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Batch 53  
MOCK EXAM 3  
General Science & Ability

## Part II

### SECTION-I

Q NO 3

a. What is meant by double circulation?  
Briefly describe how the heart is adapted to keep blood flowing in a double circulation?

#### Double Circulation:

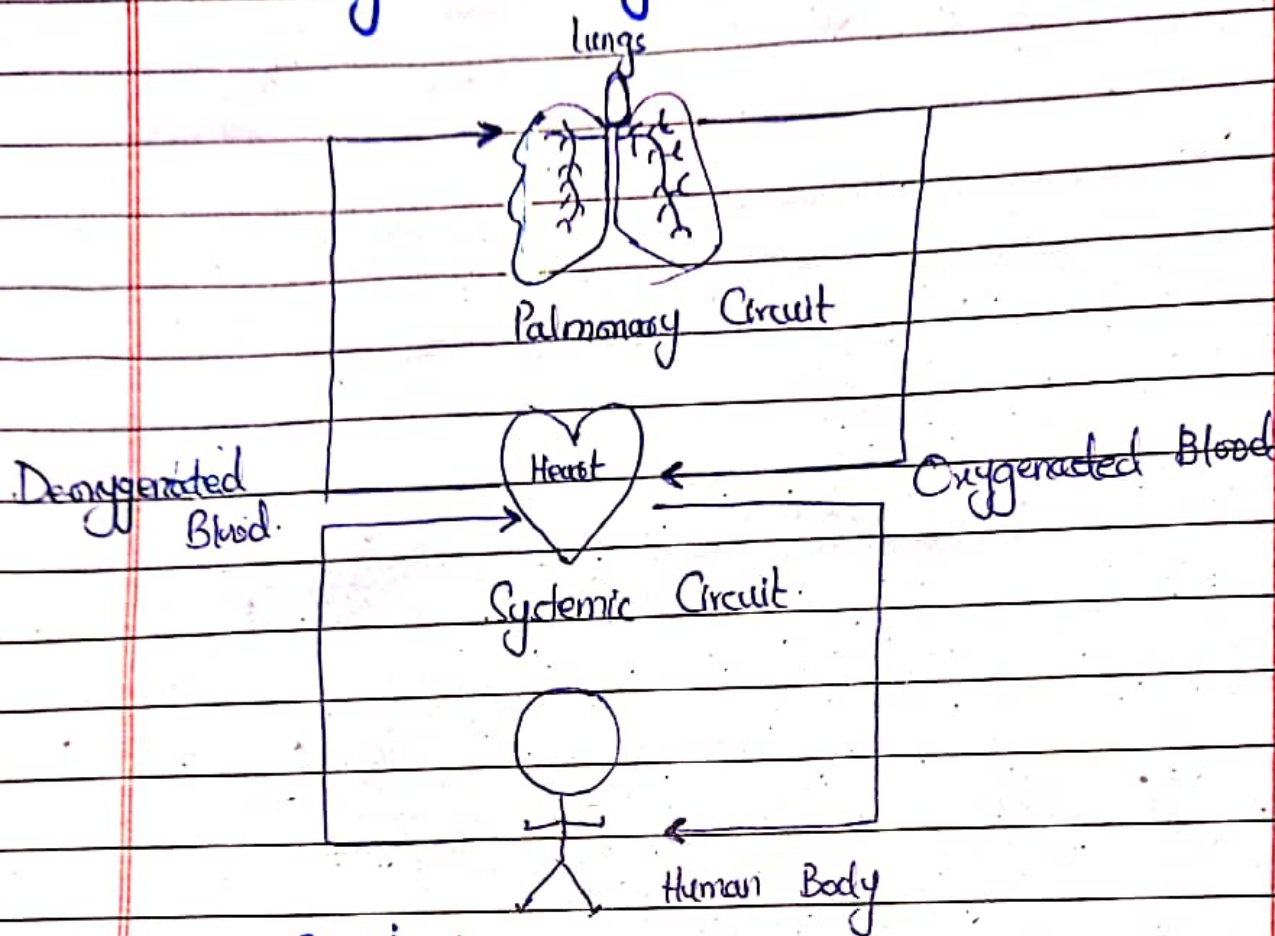
A double circulatory system is a circulatory system in which blood passes through the heart twice and has two different circuits.

- i) Pulmonary Circuit
- ii) Systemic Circuit

It is necessary because it separates oxygenated <sup>blood</sup> ~~system~~ from deoxygenated blood that play vital role in enhancing efficiency of blood transport and energy production in the human body. Human body requires a blood that contains oxygen because oxygen is necessary

for human beings to live.

## Diagrammatically:



## Explanation:

In this process the right part of pump send deoxygenated blood to the lungs.

Lungs then convert deoxygenated blood with oxygenated blood.

That oxygenated blood sent by lungs to right pump of heart.

Then heart sends oxygenated blood into the whole body.

This is how the heart is adapted to keep blood flowing in a double circulation.

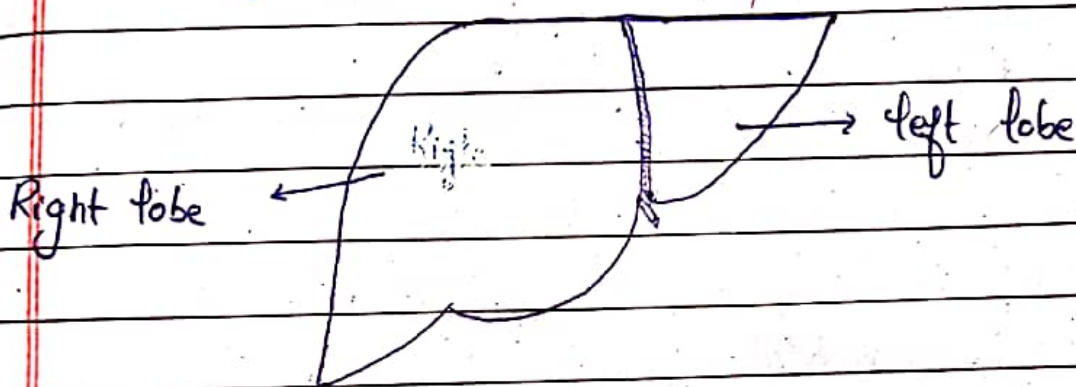


b. Liver is a chief chemist. Comment.

### Liver:

Liver is the largest organ of human body located at the right quadrant region at the top of right lungs. It is a chief chemist of human body because it performs various function in the human body.

### Diagrammatically:



### Functions of liver:

Production of bile



Metabolism



Digestion



Recycling



Detoxification



Restoring



Synthesis

- **Production of bile**

A digestive fluid that helps in digestion and absorption of fat and fat soluble vitamins.

- **Metabolism**

Metabolism of fats, lipids and carbohydrates through conversion of lactic acid to glycogen.

- **Digestion**

It helps in digestion by producing a fluid called bile production.

- **Recycling**

Recycling of the content of old blood cells and (e.g iron and other constituents of hemoglobins).

- **Detoxification**

Detoxification of chemicals such as amino acid and uric acid etc.

- **Restoring**

Storing of iron and Glycogen.

- **Synthesis**

Synthesis of nitrogenous wastes.

Therefore, on the basis of such function as production of bile, metabolism, digestion, recycling, detoxification, storing and synthesis liver can be called as <sup>Chief</sup> chemist of human body. These functions play vital role for human working.



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c. Comment, the green-house effect is a blessing. Also discuss enhanced greenhouse effect and its relation in global warming?

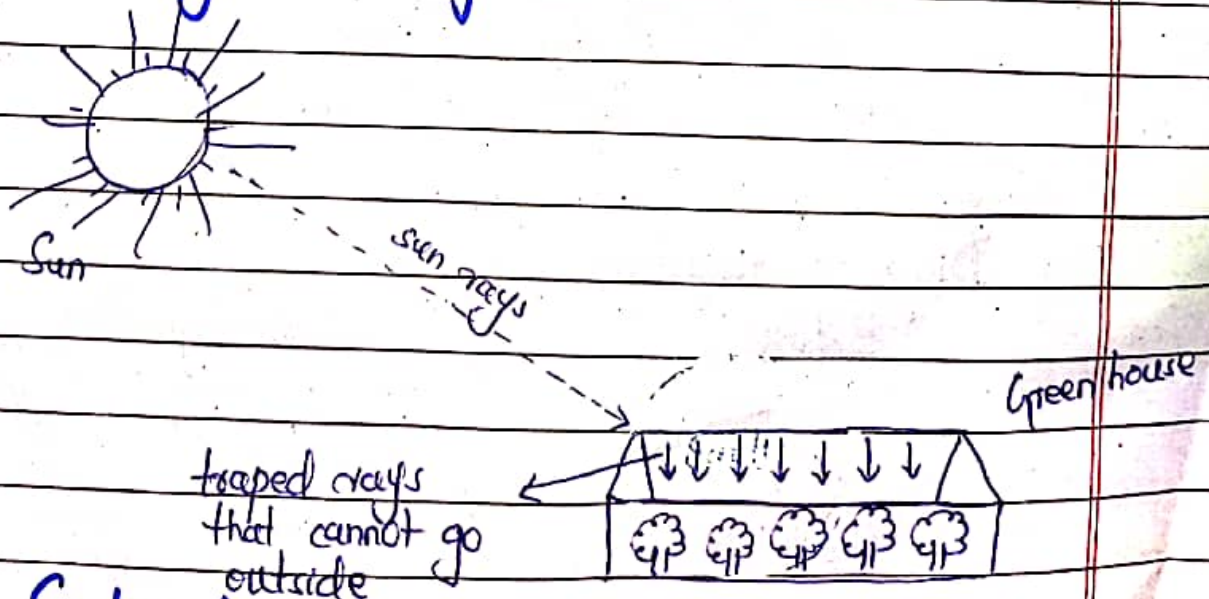
Understanding,

### Greenhouse Effect:

Greenhouse effect is the process in which plants are kept for their proper growth in a specified temperature. As we know that plants require sun light for their photosynthesis process. At night it is not possible and sometime due to weather condition this process delays and it causes delay in the growth and production of plants.

Greenhouse effect is used for this purpose in which sun light trap in greenhouse and plants are kept in that for their faster growth.

### Diagrammatically:



### Explanation:

Greenhouses are special houses

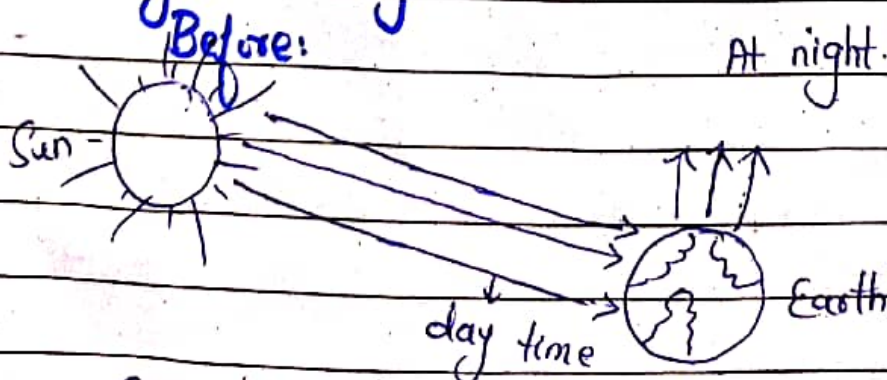


that can trap heat/light inside the greenhouse. It helps in faster growing of plants.

## Enhanced greenhouse effect and its relation with global warming.

With the advancement in every field of life and due to rapidly growing population it requires more food and facilities to live. That's why industrialisation, deforestation, carbon emission through transport happened. To meet with demand and supply chain industrialisation, deforestation was carried out by the countries for better living standards. But unfortunately, it causes severe damage to the earth's natural environment. It started ~~was~~ rising of <sup>due to ozone depletion</sup> earth temperature than average. Instead of giving better standards to human it is causing severe disasters such as flood, glacier melting, extreme weather conditions, avalanches, Tsunami and many more.

### Diagrammatically:

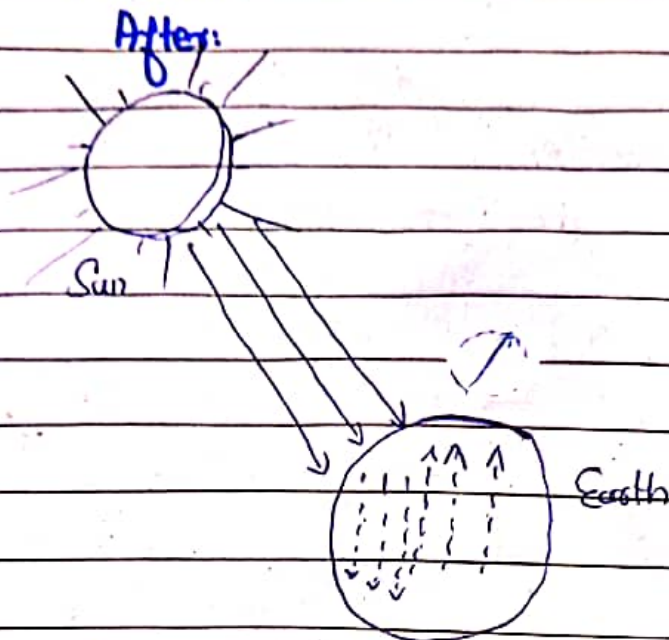


Earth absorb heat at day and at



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night it emit/reflect that rays int  
back into space to keep temperature  
balanced.



Sun rays trapped in the earth atmosphere  
and causing global warming.

**Reason:**

Ozone layer protect earth from  
extreme temperature by sending back  
radiations at night but due to  
carbon emission, industrialisation, deforestation.

The ozone layer started depleting that  
is causing global warming.

In a nutshell, greenhouse effect  
was only effective for plants but its  
enhanced version has far reaching  
threats to humanity. So, globally its  
remedial/precautionary steps should be taken and  
try to reduce those factors that causing  
global warming.

d. Write a note on the following

a. Working of GPS

b. Working of Mobile Phone.

GPS:

GPS stands for Global Positioning System. It is an instrument that is placed on the mountains, ships and under water to find out the exact location of particular area. It is most commonly used instrument for locating exact location.

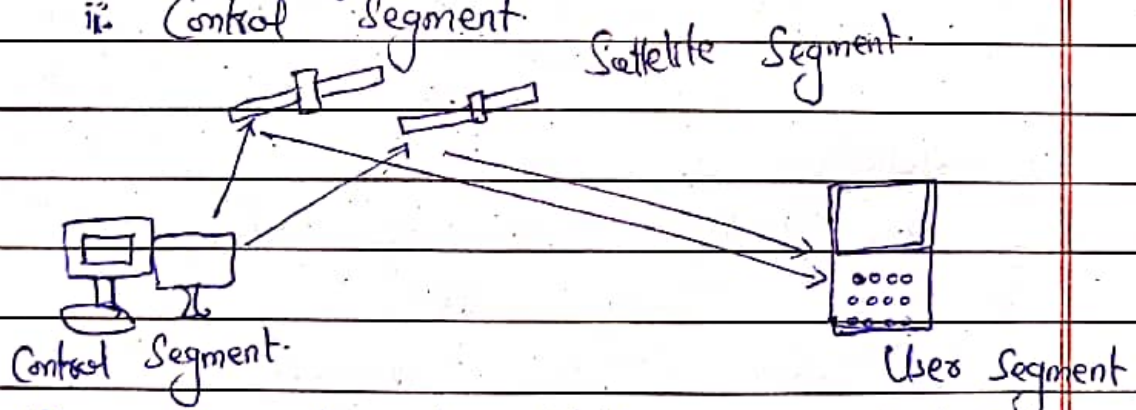
Working of GPS:

Its working based on three major segments

i) Space Segment

ii) User Segment

iii) Control Segment



- **Space Segment:** (satellite are used in this segment that detect location of person on earth)

- **User Segment:** (User segment is that which have instrument attached with phone or device)

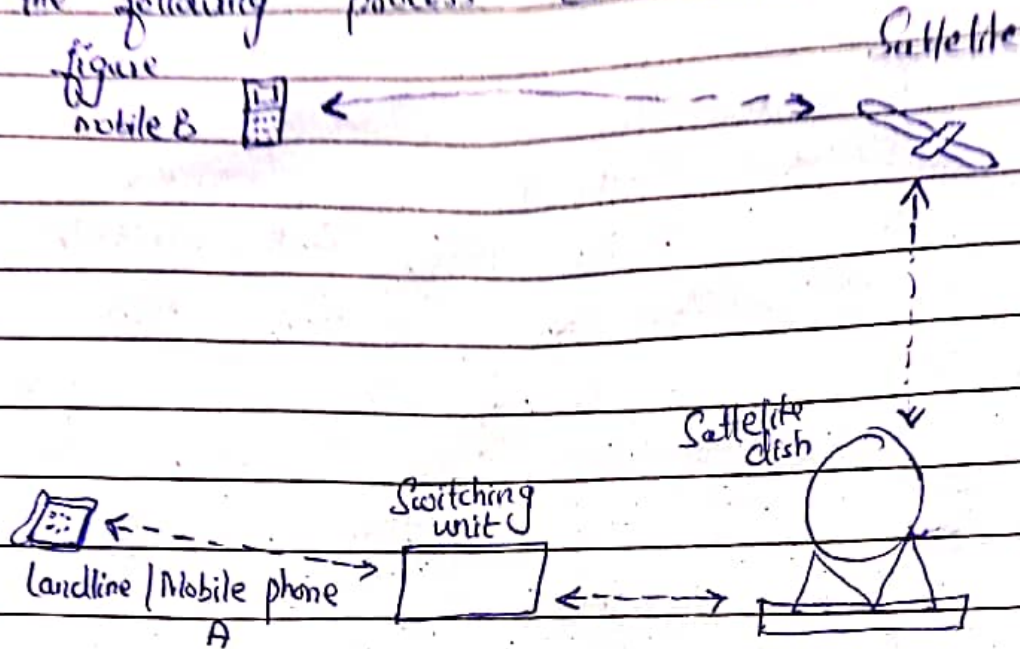
- **Control Segment:** (It is the segment that controls overall working of satellite either it is working properly or not).



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## Working of Mobile Phone

The working of mobile includes the following process as shown in figure



### Explanation:

- When a person make a call
- the call is <sup>first</sup> transferred to the switching unit either in which call is being carried out.
- After that <sup>satellite</sup> dish of that area is identified and sent on that location.
- After that the call transferred towards the satellite in the space
- Finally, call reach at destination.

This is the phenomenon, process that is being followed when we try to make a call.



Q No 5

a. What is Radioactivity? Differentiate between natural and artificial radioactivity.

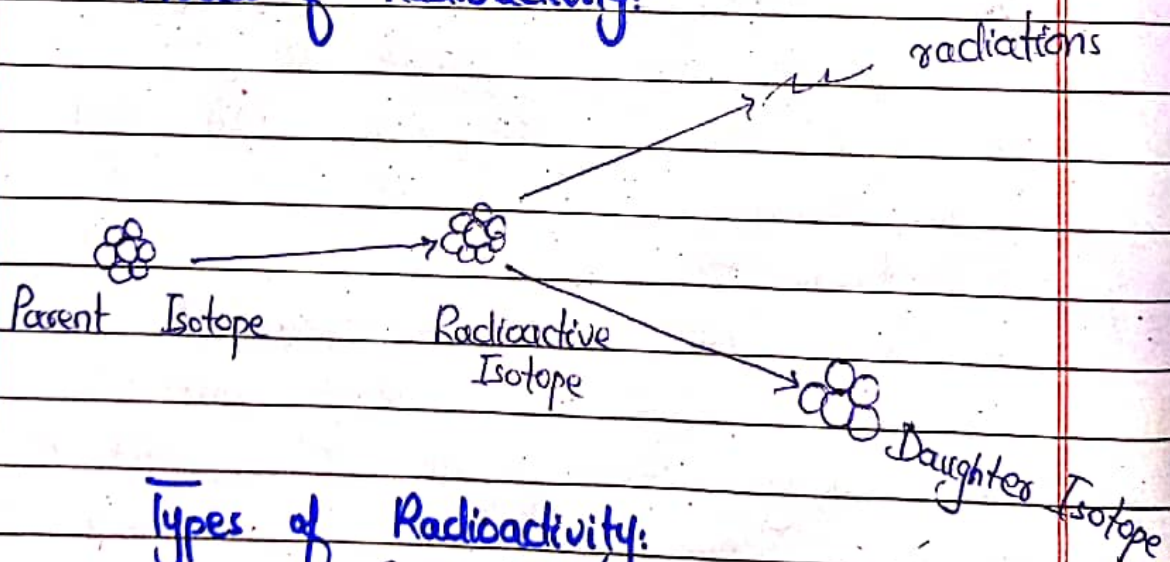
**Radioactivity:**

Radioactivity is the phenomenon in which the elements of ~~radi~~ unstable nuclei emits ~~radiat~~ radiation such as Alpha, Beta and Gamma rays to attain its stable nuclei. This is the process that happens due to decays of nuclei.

**Discovery:**

The first radioactive element was discovered by Becquerel in 1896 in the form of Uranium.

**Process of Radioactivity:**



**Types of Radioactivity:**

Radioactivity

Natural Radioactivity

Artificial Radioactivity



### • Natural Radioactivity:

In this form of radioactivity as the name shows its self that naturally or by default element are unstable and they transmit radiation until decay complete.

### • Artificial Radioactivity:

In this form element are excited to a particular <sup>unstable</sup> situation/state to act as radioactive element.

### Laws of Radioactivity:

Radioactivity occurs on certain laws

- i. This is the phenomenon that occurs due to decay of element of nuclei.
- ii. Radioactivity does not affected by pressure and temperature.
- iii. It is based on law of conservation:
  - Conservation of energy
  - Conservation of momentum
  - Conservation of mass
- iv. The properties of daughter nuclei is independent of properties of parent nuclei.
- v. It always emit radiations in the form of Alpha, Beta and Gamma rays.



b. What is Polio? Discuss its symptoms, causes of spreading and prevention and vaccine.

### Polio.

Polio is an disabling and life threatening disease that is caused by the polio virus. Its full name is poliomyelitis. Due to polio virus a person become paralysed and cannot move his body parts.

### Symptoms:

- Most people who get infected by polio viruses (about 72 out of 100) do not have any visible symptoms.
- About 1 out of 4 people with polio viruses may have symptoms like
  - Sore throat
  - Nausea
  - Fever
  - Stomach pain
  - Tiredness
  - Headache

### Causes of Spreading:

Polio viruses spread due to physical touch / or if it enters into the body. such as.

- It spread if it enters into human body through mouth.
- Through contact with feces of an infected person.
- Droplet from a sneeze and cough of an infected person.
- Sometimes objects that you put in



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like child toys that are contaminated with feces.

### Consequences:

- Paresthesia: (feeling of pins and needles in the legs).
- Meningitis: (infection of the covering of spinal cord and/or brain).
- Paralysis: (cannot move parts of body).

### Prevention: and Vaccines:

These are two <sup>only</sup> methods for the prevention and treatment of poliovirus.

#### • Inactivated Poliovirus Vaccine (IPV)

It is given as an injection in the leg or arm depending on the patient's age.

#### • Oral Poliovirus Vaccine (OPV)

It is given in the form of drops. It is still used throughout the world.

c. Write steps involved in Solid Waste Management. Discuss the main issues of solid Waste Management in our country.

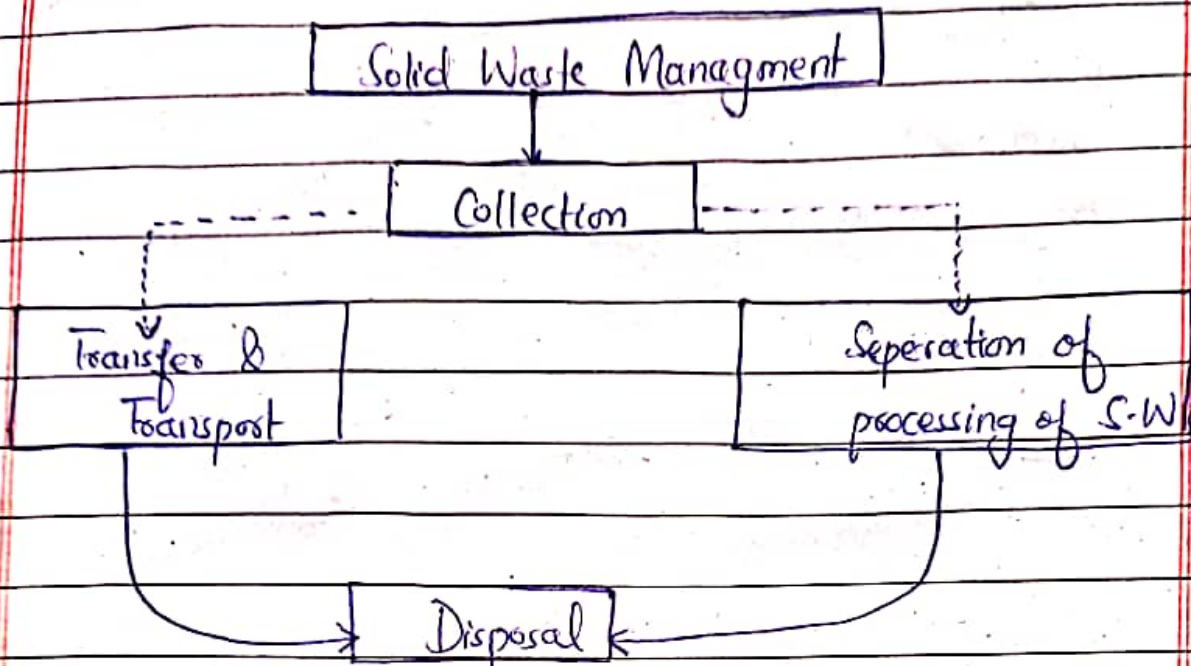
### Solid Waste Management:

Solid waste management is a department that is responsible for managing and disposing the solid waste. Due to over population solid



waste management become crucial now a days.

## Solid Waste Management Cycle:



## Steps for Solid Waste Management:

There are several steps that should be taken for Solid Waste Management such as;

1. The use of polythene bags should be banned.
  - a. Polythene bags cannot be disposed because of its composition it requires billion years to be decomposed.
3. The strategy of recycle, reuse and reproduce should be adopted.
4. Need of awareness to people so that they become aware of this problem that has far reaching implication on human health.
5. High penalties and fines should be imposed on those industries



vii. -that case making polythene bags. Shifting from plastics to bio-processed such as paper disposable plates that can be easy to decompose.

viii. Citizen should also play important role for solid waste management.

## Issues of Solid Waste Management in Pakistan.

There are many issues regarding solid waste management i.e.

- i. Lack of funds in this sector so that they can work properly.
- ii. Lack of attention by the leaders.
- iii. Lack of policy making related to solid waste management.
- iv. Overpopulation causing solid waste because population is growing but to handle this growing population there is no policy making.
- v. Lack of awareness/education among citizens related to solid waste management.

In a nutshell, solid waste management is becoming global issue, so government needs to take effective steps regarding solid waste management.

d. What do you understand by the term population planning? Highlight the different benefits of population



planning?

## Population Planning:

Population planning is the form or policy that is made by the government to attempt to limit the a number of peoples. In the modern world overpopulation becomes one of major threat not only to existing generation but also for the upcoming generation. Policies are made to limit the population growth.

## Why population planning is necessary?

Population planning is necessary because the birth rate is globally is more than the death rates. It causing alarming situation to the world because if it continue growing then following issues world ~~we~~ should have to face;

- Shortage of food
- Shortage of Water
- Lack of education
- Lack of healthcare
- Lack of Nutrition.
- Poverty
- Unemployment

## Benefit of population planning:

Population planning can play vital role and benefit in many ways such as



- i. Sufficient resources for human being
- ii. Provision of food and water
- iii. Better living standards
- iv. Access to education for everyone
- v. Provision of healthcare to every citizen.
- vi. Eradication of Poverty
- vii. More opportunities for people
- viii. Lowers the burden on Government
- ix. More access to the resources.

In conclusion, population planning can play vital and important role in modifying and transforming peoples living standards. Therefore, government needs to make such policies for the control of population growth.

## SECTION - II

### Q no 6

a. A primary school had an enrollment of 850 pupils in January 2022. In January 2023, the enrollment was 1120. What was the increase percentage for the enrollment;

As we know that:

In 2022 enrollment = 850

In 2023 enrollment = 1120

We have to find

Increase percentage = ?

Formula:

$$\text{Percentage} = \frac{\text{increase} \times 100}{\text{Original}}$$

$$= \frac{270}{850} \times 100$$

$\frac{\text{Increase}}{\text{Enrollment}} = 31.76\%$
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b. A man is 5 times as old as his son, two years ago

c. A man has some hens and cows. if the no of heads be 48 and no of feet is equal to 140, find the no of hens.

Solution:

$$\text{No of heads} = 48$$

$$\text{No of feet} = 140$$

To find

$$\text{No of hens} = ?$$



$$\begin{aligned}\text{Total heads} &= 48 \\ &= 48 \times 4 \\ &= 192\end{aligned}$$

$$\begin{aligned}&= 192 - 140 \\ &= 52\end{aligned}$$

As hen has two legs, therefore it will be

$$= 26$$

There are 26 hens there.

d. A car runs at a speed of 40 km/h during first half of journey and at the speed of 60 km/h the 2nd half of journey. What is average speed of car?

Given that:

In 1st half speed was = 40 km/h

In 2nd half speed was = 60 km/h

Average Speed = ?

Formula:

$$\text{Average} = \frac{\text{Sum of observations}}{\text{No of observations}}$$

$$= \frac{40 + 60}{2}$$

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

$$\text{Average} = 50 \text{ km/h}$$