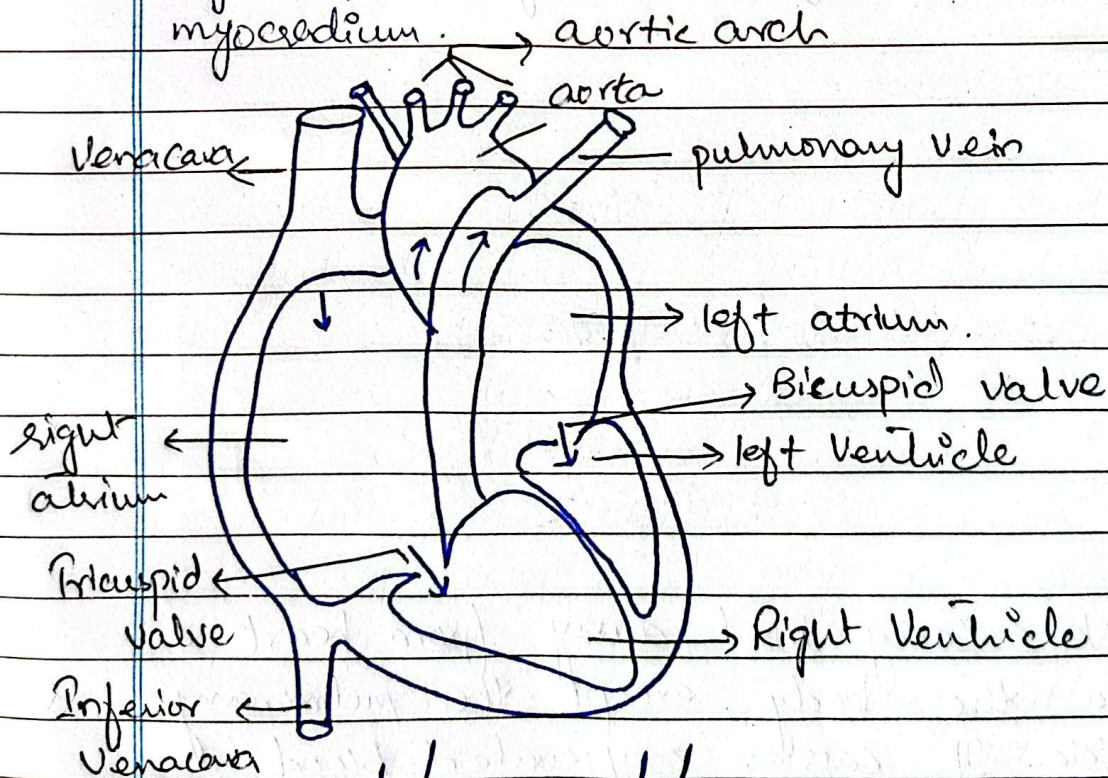
"GENERAL SCIENCE AND ABILITIES"

QUESTION NO: 04

(PART- A)

ROLE OF HEART AND BLOOD VESSELS

HEART: Heart is an organ in human body provides filtered blood to every part of body. It consists of three layers, pericardium, epicardium and myocardium.

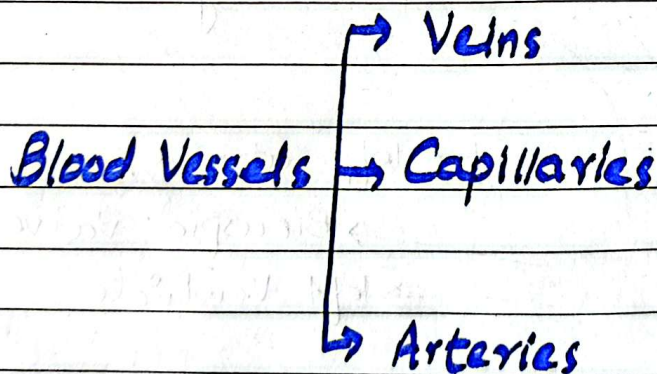


HUMAN HEART

Role of Heart: Veins originating from every organ of the body carrying deoxygenated blood and pour into the Vena Cava.

The Vena Cava transfers the blood to tricuspid valve which then pours into the right atrium preventing the backflow. The blood then flows into the pulmonary artery then to lungs to add up O_2 and eliminate CO_2 . The oxygenated blood then goes to pulmonary artery to bicuspid valve and left ventricle. It transfers the blood to aorta which then transfers the oxygenated blood to all parts of the body.

Blood Vessels:



Veins carry blood away from heart to the body except the pulmonary vein. It carries oxygenated blood and blood pressure remains high in

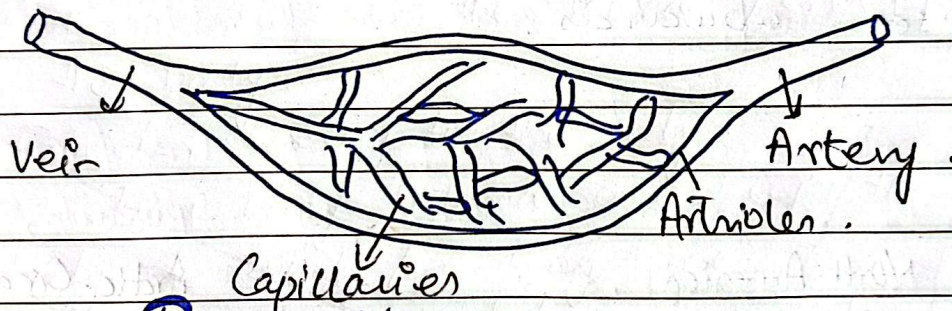
DATE: ___/___/___

DAY: ___/___/___

Veins.

Arteries move blood towards heart from body. Blood pressure remains slightly low in arteries as compared to veins.

Capillaries are thread like structures, contains the least blood pressure. They distribute blood to cells and tissues.



BLOOD VESSELS

(PART : B)

"CYCLONE"

"Cyclone is a natural disaster that generalises due to the difference in pressure gradient and the Coriolis effect."

Formation of Cyclone:

Cyclone is formed when warm air and cold air meet at polar fronts, creates the pressure gradient.

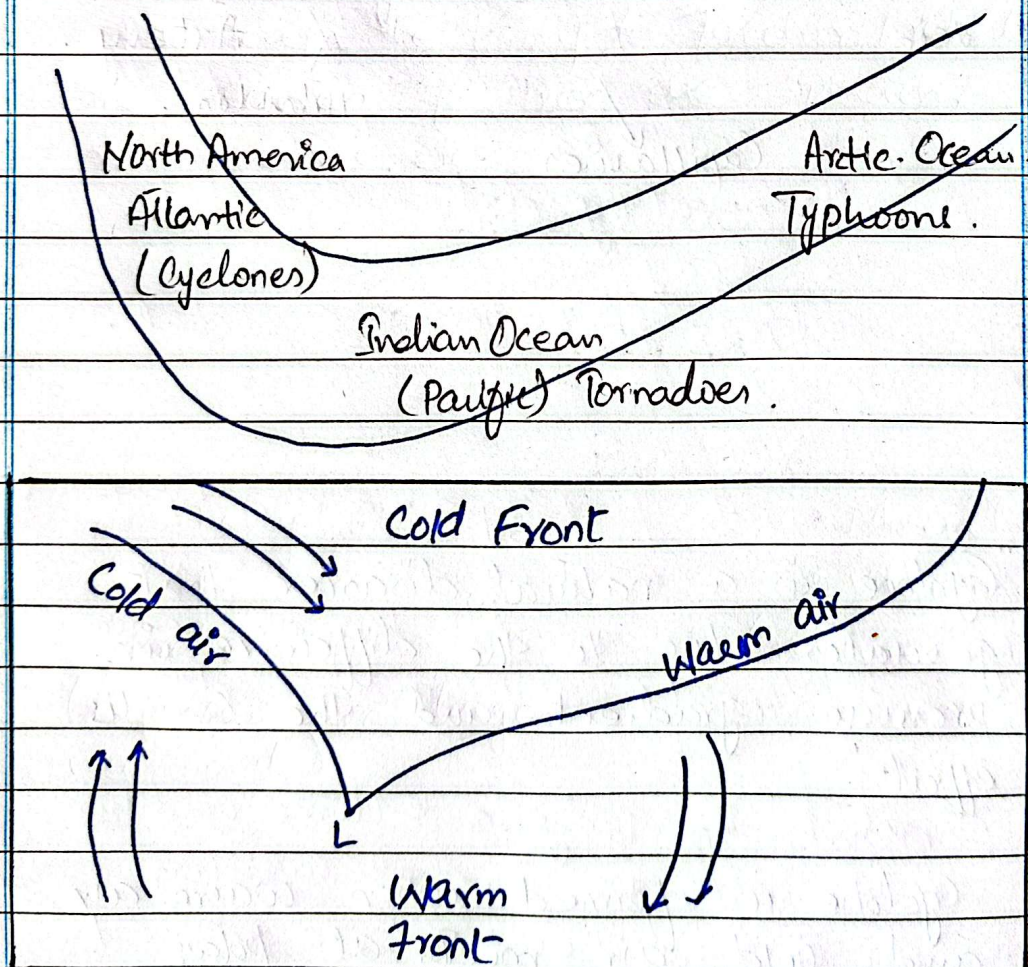
DATE: ___/___/___

DAY: ___/___/___

Coriolis effect occurs by the rightward inclination of earth at Northern Hemisphere and left ward at Southern Hemisphere.

Centripetal and Centrifugal forces play a major role in the formation of cyclone.

The above mentioned pressure gradient and coriolis effect results in the formation of cyclone when air rises upwards.



→ Flow of Winds : Clockwise
FORMATION OF CYCLONE

(PART: C)

FUNCTIONS OF CARBOHYDRATES:

Carbohydrates are the main energy source of body. It provides:

Energy to the body

Maintains body balance

Maintains the sugar level of body.

Main sources of carbohydrates are:

Cereals, sugar cane, beans, etc.

Functions of Proteins:

Proteins are also the source of energy to the body.

Provides energy to the body.

Maintains body balance and keeps the body to work for long time.

Provides healthy diet and nutrition to the body.

Main sources of proteins are meat, fish, etc.

FUNCTIONS OF FATS:

Fats consists of fatty acids and lipids which are necessary in adequate amount for a normal human being.

Fats convert the fatty acids into lipids.

Protects the body in extreme conditions and helps in normal sweating.

Sources of fats are butter, meat, oil and milk.

FUNCTIONS OF CALCIUM:

Calcium is an essential mineral for the body in adequate amount:

It keeps the teeth strong.

It keeps the bones strong.

The sources of calcium are sunlight, milk and calcium supplements.

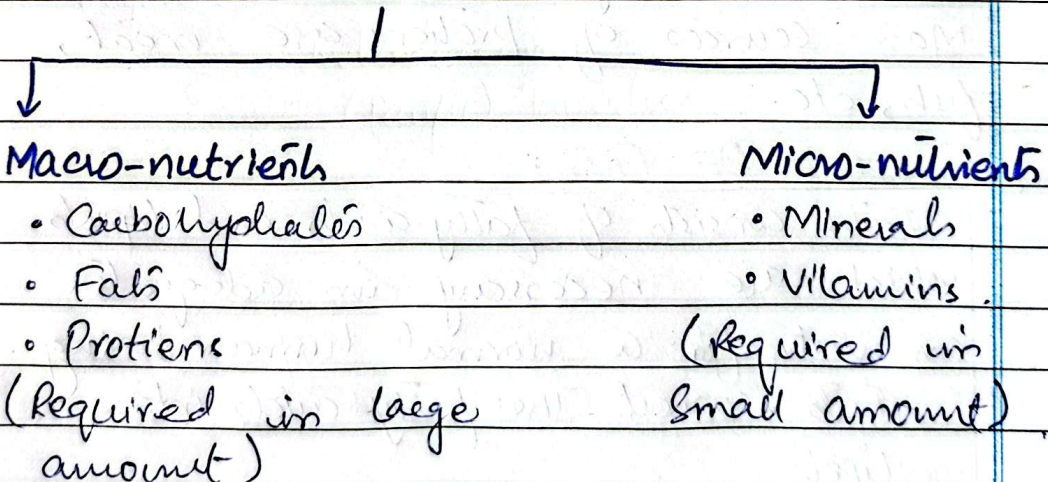
FUNCTIONS OF IRON:

Iron is also an essential nutrient from human body.

It helps to maintain the blood level in the body.

Also keeps the body to function properly.

The sources of iron are Spinach, red beans, etc.

Balanced Diet

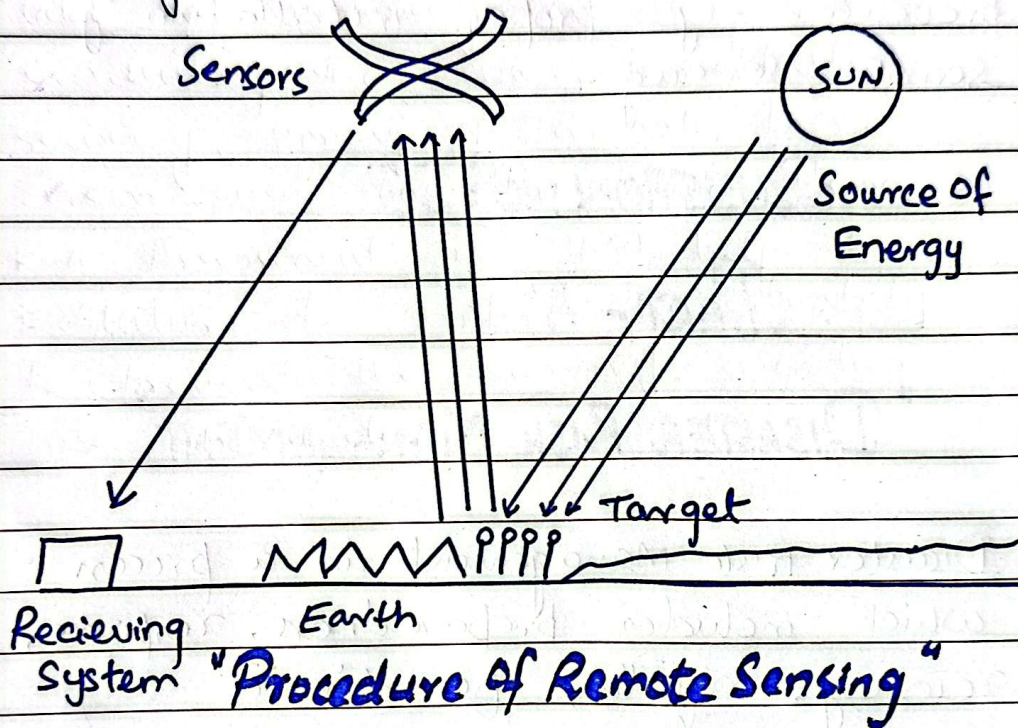
(PART - D)

REMOTE SENSING

DATE: ___/___/___

DAY: ___/___/___

"Remote sensing is a science used to gather information about any specific area or location on Earth using sensors."



Remote sensing can be employed for environmental purposes as it is able to access to difficult areas beyond the reach of humans. Through remote sensing, environmental conditions can be measured with the sensors employed in the atmosphere. They send the information of disaster prone areas, vulnerabilities of atmosphere to receiving system where the information can be interpreted and analyzed, according to demand.

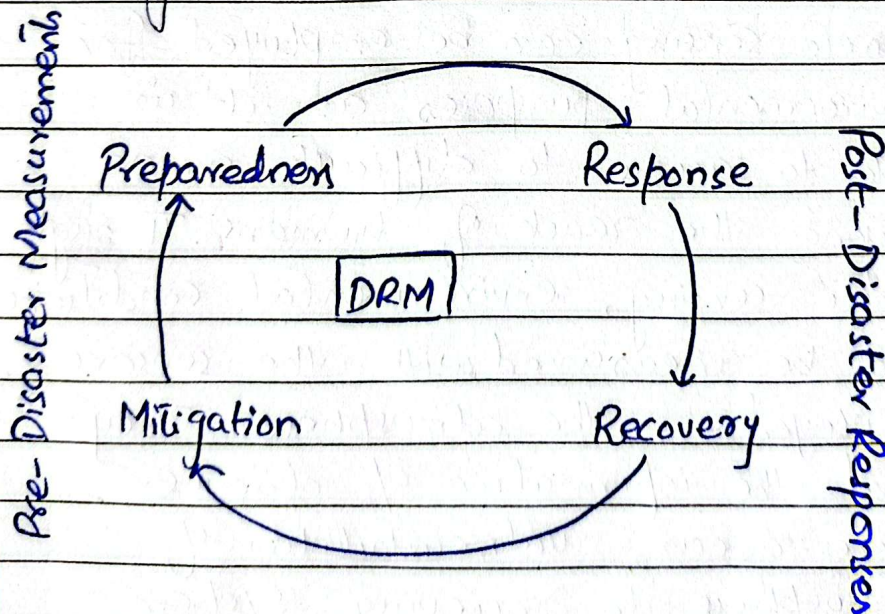
Moreover, remote sensing helps in environmental management, pollution management, urban management and many other fields that can be prevented by proper installation of remote sensing.

QUESTION NO: 05

(PART - A)

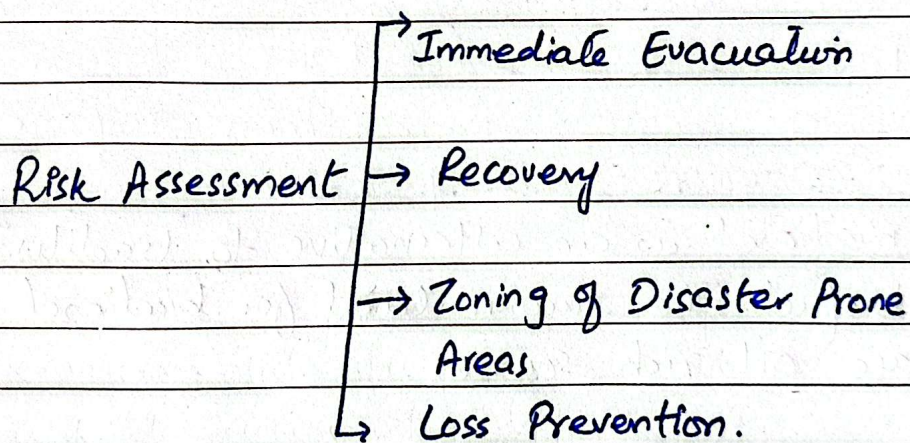
"DISASTER RISK MANAGEMENT"

Disaster Risk Management is a process which includes preparedness, response, recovery, mitigation for disaster management.



Risk assessment in Disaster Risk Management is of ultimate importance.

importance. Risk assessment helps in estimating the intensity of disasters and destruction it can cause. Then according to DRM, institutions can take precautionary measures such as evacuating the masses, immediate recovery, zoning of disaster prone areas and loss prevention. Hence, Risk Assessment in DRM helps the institutions to respond immediately to prevent the economy, societies and the nation.



(PART : OB)

"BIO-FUELS"

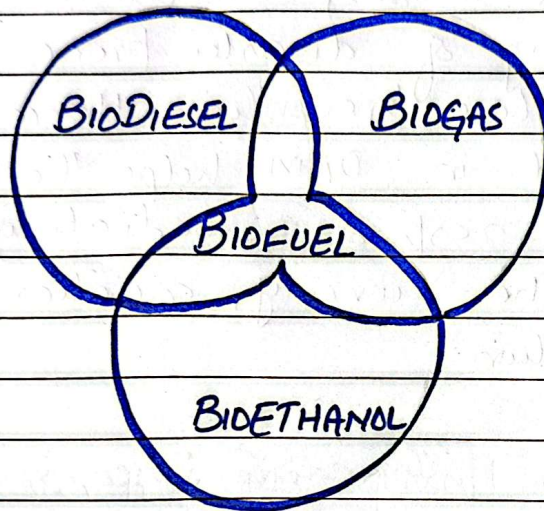
"Bio-fuels are such fuels that are derived from biomass (organic matter and organic waste)".

DATE: ___/___/___

DAY: ___/___/___

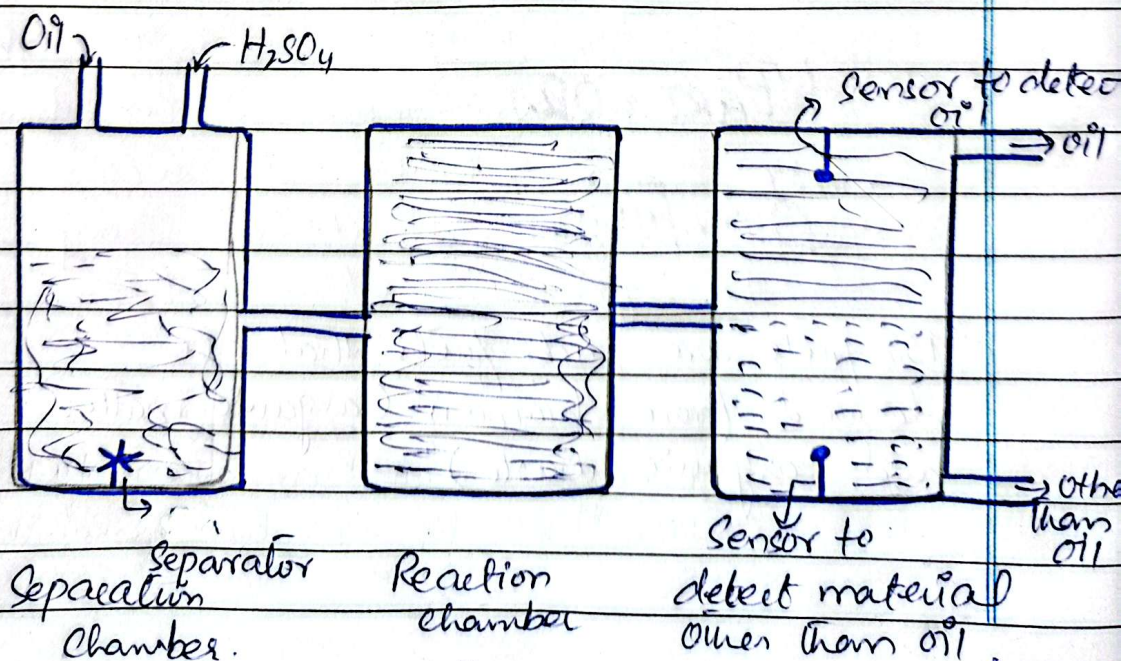
It includes plants waste, animal waste, oil rich sources and other organic matter.

Biofuels are classified into three types:



PRODUCTION OF BIODIESEL

Biodiesel is an alternative to traditional biofuel. The raw material for biodiesel are oil rich sources.

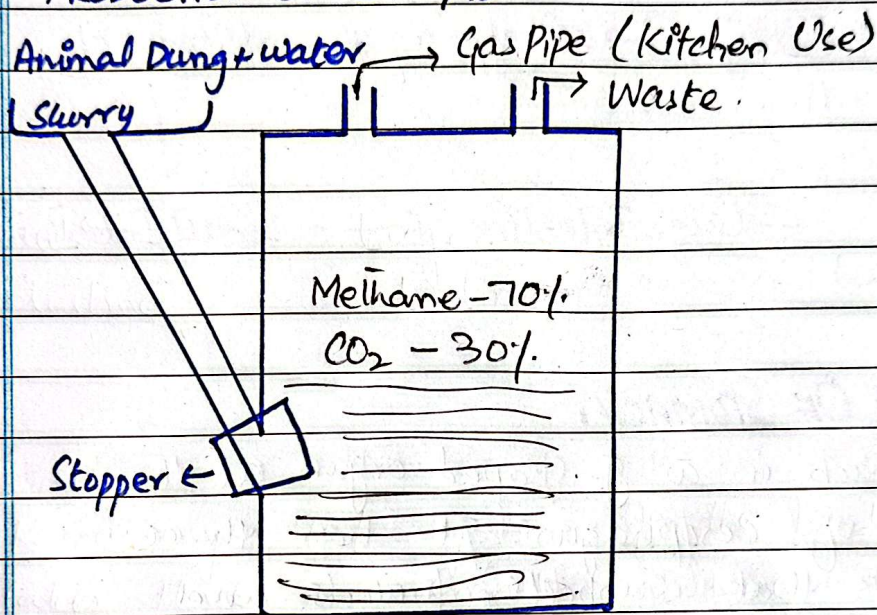


DATE: ___/___/___

DAY: ___/___/___

Biodiesel in the form of oil is separated from the last chamber and extracted from the outward pipe.

PRODUCTION OF BIOGAS



For the production of biogas mainly to be used for domestic purposes, animal dung and water is added from to a pipe to reaction chamber. where 70% Methane (CH₄) and 30% (CO₂) is produced. which is then transferred to domestic sectors and waste is separated.

(PART-C)

"DIGESTIVE SYSTEM"

DATE: ___/___/___

DAY: ___/___/___

Digestion system is a process in which larger particles of food are broken down into smaller particles and then digested by the body.

Oral Cavity → Oesophagus → Stomach



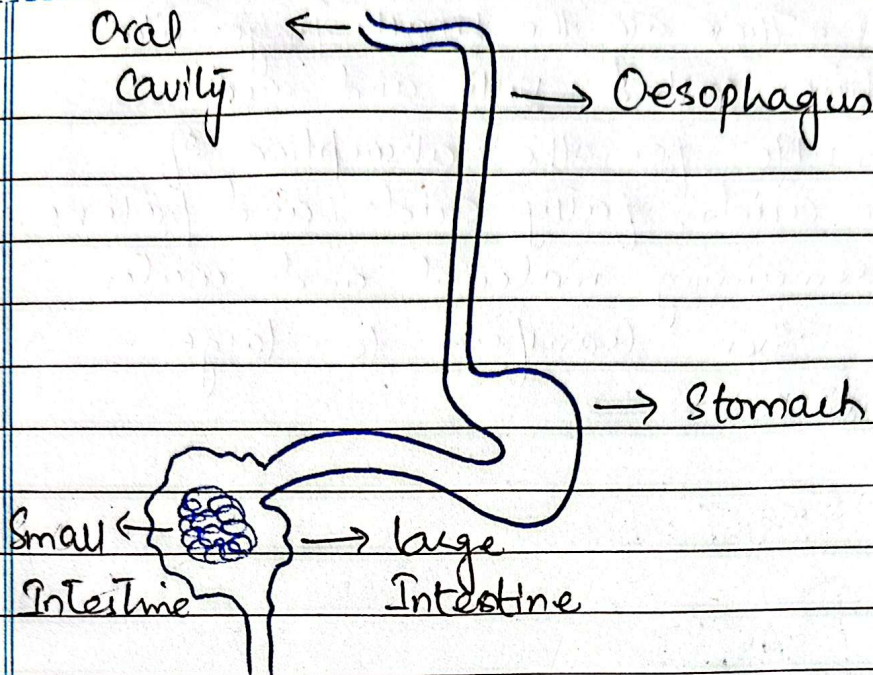
Anus (faeces) ← Large Intestine ← Small Intestine

ROLE OF STOMACH:

Stomach is a J-shaped organ at the end of oesophagus. It has three layers that supports, protects and maintains the shape of stomach.

Stomach releases hydrochloric (HCl) acid to eliminate the acidity of food and creates a layer around it to protect it from toxification.

Stomach also produces pepsinogen which is in inactive form, then HCl converts the pepsinogen into pepsin i.e. the active form which as a result converts the poly peptides into proteins. Food stays in stomach for 4 to 6 hours and only 10% of digestion takes place in stomach.



ROLE OF SMALL INTESTINE :

Remaining 90% digestion of the food takes place in small intestine. It is 6m long and consists of three parts.

- Duodenum
- Jejunum
- Ileum.

Duodenum: It is 25 to 30 cm long. It consists of Pancreas and liver. The only enzyme it produces is Esterokinase which converts the polypeptides into proteins. Pancreas releases the pancreatic juice and amylase which the starch into maltose.

Jejunum: It is also a part of small intestine and releases intestinal juice.

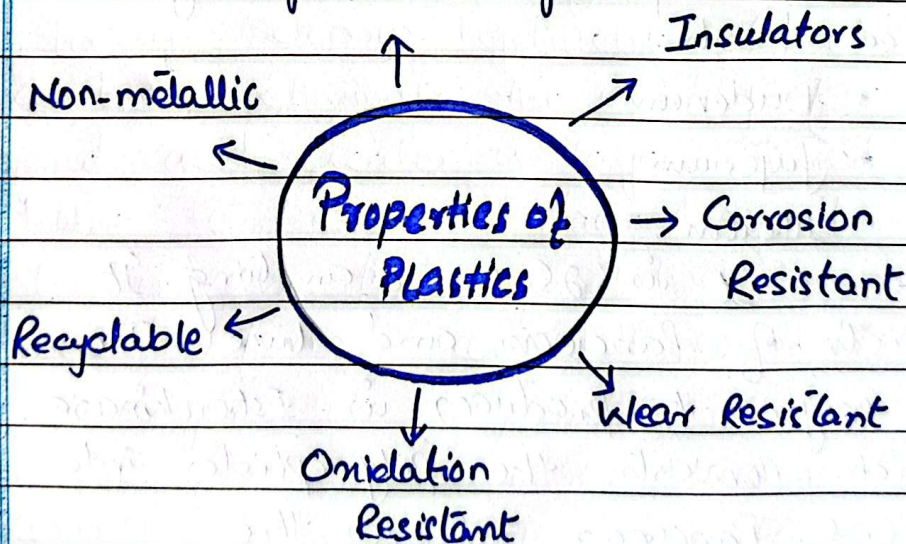
Ileum: These are the small finger like structures called villi and are responsible for the absorption of amino acids, fatty acids and proteins. The remaining material and water will then transfers to large intestine.

(PART: D)

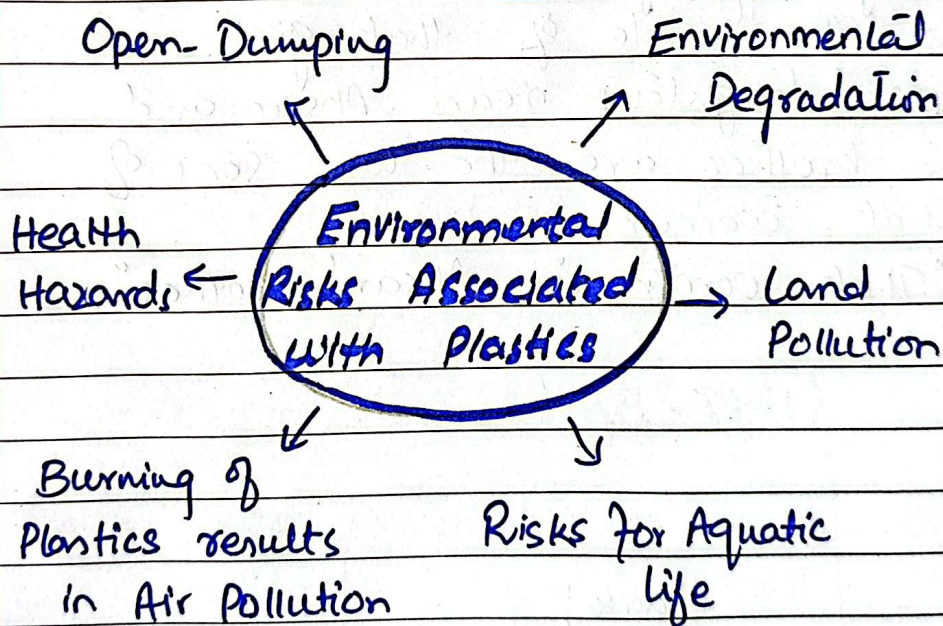
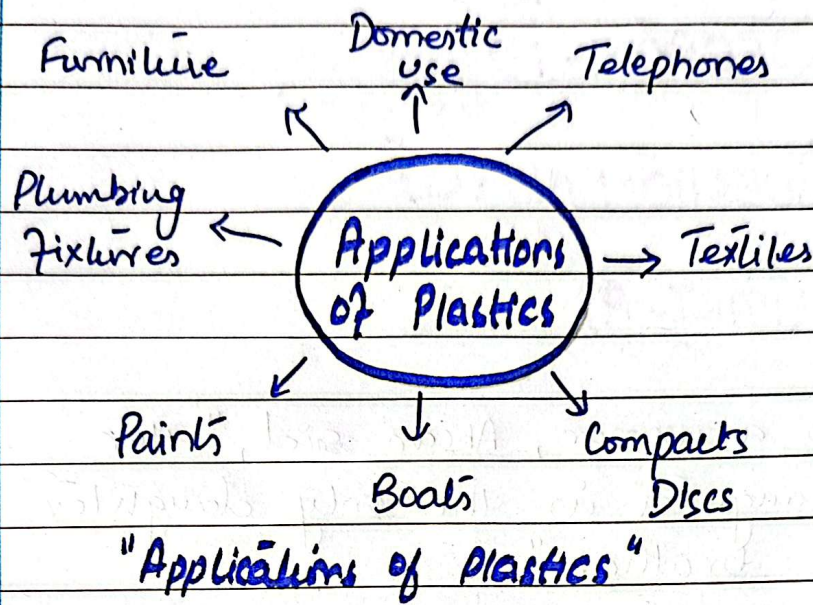
"PLASTICS"

"Plastics are the non-metallic, recyclable materials formed by long-molecular chains called polymers."

High Yield Strength



"Properties of Plastics"



"Environmental Risks Associated With Plastics"

SECTION-B

QUESTION NO: 05

(PART-A)

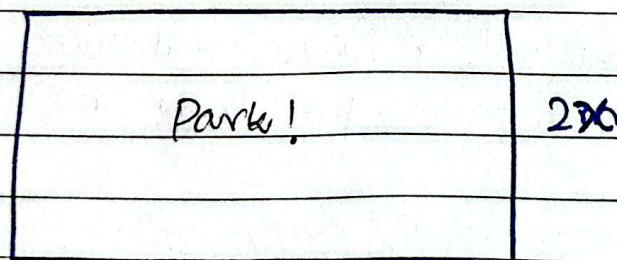
Pointing to a woman, Ahsan said, "Her grand daughter is the only daughter of my brother."

Daughter of my brother : means Ahsan is the uncle of that girl.

Grand daughter : means Ahsan and his brother are the two sons of that woman.

"That woman is Ahsan's Mother".

(PART-B)



300

Speed = 12 km/hr.

Time = 8 minutes = $\frac{8}{60}$ = 2 hr.

Area = ? 60 15

DATE: ___/___/___

DAY: ___/___/___

$$\text{length} = 3x, \text{ breadth} = 2x.$$

Perimeter of rectangle:

$$2(L+B) = 2(3x+2x) = 10x.$$

$$\text{Distance covered} = 12 \times \frac{2}{15}$$

$$x = 1.6 \text{ km} \Rightarrow 1600 \text{ m}.$$

$$10x = 1600$$

$$x = 160.$$

$$\text{length} = 3 \times 160 = 480 \text{ m}.$$

$$\text{breadth} = 2 \times 160 = 320 \text{ m}.$$

$$\text{Area} = L \times B$$

$$= 480 \times 320$$

$$= 153,600 \text{ m}^2.$$

(PART-C)

Let the ten's digit be x .

Then the unit's digit $= x+2$

$$\text{The two digit number} = 10x + (x+2) = 11x+2$$

$$\text{Sum of digits} = x + (x+2) = 2x+2.$$

$$(11x+2)(2x+2) = 44$$

$$(11x+2) \cdot 2(x+1) = 44$$

$$(11x+2)(x+1) = 22$$

$$11x^2 + 2x + 11x + 2 = 22$$

$$11x^2 + 13x = 20$$

$$11x^2 + 13x - 20 = 0$$

DATE: ___/___/___

DAY: ___/___/___

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-13 \pm \sqrt{(13)^2 - 4 \times 11 \times (-70)}}{2 \times 11}$$

$$x = \frac{-13 \pm \sqrt{169 + 3080}}{22}$$

$$x = \frac{-13 \pm 57}{22}$$

$$x = \frac{-13 + 57}{22}$$

$$x = \frac{-13 - 57}{22}$$

$$x = 2$$

$$x = \frac{-70}{22} \text{ (Negative)}$$

Ten's digit = 2.

Unit's digit = 4.

The required number is 24.

(PART: D)

Let x and y be the numbers.

$$\text{L.C.M} = 48.$$

The numbers are in the ratio 2:3.

$\therefore 2x$ and $3y$.

$$6x = 48$$

$$x = 8$$

$$2(8) = 16$$

$$3(8) = 24$$

$$16 + 24 = 40.$$

The sum of the two numbers = 40.

QUESTION NO : 08**(PART - A)**

Five different houses in a row.

Condition 1:

A is to the right of B.

$\therefore$ B A

Condition 2:

E is to the left of C and right of A.

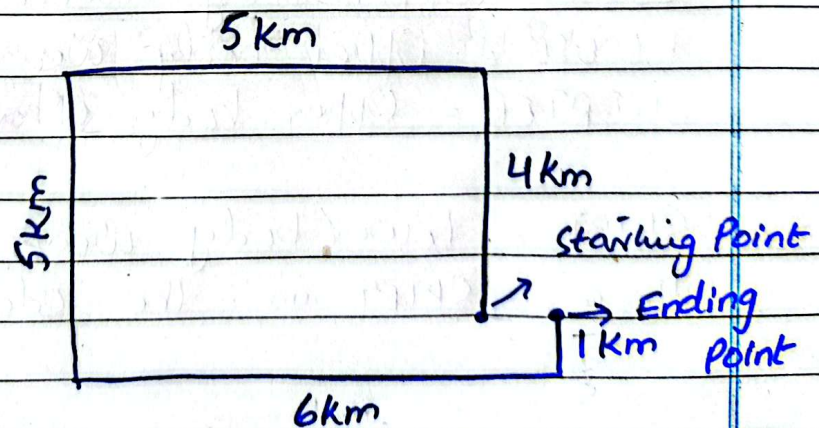
A E C

Condition 3:

B is to the right of D.

D B A E C

A is in the middle.

(PART - B)

DATE: ___/___/___

DAY: ___/___/___

1) How many km away from starting point?

1 km.

2) Direction while finishing?

Towards North

3) Direction after 2nd turn?

Towards South.

4) From finishing point if you have to reach the starting point, in which direction will you have to run?

Towards West.

(PART: C)

a) THRSI = SHIRT

b) AOTC = COAT

c) EOUBSL = BLOUSE

d) KTRIS = SKIRT

e) RETAEWS = SWEATER.

SHIRT = Upper body wear.

COAT = Upper body wear.

BLOUSE = Upper body wear.

SWEATER = Upper body wear.

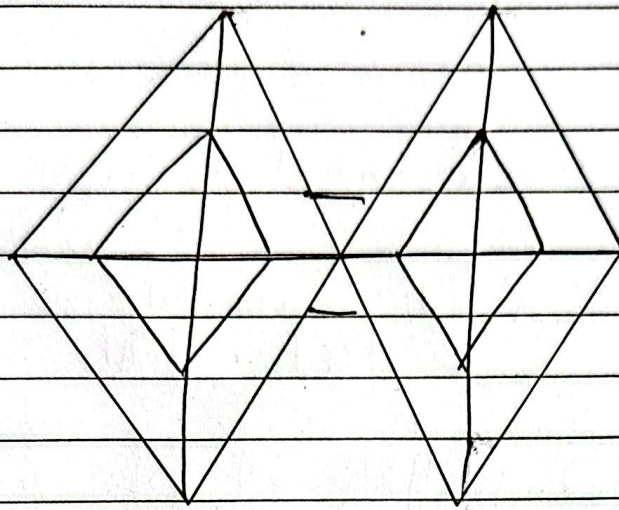
SKIRT = Lower body wear.

Hence, SKIRT is the odd one.

DATE: ___/___/___

DAY: ___/___/___

PART : D



Total number of triangles in the figure?

First Δ contains : 4 interior triangles
4 exterior triangles.

Total 8.

Second Δ contains : 4 interior triangles.
4 exterior triangles.

Total 8.

Two overlapping triangles.

$$\text{Total number of triangles} = 8 + 8 + 2$$
$$\underline{\underline{18}}$$

