

General Science And Ability

Mock-2026

I.

Qno: 04

Part 9:

Explain the role of heart and blood vessels in circulation.

Answer:

Circulatory system

The circulatory system is made up of the vessels and the muscles that help and control the flow of the blood around the body. This process is called circulation. The main parts of the system are the "heart" and "blood vessels".

* Blood circulation:

Blood returning from a trip around the body has given up most of its oxygen and picked up carbon dioxide from the body's tissues. This oxygen-poor blood feeds into two large veins, the superior vena cava and inferior vena

cava, which empty into the right atrium of the heart. The right atrium conducts blood to the right ventricle, and the right ventricle pumps blood into the pulmonary artery.

The pulmonary artery carries the blood to the lungs, where it picks up a fresh supply of oxygen and eliminates carbon dioxide. Now oxygen rich blood returns to the heart through the pulmonary veins, which empty into the left atrium. Blood passes from the left atrium into the left ventricle, from where it is pumped out of the smaller arteries that branch off the aorta distribute blood to the whole body.

The above described circulation can be divided into two circuits. In each circuit, the blood returns to the heart.

Blood Circuits

Systemic
circulation

Pulmonary
Circulation

Part : b : What is cyclone? Describe the formation of cyclon.

Answer:

Cyclone

A cyclone is a large scale system of air that rotates around a strong center of low atmospheric pressure. While many people use the word to describe a specific violent storm, it is actually a broad term that covers everything from a gentle rain-bearing low-pressure system to a massive hurricane.

(Formation of a cyclone)

For a tropical cyclone to develop, several "ingredients" must be present:

→ Ocean temperatures must be at least 26.5°C to a depth of about 50 meters.

→ Winds need to be consistent at different heights so the

Storm's structure is not "ripped apart".

→ The storm needs to be at least 5° latitude away from the Equator so the Earth's rotation can start the "spin".

→ As the storm matures, a calm, clear center forms called the eye, surrounded by the eyewall, where the strongest winds and heaviest rains occur.

Examples:

Most of the world's deadliest cyclones occur in the "Bay of Bengal" because the shallow water and low-lying coastlines of Bangladesh and India create massive, lethal storm surges. The great Bholá Cyclone and cyclone Nargis are its examples.



Part C:

Functions of Carbohydrates,
Proteins, Fats, Calcium, Iron.

Answer:

Carbohydrates

Carbohydrates are the human body's key source of energy, providing 3.9 calories of energy per gram. Carbohydrates are organic compounds, these comprise of only carbon, hydrogen and oxygen.

Functions of Carbohydrates:

- ① Glucose is stored as glycogen in animals and starch in plants.
- ② Stored carbohydrates act as energy source instead of proteins.
- ③ Carbohydrates aid in regulation of nerve tissue and is the energy source for brain.
- ④ Carbohydrates gets associated with lipids and proteins to form surface antigens, receptor molecules, vitamins and antibiotics.

- ⑤ Carbohydrates are rich in fiber content help to prevent constipation.

Proteins

Proteins are the chief builders of the body. They are complex molecules made up of carbon, hydrogen, oxygen and nitrogen. They are used to synthesize enzymes, hormones, carrier proteins and contractile proteins.

Functions of Protein

- Proteins build new tissues of the body and maintain to replace damaged tissues.
- Proteins are protective as anti-biotics.
- Proteins carry out regulating activities as enzymes and hormones.
- Keratin protein form hair, nails, horns and beaks.
- Carrier proteins move molecules from one place to another around

the body.

(Fats)

Fats are vital for survival. Gram for gram, they provide more than double the energy of carbohydrates.

*Functions

Fats stores concentrated fuel for the body to use later.

Helps you absorb fat-soluble vitamins.

Cushions and pads vital organs against physical shock.

Forms the outer membranes of every cell in your body.

Provides insulation to keep your body heat stable.

(Calcium)

Calcium is the most abundant mineral in the human body, and while we mostly associate it with bones, it is also a critical chemical

messenger.

Functions:

- Builds and maintains the structural density of bones and teeth.
- Essential for muscles to contract and relax properly.
- Helps the brains send and receive messages throughout the body.
- Acts as a key trigger to help blood thicken and heal wounds.

(Iron)

The primary job of iron is transportation.

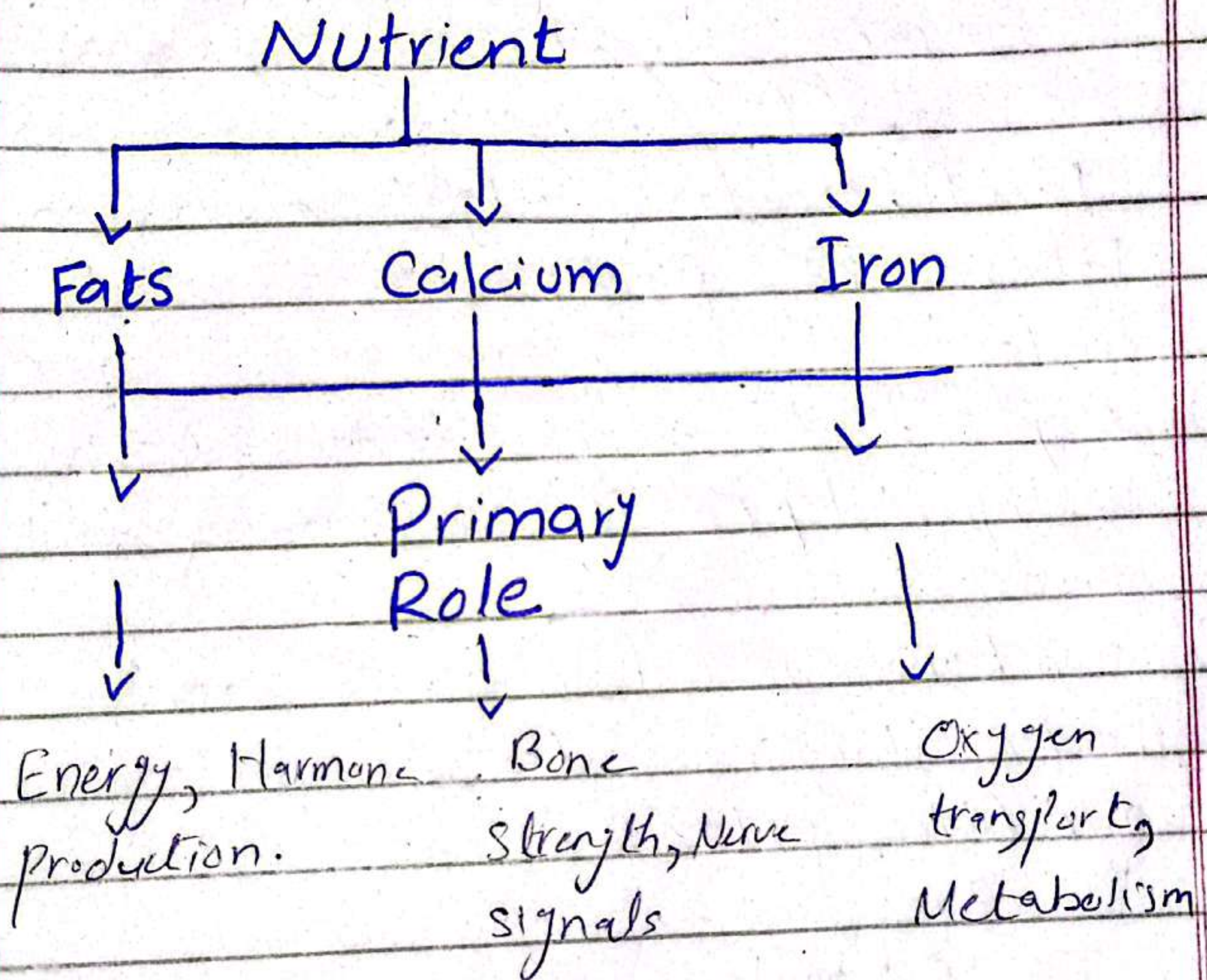
(Functions)

- It creates hemoglobin to carry oxygen from lungs to tissues.
- Helps convert nutrients from your food into usable energy.
- Provides myoglobin to hold oxygen

inside your muscle cells.

→ Supports cognitive functions like memory, focus and learning.

→ Necessary for the growth and action of the immune system cells.



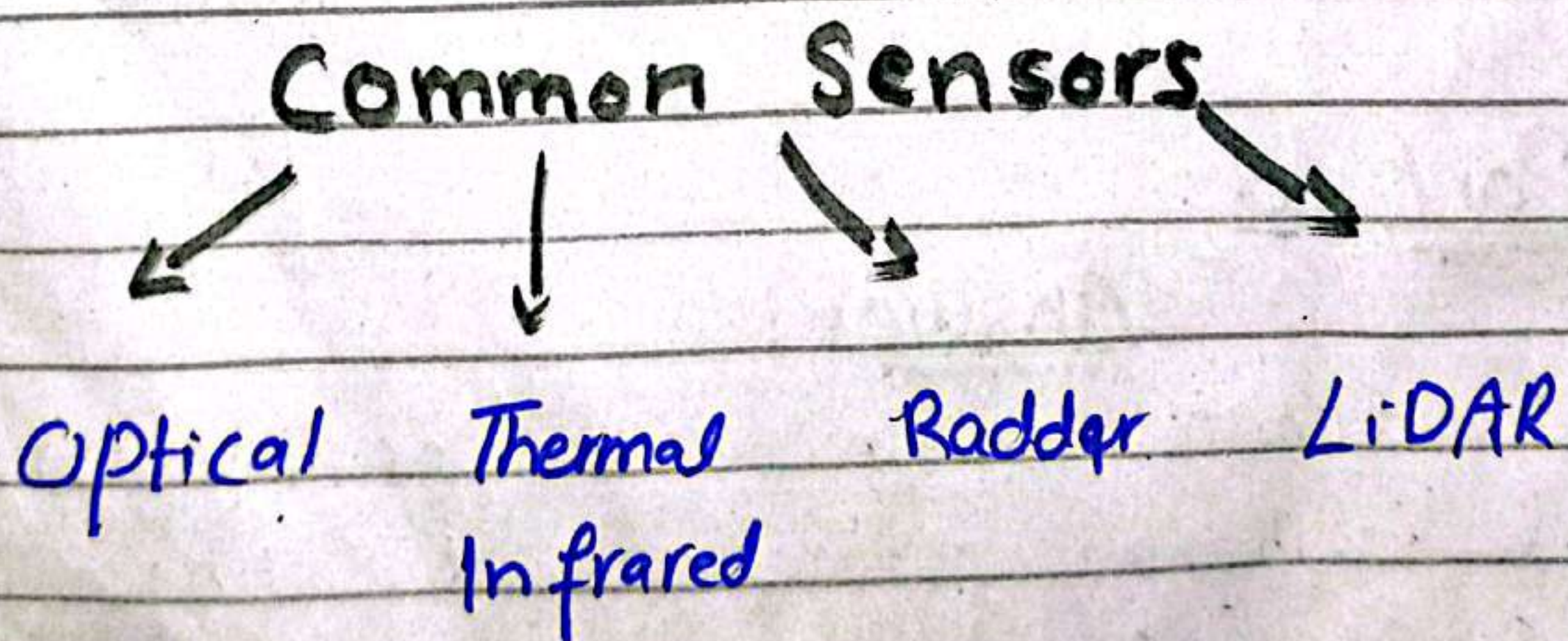
Part d:

Answer:

Remote sensing is the process of gathering data about the Earth from a distance through satellites, air craft, or drones. It

is one of the most powerful tools in the modern environmental science.

- ① Detects illegal logging and changes in forest cover over time.
- ② Measures greenhouse gases and air quality in cities.
- ③ Identifies toxic algal blooms in lakes and tracks rising sea levels.
- ④ Maps floods zones and detects wildlife hotspots through smoke and clouds.
- ⑤ Monitors habitat loss and tracks large-scale animal migration patterns.



Qno: 05:

Part (a)

DRM (Disaster Risk Management)

DRM is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing risk, and manage residual risk. It is a systematic process aimed at strengthening resilience and reducing losses from natural or man-made hazards.

(Importance of DRM)

- ① It helps to identify potential threats for example floods, earthquakes or industrial leaks) to specific to a region.
- ② Vulnerability mapping: It determines which populations, infrastructures, or ecosystems are most at

risk and why.

③ Resource allocation

By identifying high-risk areas, governments can prioritize limited funds and manpower effectively.

Informed planning

It provides the data needed to design early warning systems, evacuation routes, and resilient infrastructure.

Examples:

- ① Building dams, levees and earthquake-resistant buildings are including in engineering which is the "structural" example of DRM.
- ② Creating bodies like **NDMA** (National Disaster management Authority) is the "institutional" example of DRM.

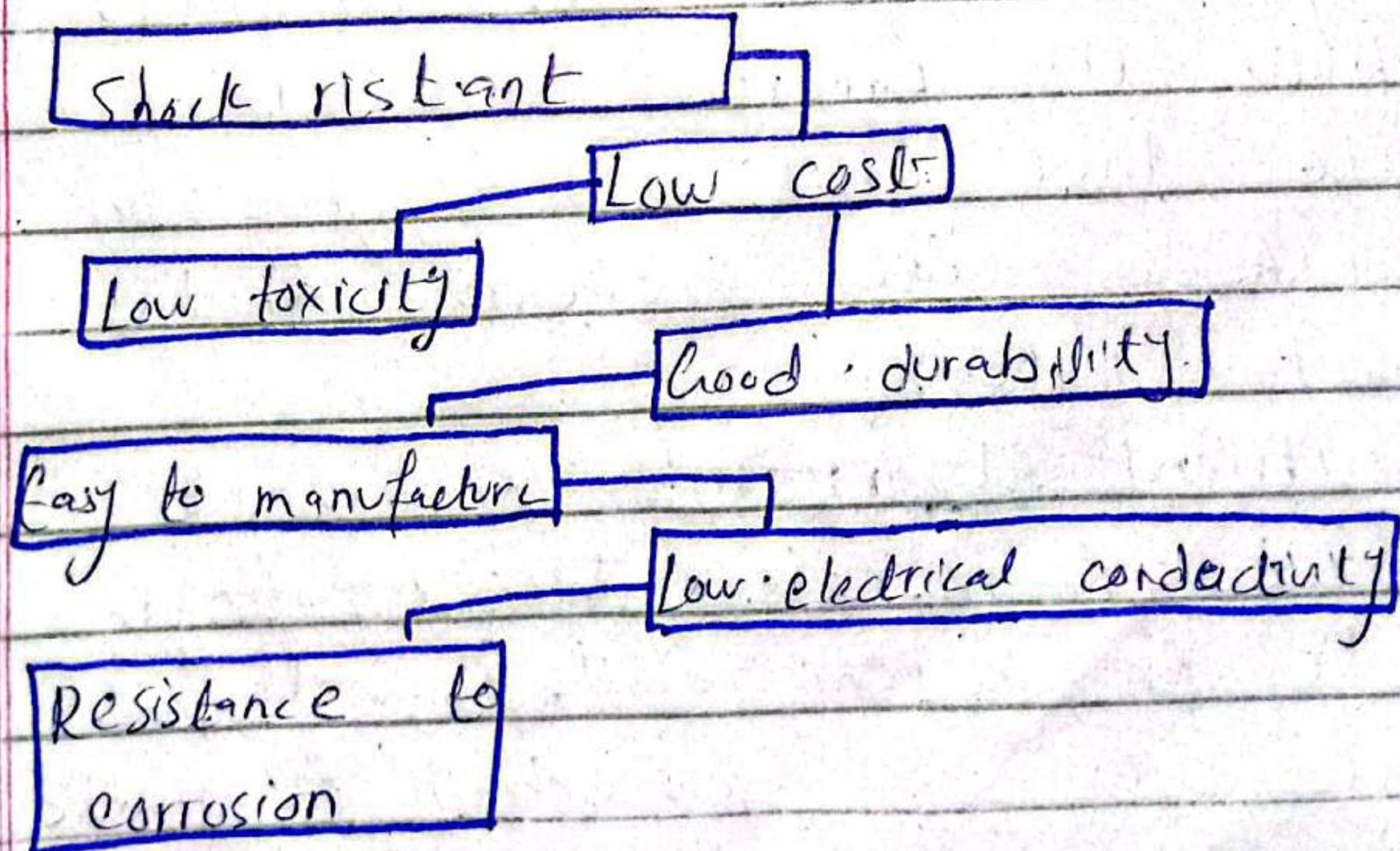


Part(d) Plastics

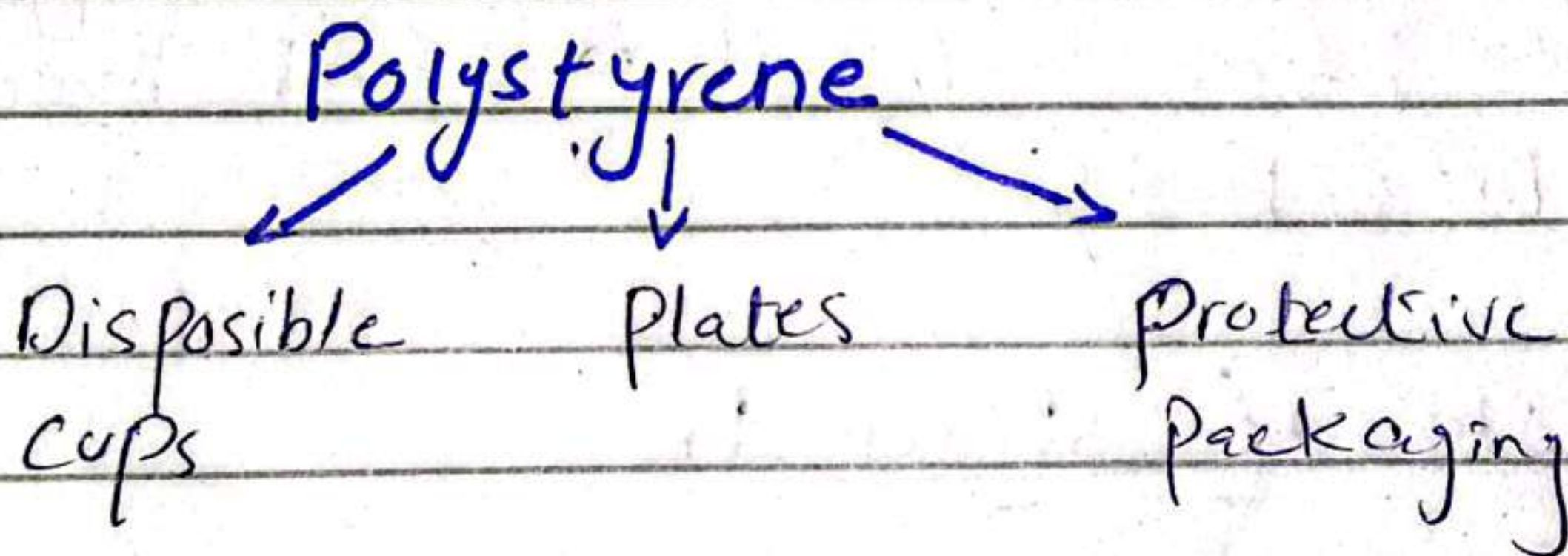
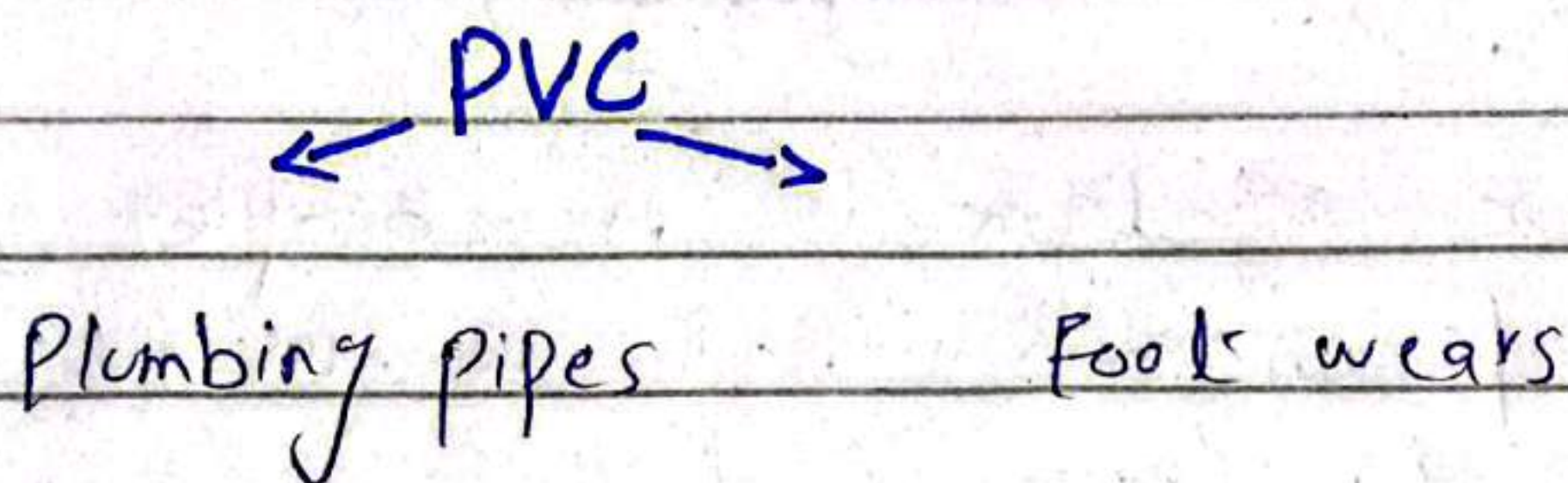
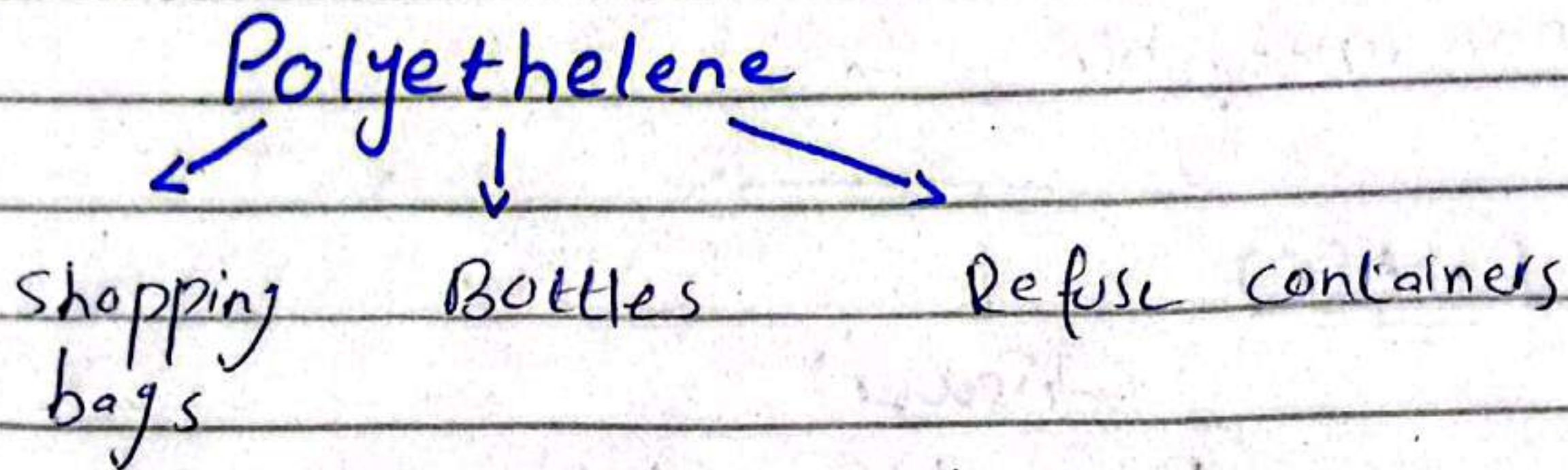
Answer:-

Plastic is derived from Greek word "Plasticus" meaning "to mould". The molecule that composes plastics are long carbon chain polymers. A "polymer" is any of a class of natural or synthetic substances composed of very large molecules, called macromolecules, which are multiples of simpler chemical units called "monomers".

"Properties of Plastics"



Applications of Plastics



Environmental Risk

- * Microplastics: A plastic break down into microscopic particles, they enter the food chain, eventually being consumed by humans with unknown health risks.
- * Resource Depletion: Since most plastics are made from oil

and natural gas, their production contributes to the depletion of non-renewable fossil fuels.

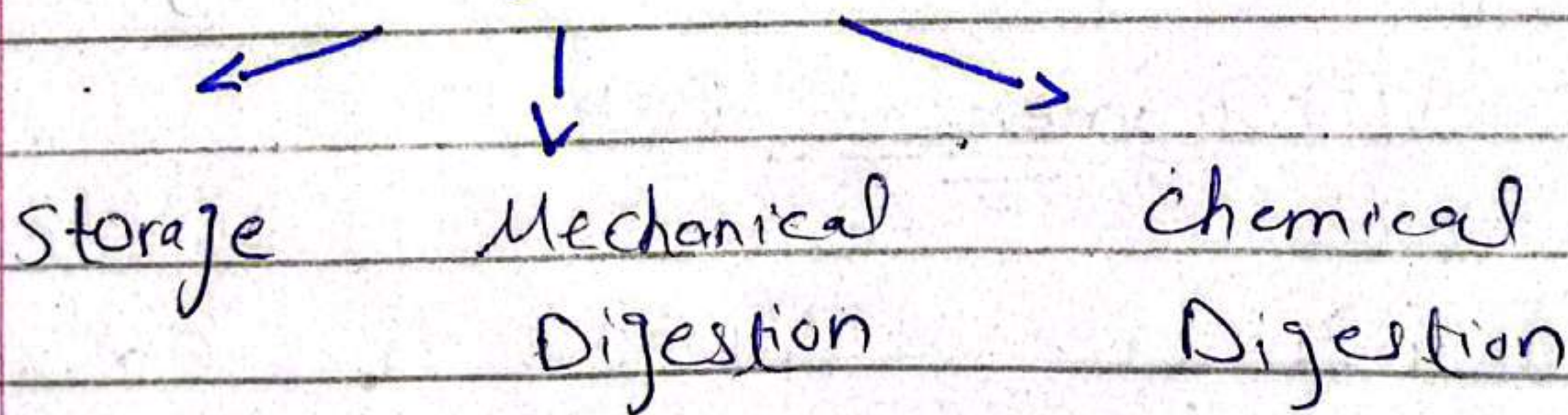
Part (C)

(Answer)

(Digestive system)

Digestive system is a complex series of organs that work together to turn food into energy and basic nutrients to feed the entire body.

Role of stomach



* **Storage:** Stomach in digestion process acts as a temporary holding tank for food.

* **Mechanical Digestion:** The stomach walls churn and squeeze food

into a semi-liquid paste called chyme.

* Chemical Digestion:

It secretes Hydrochloric Acid and the enzyme pepsin, which begins the break down of proteins and kills harmful bacteria.

Role of small intestine

Final breakdown

Nutrient

Absorption

Final break down: Most chemical digestion happens here. Enzymes from the pancreas and bile from the liver mix with chyme to breakdown fats, proteins, and carbohydrates.

Nutrient Absorption: This is its most critical role. Through finger-like projections called villi, nutrients are absorbed into the

blood stream. By the time food leaves the small intestine, about 90% of all nutrients have been extracted.



Part (B)

(Answer)

Biofuel

Biofuel is a fuel that is produced over a short time span mostly from biomass, rather than being produced by the very slow natural processes involved in the formation of fossil fuels, such as oil.

Unlike fossil fuels, they can be quickly replenished on a timescale meaningful to humans.

Biodiesel Production:

Biodiesel is produced through a chemical process called transesterification.

(i) Process: Vegetable oils or animal fats are reacted with an alcohol in the presence of a catalyst.

(ii) Output: This reaction breaks the fats into two products. Biodiesel and glycerin.

Biogas production

Biogas is produced through anaerobic digestion. Organic waste is placed in a sealed, oxygen-free container called a digester.

Uses: This gas is used for heating, cooking and generating electricity.



Qno: 08

A)

Solution:

- (i) B is to the right of D:
D-B
- (ii) A is to the right of B:
D-B-A
- (iii) E is to the right of A:
D-B-A-E
- (iv) E is to the left of C:
D-B-A-E-C

Answer:-

A is in the middle



Part B

Solution:

Start: North 4 km (0,4)

1 turn $\rightarrow$ West 5 km (-5,4)

2nd turn $\rightarrow$ South 5 km (-5,-1)

3rd turn $\rightarrow$ East 6 km (1,-1)

4th turn $\rightarrow$ North 1 km (1,0)

① You are 1 km away from

starting point.

- ② you just turned left from East, so you are running North.
- ③ After turning left from West, you were running South.
- ④ You are at $(1,0)$. To go back to $(0,0)$ you must run West.



Part c

Solution:

* Decoding:

TH.RSI $\rightarrow$ SHIRT

AOTC $\rightarrow$ COAT

EOUBSL $\rightarrow$ BLOUSE

KTRIS $\rightarrow$ SKIRT

(All are clothing items)



Qno: 07

Part B

ball: Cost price of 9

Sold 17 balls at 720

money got back was short by
the cost of 5 balls.

$$(17 - 5) = 12 \text{ balls}$$

$$12 \text{ balls cost} = 720$$

$$720 \div 12 = 60$$

$$\overline{12}$$

$720 \div 12 = 60 \rightarrow$ cost price of
each ball. (Answer)

←————→

Part C
= Age problem

Father's age (F)

Son's age = (S)

$$F = S + 24$$

$$F + 2 = 2(S + 2)$$

$$(S + 24) + 2 = 2S + 4$$

$$S + 26 = 2S + 4 \rightarrow S = 22.$$

Present age of the son
is 22 years: Answer.

←————→

(Part D)

Solution

$$\text{Rashid's speed: } \frac{32 \text{ pages}}{6 \text{ hours}} = \frac{16}{3} \text{ pages/hr}$$

$$\text{Kamran's speed: } \frac{40 \text{ page}}{5 \text{ hours}} = 8 \text{ pages/hr}$$

Combined:

$$\frac{16}{3} + 8 = \frac{16 + 24}{3} = \frac{40}{3} \text{ pages/hr}$$

$$110 \div \left(\frac{40}{3}\right) = \frac{110 \times 3}{40} = \frac{33}{4} = 8.25 \text{ hours}$$

8 hours and 15 mins (Answer)

Part: (A)

Solution

$$40\% = \frac{40}{100} = \frac{2}{5}$$

first number = A

2nd number = B

$$\frac{2}{5} \text{ of } A = \frac{2}{3} \text{ of } B$$

$$\frac{2}{5} \times A = \frac{2}{3} \times B$$

$$\frac{1}{5} \times A = \frac{1}{3} \times B$$

$$\frac{A}{B} = \frac{5}{3}$$

So, the ratio is 5:3 (Answer)