

Section I

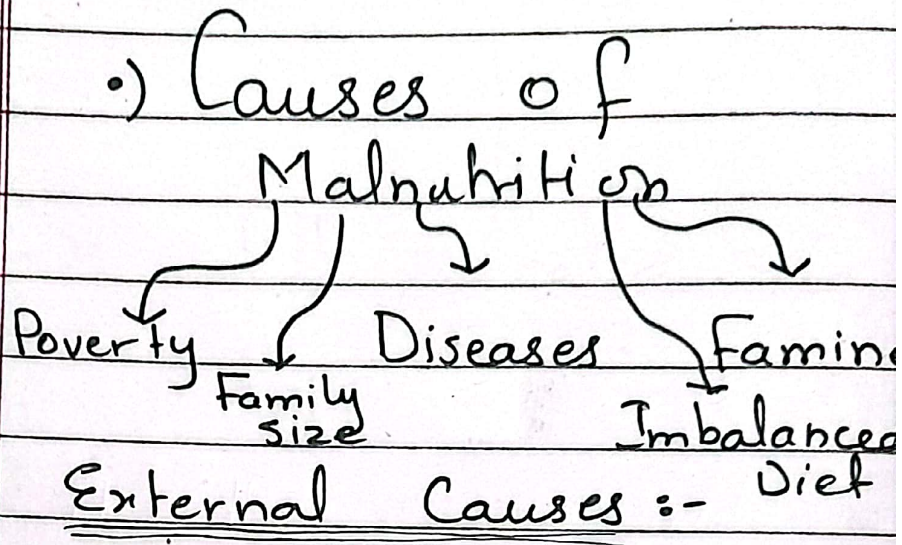
Q2:

a)

Malnutrition:

Malnutrition is the lack or excess of macro or micro-nutrients in the body.

Macro	Micro
→ Carbohydrates	→ Vitamins
→ proteins	→ A
→ fats	→ K
	Minerals → D
	→ E
	→ B



1) Poverty:- Unavailability or unaffordability of nutritious food like fruits, meat and milk due to inflation, war etc.

2) Family Size :

Large families are unable to provide adequate nutrition to each member.

3) Famine :

Famine such as the Irish potato blight can result in severe food insecurity.

2) Internal Causes:

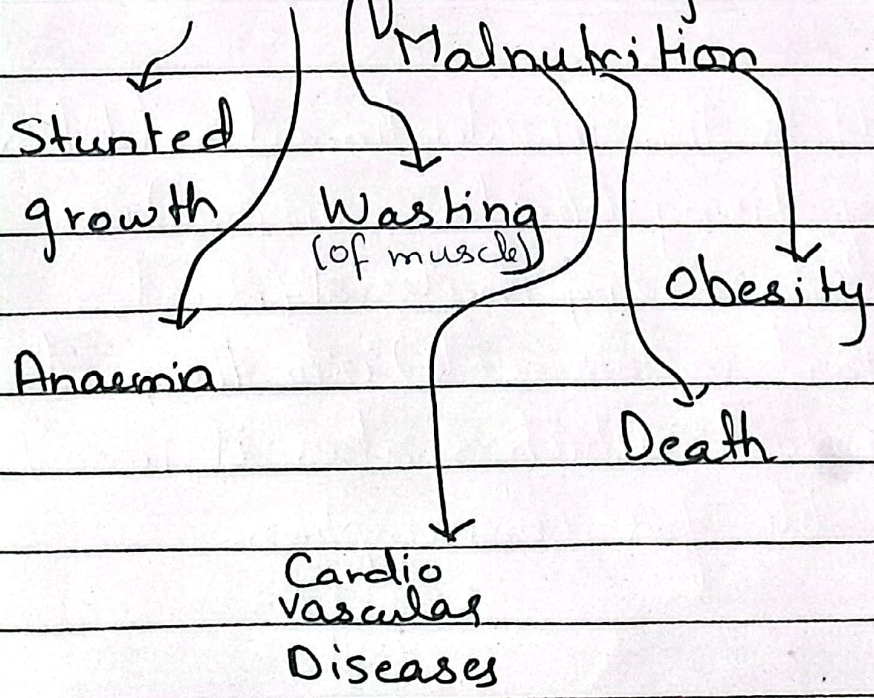
1) Diseases :-

Crohn's disease, Celiac disease, Thalassemia can cause severe malnutrition.

2) Imbalanced diet :-

Imbalanced diet due to over-consumption of junk (due to busy work schedule) can lead to nutritional deficiencies.

•) Consequences of



b)

1) Food Adulteration

It is the intentional addition of external chemicals or adulterants (colour, flavours, water, sand, flour) to reduce the production cost and maximise the profits.

2) Food Contamination

It is the unintentional addition of living (bacteria, viruses) or non-living material (dust, food contaminants) into the food product which makes it unsuitable for consumption.

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Food

Adulteration

Contamination

→ Intentional

→ Un-intentional

→ Can be fatal

→ Can be fatal

/cannot be fatal

/dangerous

→ Example:

→ Example

◦ Addition of water in milk

◦ Lactobacillus growth in milk

◦ Addition of flour (maida) in street fritters to reduce cost of gram flour

◦ Addition of gluten in gluten-free food by cross contamination from other utensils

→ Is usually done by the vendor / producer / owner

→ Can happen itself or by anyone (family etc)

c) RAM vs ROM

RAM

(Random Access Memory)

-) Volatile memory
-) Disappears when device (pc / Laptop) loses power
-) Easier to put / write
-) higher capacity

Example:

-) Browser Tabs

ROM

(Read only memory)

-) non-volatile
-) Does not disappear when power is lost
-) stores instructions & System files
-) Slower ^{read} speed.
-) Lower capacity

Example:

Calculators
video games

d)

o) Geo-Stationary Satellites:

A geo-stationary satellite orbits Earth at a specific altitude and rotates in the same direction as Earth making it appear stationary in the sky to observers on the ground.

Altitude: 22,300 miles

directly above the equator.

Time taken

for one Orbit: 23 hours

, 56 minutes

, 4 seconds.

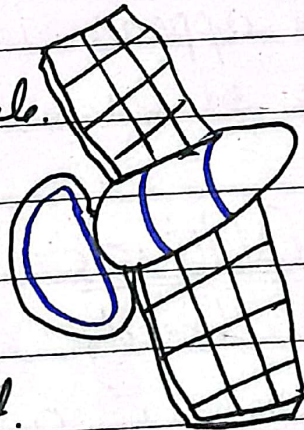
Natural

VS

Artificial Satellites

Natural :-

- 1) They are man-made.
- 2) Cover lower distance than natural ones / Closer to Earth.
- 3) Are not permanent.
(can be brought down once mission is successful).
- 4) Can be controlled.



Example: Chang-6 of China.

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1) Artificial :

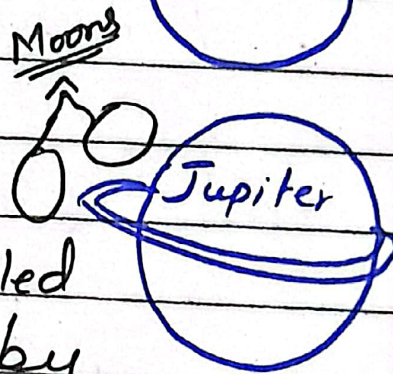
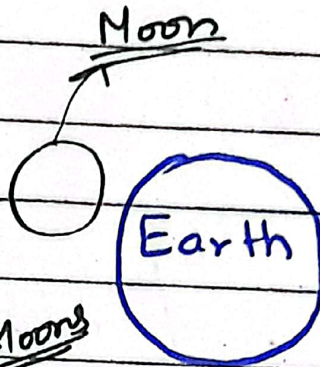
→ Natural
Celestial Bodies

→ Much larger
distance ^{from} to Earth

→ Are permanent

→ Cannot be controlled
| Are controlled by
natural physics laws.

Example: Moon of Earth
and moons of Jupiter.



No. Satellites of Jupiter
According to NASA:
80-95 Moons.

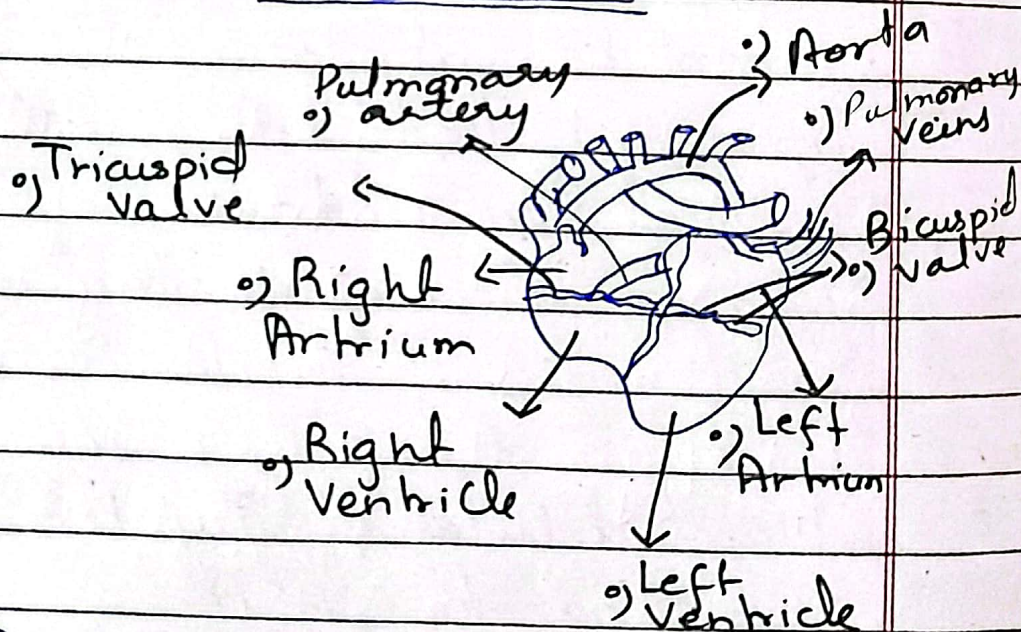


Q 3:

a)

↳ Double

Circulation:



Double Circulation is a process whereby the blood passes through the heart twice for de-oxygenation and then returns after being oxygenated from lungs.

Process of double circulation

Step 1:

Deoxygenated blood enters ~~left~~ right atrium and then right ventricle

→ Step 2: Blood enters the left pulmonary artery and reaches lungs for oxygenation.

Step 3:

Oxygenated blood enters heart again through left pulmonary veins into left atrium and then left ventricle

Step 4:

Oxygenated blood is supplied to body via Aorta

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Adaptation of Heart for Double Circulation:

Valves:

Valves push blood from atrium to ventricles and ventricles to pulmonary veins/arteries.

Examples:

Tricuspid valve
Mitral Valve.

Muscles

Muscles

(Cardiac)

provide the pushing and

squeezing

force to the atrium and

ventricles for

complete empty

-ing.

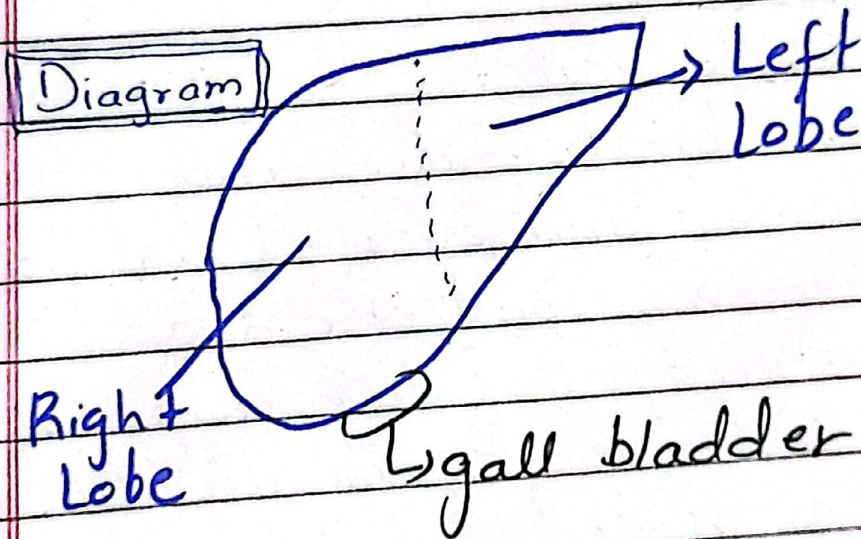
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b)

Liver as a

Chief Chemist:



Chemical Functions
of Liver:-

1) Production of Bile:
Liver produces bile salts which are passed down from the

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gall bladder into the small intestine during a meal. Bil. helps with emulsification and the subsequent digestion of fats. It also neutralizes the stomach acid so intestinal enzymes can work.

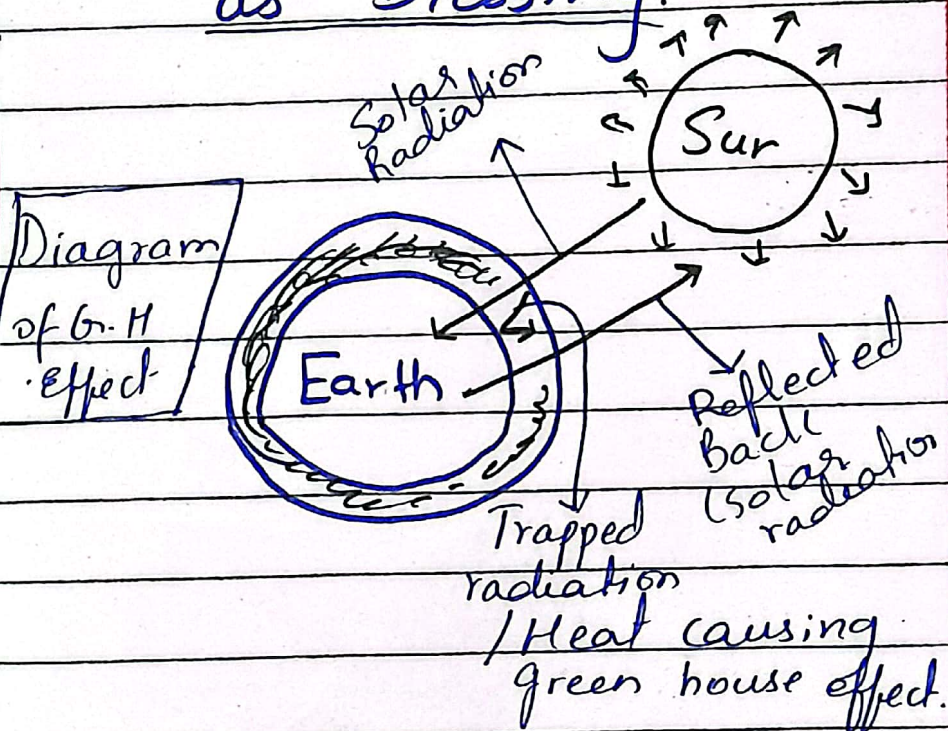
2) Detoxification of Chemicals:

Liver breaks down and detoxifies numerous drugs, chemicals (food colour, additives) and other such compounds. This demonstrates its ability to assess and then ~~etc~~ choose a suitable mechanism for chemical degradation.

c)

Green-House Effect

as Blessing:



How it is a Blessing:

The trapped heat in the atmosphere causing the Green House effect makes temperatures liveable on Earth. Without it, temperatures would drop to -20 degree causing famine,

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Water Shortage (as water would freeze). Famine would be as a result of lack of agriculture, death of marine life and birds etc.

1) Enhanced

Green-House Effect:

1) Increased trapping of heat in atmosphere due to green house gases released mainly from global industries (CO_2 , CO , CFC , CH_4) results in enhanced green house effect.

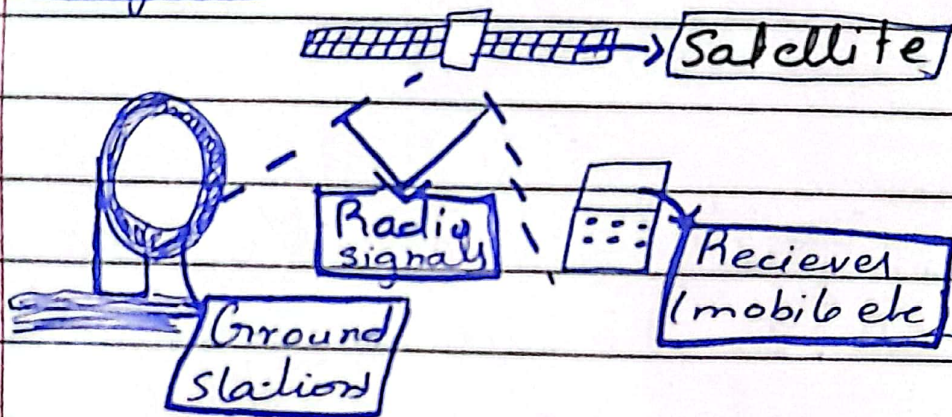
2) Relation to Global Warming:

Enhanced Green house effect causes global average Earth temperatures to rise to 1.5 or 2°C above normal.

d)
a) Working of
GPS:

Global Positioning
System

Diagram



Step 1 Radio Signals
from Ground Signals
received by Satellite

Step 2

Satellite measures
distance and sends

Step 3: Signals to receivers.
Receiver gets the position / Location.

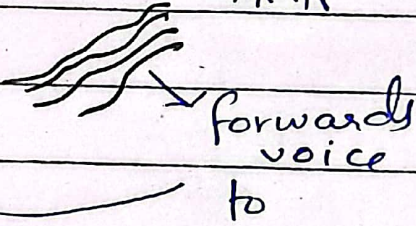
b) Mobile Phone Working:

1) Cellular A calls

2) Nearest Tower
receives signal



3) Cellular B



* process reversed when Cellular B talks so Cellular A can hear the voice.



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Section II

Q # 6:

a)

Enrolment in Jan

2022: 850

Enrolment in Jan

2023: 1120

Difference: $1120 - 850$

= 270 students
increased

Using Direct Proportion:

100% 850

x% 270

$$x\% = \frac{850}{270} \times \frac{270}{850}$$

$$x\% = 31.7\%$$

$$\% \text{ increase} : 100 + 31.7 = \boxed{131.7\%}$$

$$b. \begin{cases} \text{man's age} = x \\ \text{son's age} = y \end{cases}$$

⇒ Equation 1:

• Two years ago

$$x + y = 114$$

⇒ Equation 2:

$$x = 5y$$

⇒ Substitution x in Equation 1 with $x = 5y$ from Equation 2:

$$\cancel{x} + 5y + y = 114$$

↓

$$5y + y = 114$$

$$6y = 114$$

$$y = 19 \rightarrow 2 \text{ years ago}$$

⇒ Y's present age (+2 years)

$$19 + 2 = \boxed{21}$$

* Son's age now = $\boxed{21}$

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No. of
C). Hens :-

⇒ Let the no. of head
hens be = x

Let the no. of cows
be = y

⇒ Since hens and cows have
only 1 head so their sum
will be the total no. of
cows and hens (equal to no. of heads)
Total:

$$x + y = 48$$

⇒ Total no. of feet:

Each hen has 1 head and
2 legs so for every head
(x) legs will be $2x$

⇒ \Rightarrow Hen = $2x$

Each cow has 4 legs so for
each head of cow there are
4 legs:

⇒ \Rightarrow Cow = ~~$4x$~~ $4y$

$$\text{Total: } 4y + 2x = 140$$

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⇒ Finding the no. of Heads:

Equation 1:

$$\text{(Heads)}: x + y = 48$$

$$y = 48 - x$$

Equation 2:

$$\text{(Feet)}: 2x + 4y = 140$$

⇒ Substitution $y = 48 - x$
from Eq. 1 into $4y$ of
Eq. 2:

$$2x + 4(48 - x) = 140$$

$$2x + 192 - 4x = 140$$

$$-2x = 140 - 192$$

$$-2x = -52$$

$$x = \frac{-52}{-2} = 26$$

$$\begin{array}{r} 26 \\ \times 2 \\ \hline 52 \end{array}$$

$$x = 26 \quad \boxed{x = 26}$$

No. of Hens = x

$$\boxed{x = 26}$$

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d)

o) Average Speed: =

$$(s_1) \frac{\text{Speed 1} + \text{Speed 2} (s_2)}{\text{Total no. of different speeds} (ds)}$$

$$\frac{S_1 + S_2}{ds} = \text{avg. speed}$$

$$S_1 = 40 \text{ km/h} \quad \& \quad S_2 = 60 \text{ km/h}$$

$$\frac{40 + 60}{2} = \frac{100}{2} = 50$$

$$\boxed{\text{Avg. Speed} = 50 \text{ km/h}}$$

Q# 8

b) Water: Milk in 1:2
1 : 2

⇒ Quantity of Water in this case by ratio formula:

⇒) $\frac{\text{part of water/milk} \times \text{Total Litres}}{\text{Total parts}}$

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Water	Total parts	T. Litres
1	$1+2 = 3$	60

$$\text{So: } \frac{1}{3} \times 60 = \frac{60}{3}$$

$$3 \times 20 = 60$$

- So 20 litres of water

⇒ For Milk: (2 parts)

$$\frac{2}{3} \times 60 = \frac{120}{3} = 40$$

40 litres of Milk

⇒ For the Ratio of 2:1
for Water: Milk:

Add 20 more litres of water as 2 parts equal to 40 litres and 1 part 20 litres:

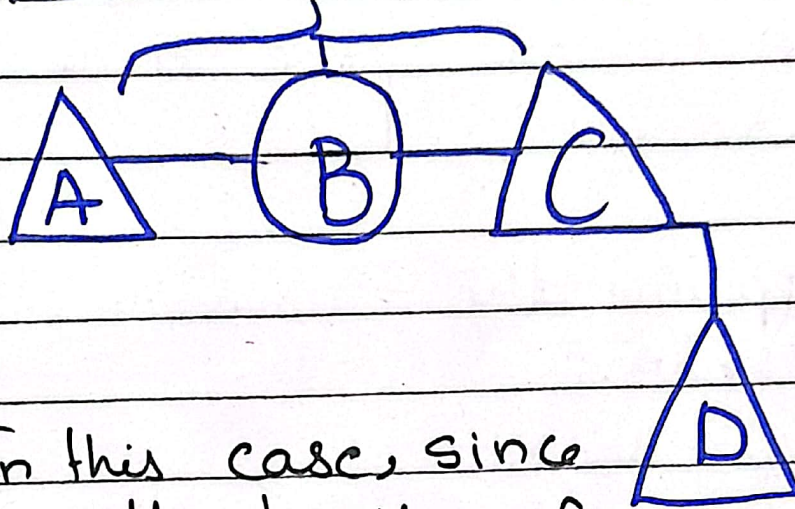
1 part: 20 litres

⇒ 2 parts: 40 litres

So add ~~40~~ 20 litres of water

C-

$\triangle = \text{Male}$ $\circ = \text{female}$



- o) In this case, since A is the brother of C and D ^{is} being a male, So D is Nephew of A.

d- A B C D E F G
 H I J K L M N
 O P Q R S T U
 V W X Y Z.

- o) In the case of RoAR, each alphabet is added 43 to codify it.

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For example

$$R + 3 = U$$

$$O + 3 = R$$

$$A + 3 = D$$

$$B + 3 = U$$

The first and last alphabets have to be the same

Applying the +3 method to Urdu:

$$U + 3 = X$$

$$R + 3 = U$$

$$G + 4 = Q$$

$$U + 4 = X$$

CODE FOR URDU:

XUGX

