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Test 3: GSA

29-Dec-2025.

Question 2

(a) Differentiate Plant and animal cell.

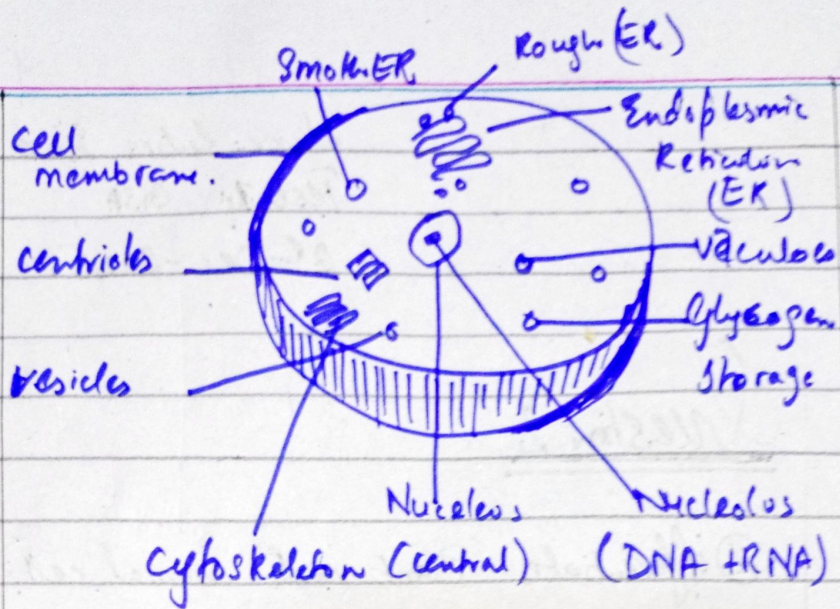
Plant and animals have structural and functional unit called cell. However, there are differences in the structure of both. Plant cells are autotrophic whereas animal cells are heterotrophic. Plant cells have chloroplast, Amyloplast, large central vacuole and cell wall. The animal cells have centrioles, flexible shape, glycogen, transport vesicles and small vacuoles.

Plant cell

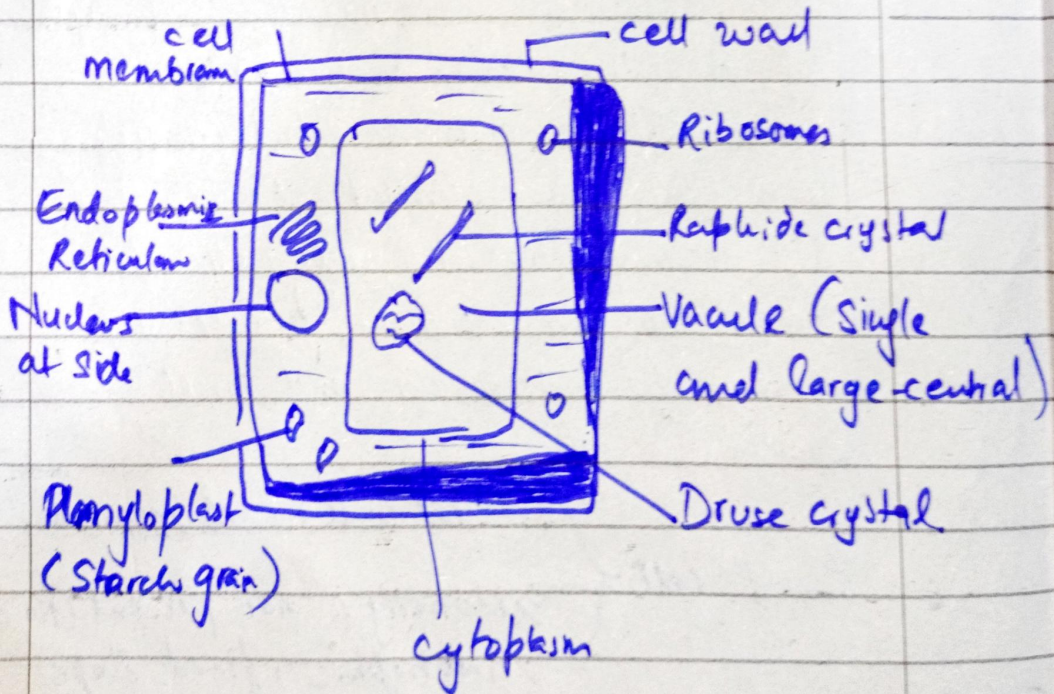
- Cell wall + cell membrane
- Motility is not present (No cilia)
- Autotrophic, fixed shape

Animal cell

- only cell membrane
- motility is present
- Heterotrophic, flexible shape.



Structure of Animal cell



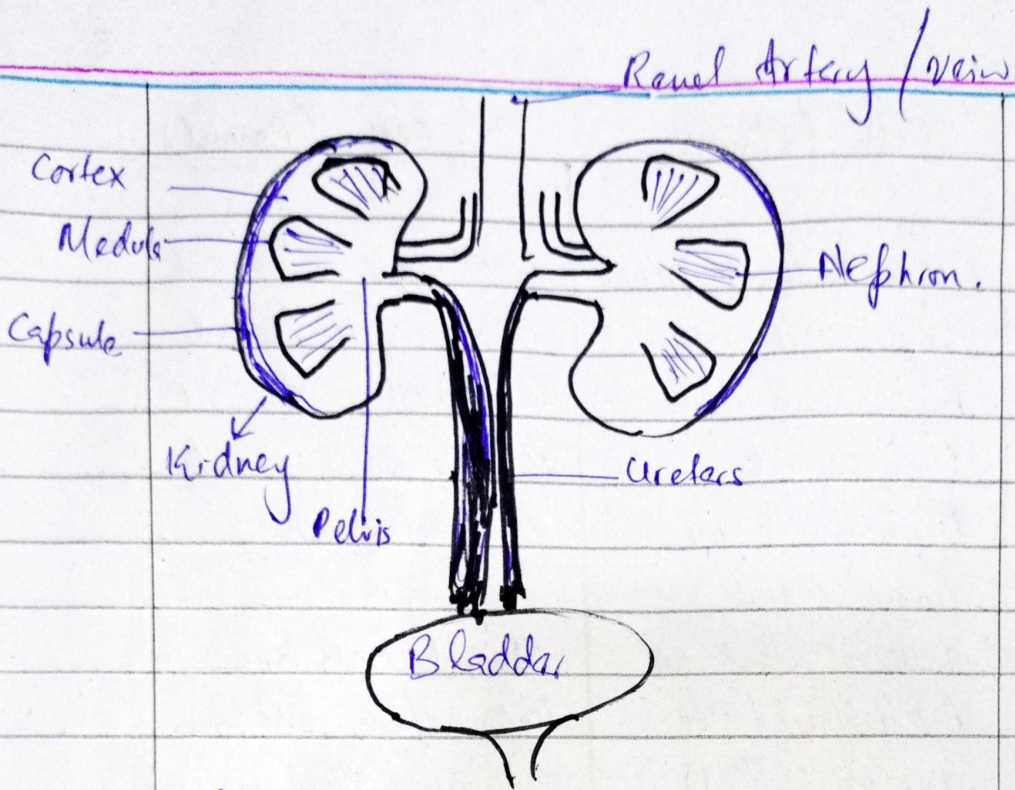
Structure of Plant cell

Cell (Plant)	Cell (Animal)
1) Cell wall is present	cell wall is absent.
2) Glycogen is absent	Glycogen is present
3) Amyloplast is present	Amyloplast is absent.
4) Large central vacuole	Multiple small vacuoles
5) Presence of Rhaphide and druse crystal	Cytoskeleton is present
6) Cells of Plant are Autotrophic (Make their own food)	Animal cells are Heterotrophic (Acquire food from other sources)
7) Chlorophyll is present	Chlorophyll is absent.
8) Cell shape is fixed	Cell shape is flexible.
9) Nucleus is sideline.	Nucleus is Central.
10) No motility No cilia	Motility is present due to cilia.

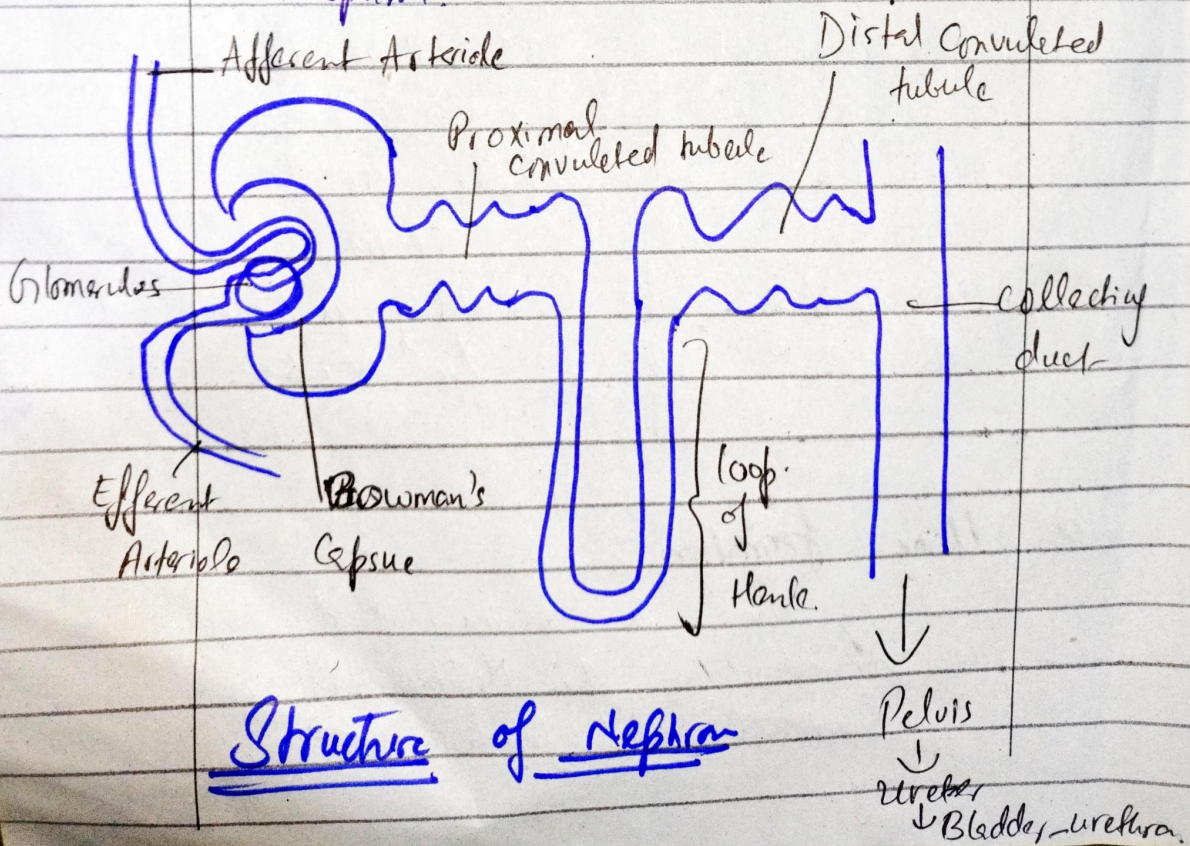
(b) Urine formation :

Urine in human body is formed in the Nephron which is structural and functional unit of Kidney.

4.



Urine is formed in the Kidney -
Nephron.



Structure of Nephron

Urine is formed in the Nephron
with 3 basic steps.

- 1) Urine Filtration
- 2) Tubular Reabsorption
- 3) Tubular Secretion.

1) Urine is filtered in the
Glomerulus (filters small solute from blood)



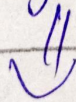
2) Proximal convoluted tubule
reabsorb water and ions like Ca^{2+} .



3) Loop of Henle (Ascending
part reabsorb K^{+} and Na^{+}
and descending part reabsorb H_2O)



4) Distal tubule maintain
electrolyte balance



5) Collecting duct
Collect urine and
reabsorb H_2O or necessary
ions under ADH influence
Rest is passed to pelvis as Urine.

Urine is formed with different concentration depending upon less or more nutrients in the body.

Qc Disaster Risk management

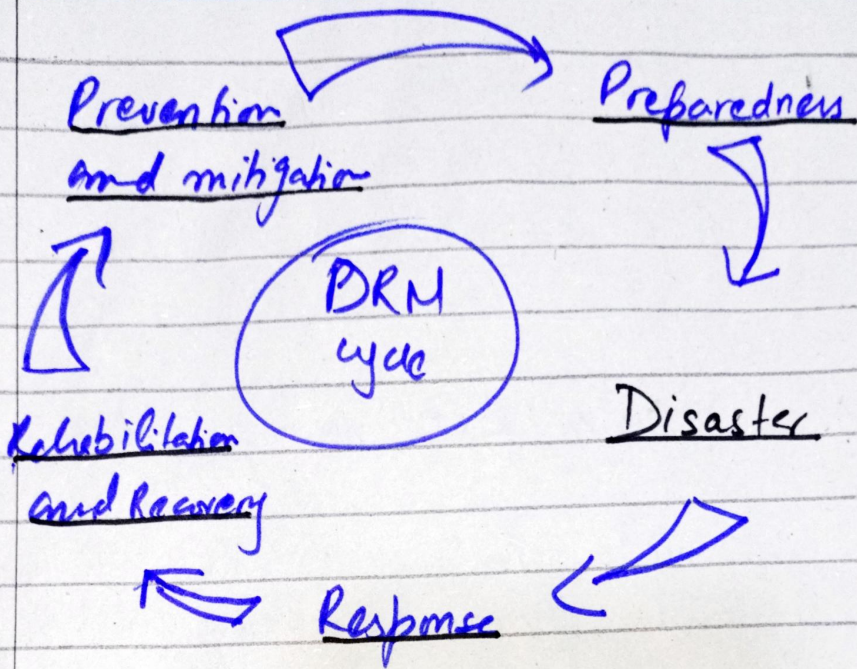
Disaster Risk Management is the systematic process of using policies, strategies and plans to prevent new risks, reduce previous risks and provide adaptive measures.

It has phases to act

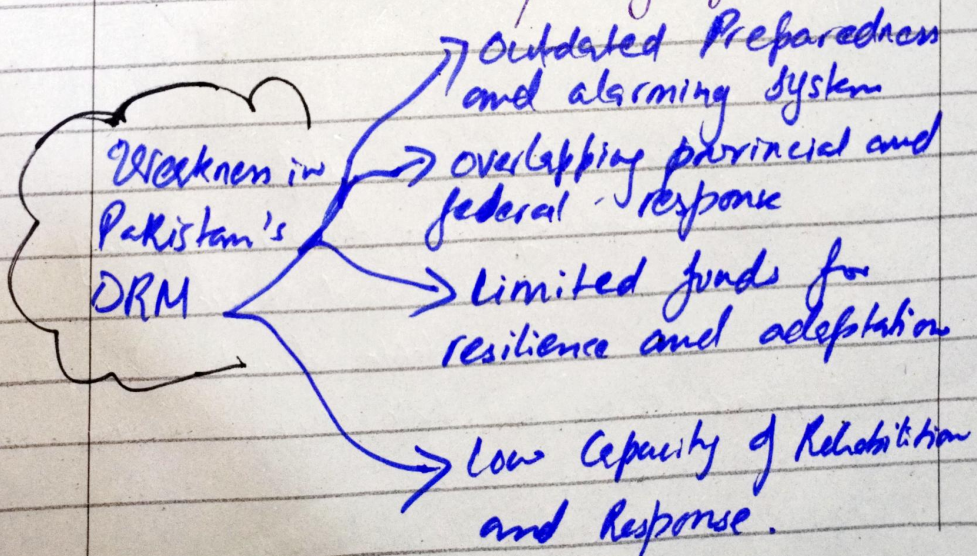
- 1) Mitigation
- 2) Preparedness
- 3) Response
- 4) Recovery.

- 1) Mitigation include the steps to lower the chances of any disaster happening
- 2) Preparedness include ready and ensured steps in case of unavoidable disaster like floods
- 3) Response is the immediate action taken in the disaster
- 4) Recovery is the rehabilitation measures to lessen the impact of disaster.

7.



Disaster Risk management assures that minimum effect is imposed on infrastructure and building with happening of any natural disasters.. like preparedness of floods can reduce damage of floods..



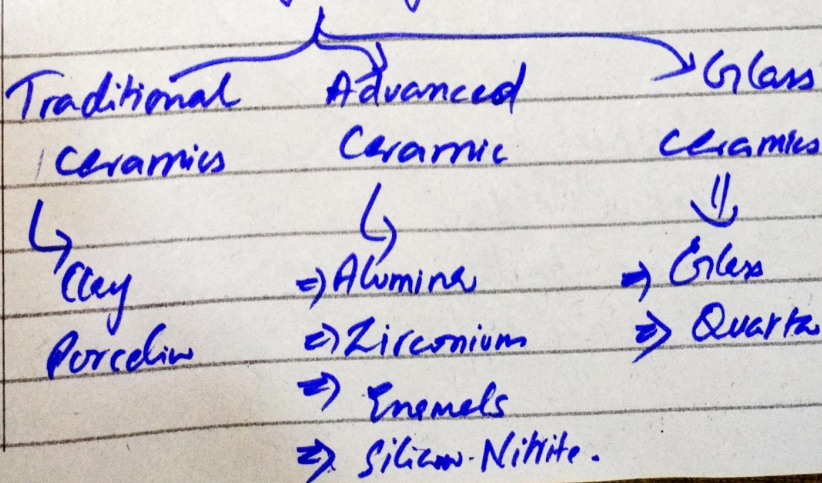
Pakistan faces weakness in all major phases of DRM. The DRM authority is not fully funded and trained for disaster happenings.

Qd) Ceramics and types + application.

Ceramics are inorganic, non-metallic materials which are shaped and hardened at high temperature. They are usually

- ↳ Hard
- ↳ Brittle
- ↳ Heat Resistant
- ↳ Corrosion Resistant.

Types of Ceramics



1) Traditional Ceramics

They are made from natural raw materials like clay.

Application

- e.g. → Clay Products → used in Art
 → Bricks → used in houses
 → Tiles → used on floors.
 → Pottery → Crockery
 → Porcelain → Crockery

2) Advanced ceramics

Made from pure chemical Compounds like

- Alumina Al_2O_3 → used in chips, sanitary ware
 → Zirconia ZrO_2 → used in Medical, Dental.

3) Glass Ceramics

Have properties of both glass and ceramic

- e.g. → Cookpot glass
 → Laboratory glass ware.

Applications of Ceramics :

Construction
(Bricks
tiles)

Medical field
(Dental crowns)
(Bone implants)

Electronics
(Insulators,
capacitors)

Household
Items
(cups, plates)

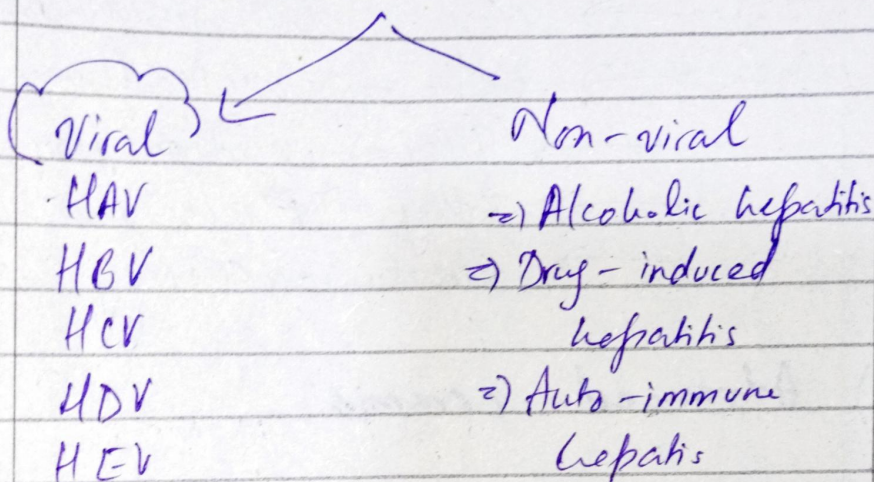
Industrial use
(Heat shields,
engine parts,
cutting tools)

Question 3

a)

Hepatitis.

Inflammation of the liver is known as Hepatitis.
It could be



Hepatitis A

is spread through Food / water via alimentary canal. It is not chronic in nature

Symptoms: Loss of Appetite, Chronic cases are rare, Nausea, Jaundice.

Prevention: Use of vaccine. as vaccine is available

Hepatitis B.

It is spread through body fluids like blood, semen.

Symptoms: Fever, Fatigue, Jaundice, dark urine, Abdominal pain, Joint pain.

Prevention: Use of Vaccine can prevent Hepatitis B, safe drinking.

Hepatitis C: It is spread through contaminated blood, or blood transfusion.

Symptoms: Liver cirrhosis, Jaundice (often asymptomatic)

Prevention: Disposable Syringes, Screen Blood transfusion, safe razors.

Hepatitis D: It occurs along with Hepatitis B

Symptom: Severe liver inflammation, Rapid progression of liver failure.

Prevention

Avoid Blood Exposure, safe injection.

Hepatitis E: It is spread through contaminated water.

Symptoms: Fever, Nausea, vomiting, Jaundice, Severe illness in pregnant women.

Prevention: Proper sanitation, Proper hygiene, clean drinking water.

b) Solar System.

The Solar System consists of Sun, planets, satellites and all the dwarf planets.

↳ Sun

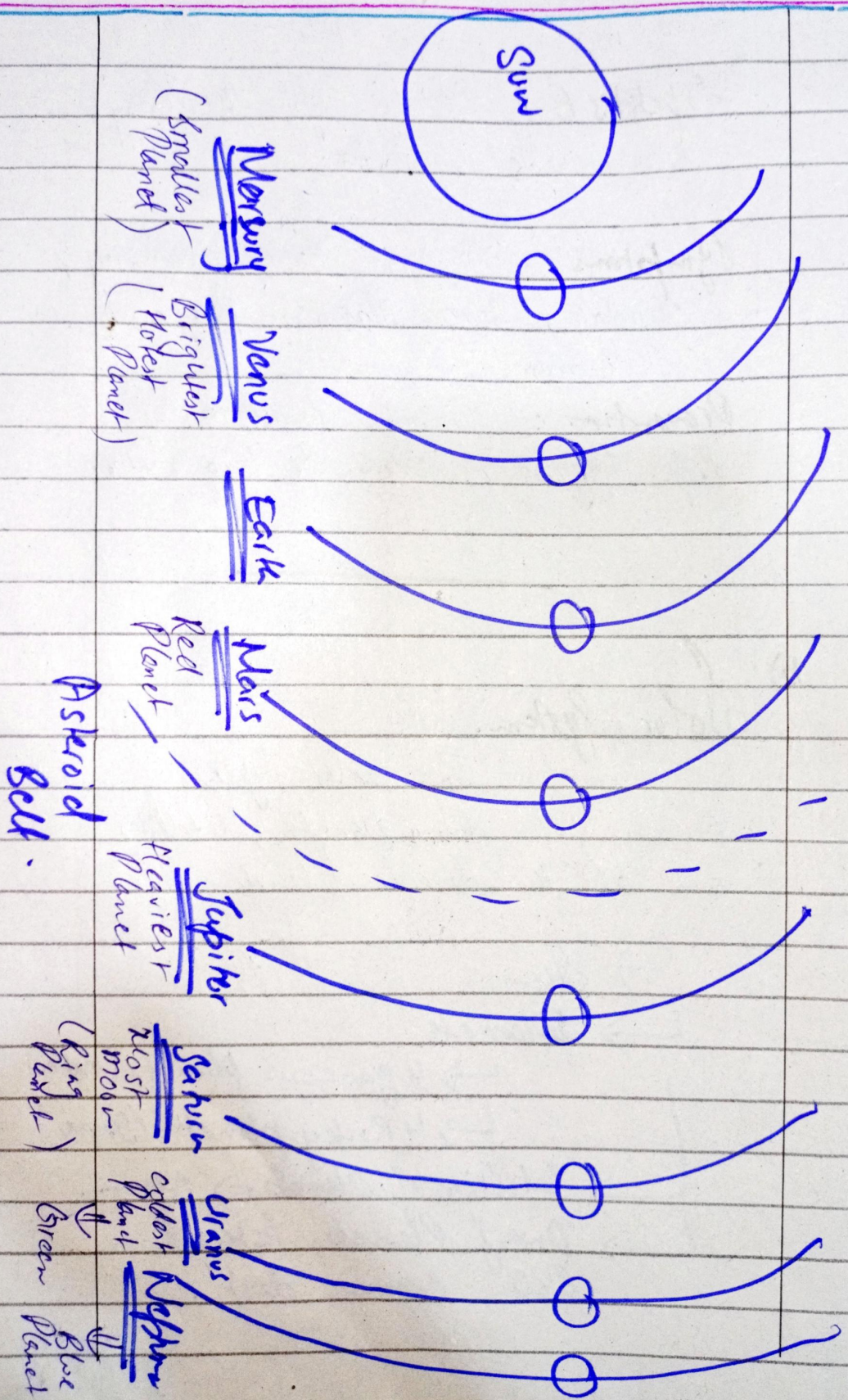
↳ Planets

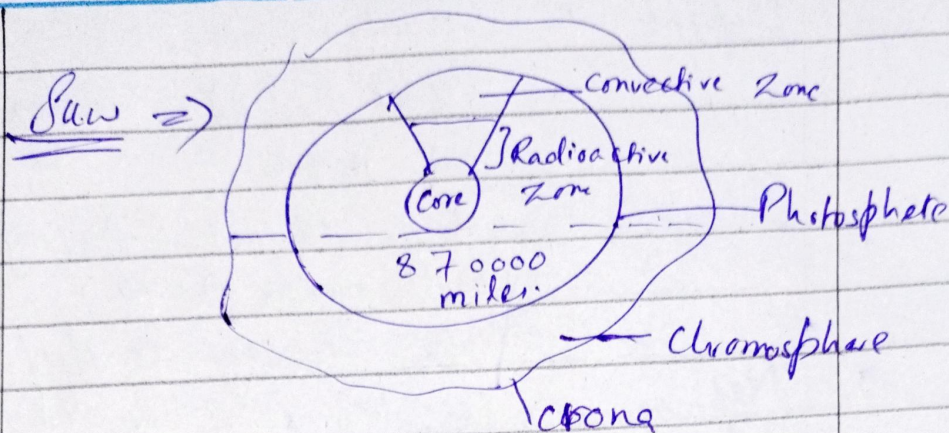
↳ 4 gaseous planets (outer)

↳ 4 Rocky planets (inner)

↳ Satellite of planets → Moon.

↳ Dwarf Planets, Asteroid Belt, comets, dust.





Planets

Mercury : Smallest Planet

No Satellite

No Atmosphere

88 days revolution

Swift Planet

Venus : Hottest / Brightest Planet

243 days Rotation 225 Revolution

Seen with naked eyes.

CO₂ clouds are present

Earth : 5th largest Planet

Life exist here

One satellite (Luna)

Green Planet.

Mars

Sister planet of Earth

Red Planet

Iron oxide Rust present

2 moons (Phobos, Deimos)

Jupiter : - Fastest Rotating
- Great Red spot present
82 moons.

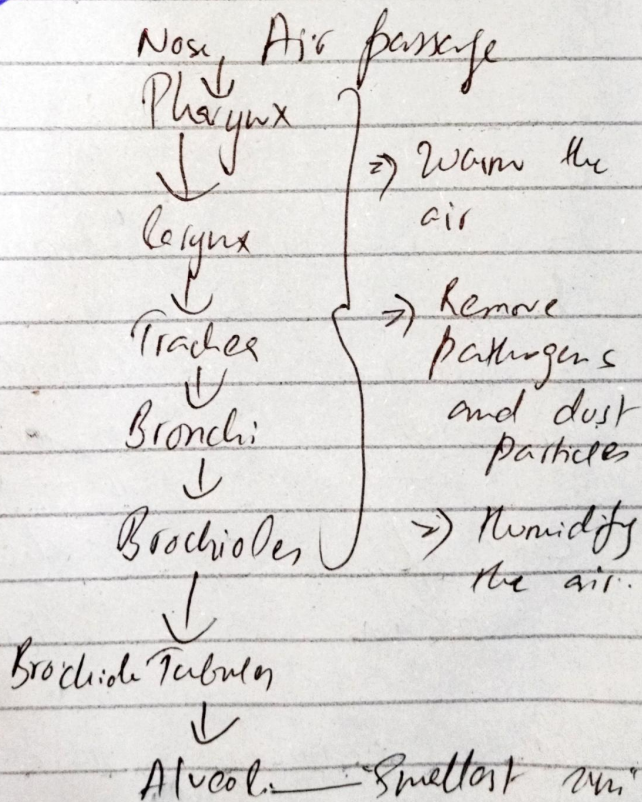
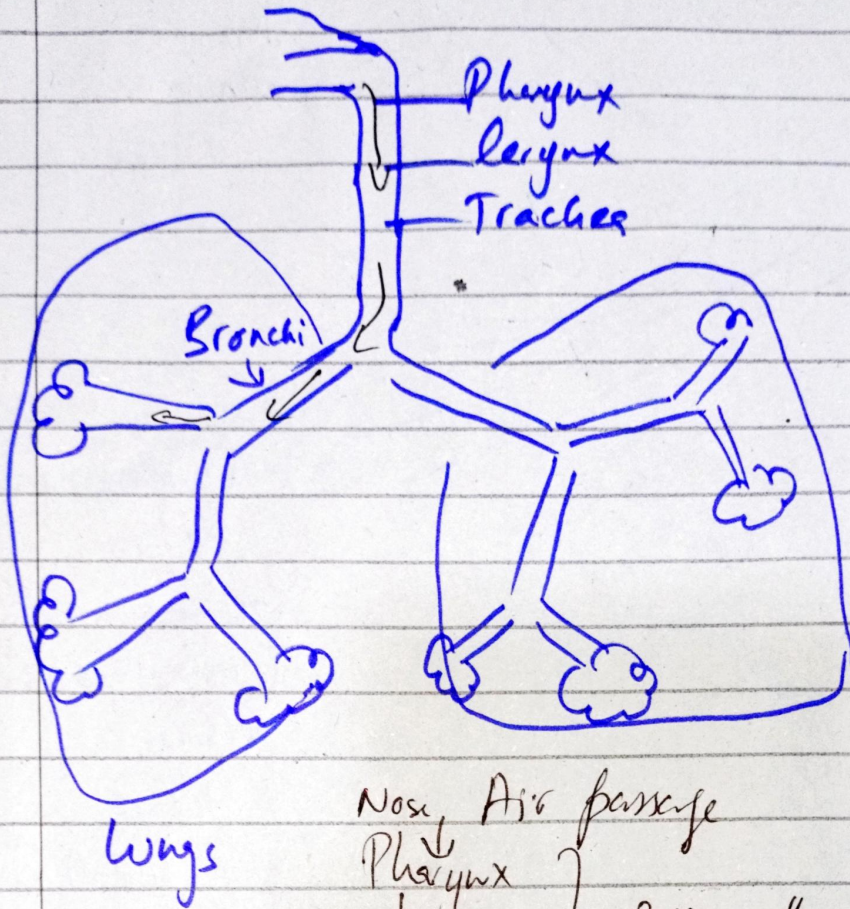
Saturn $\Rightarrow$ Rings present (7-9 major)
 $\Rightarrow$ Most moons 8274
 $\Rightarrow$ Low density 0.7 g/cm^3 .

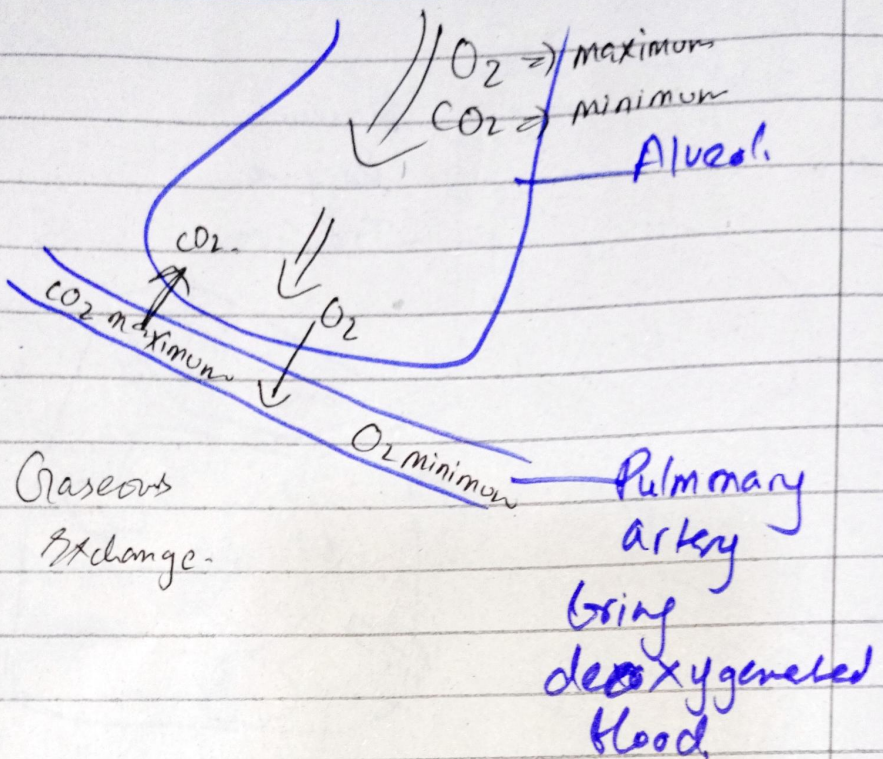
Neptune $\Rightarrow$ 165 year revolution
 $\Rightarrow$ 4500 km distance from sun
 $\Rightarrow$ Blue planet.

Uranus $\Rightarrow$ Green Planet
 $\Rightarrow$ Coldest planet. (-224°C)
 $\Rightarrow$ CH_4 gas present.

(c) Gaseous Exchange in human body

Gaseous Exchange in human body occurs through lungs. The functional unit where gas is exchanged is known as Alveoli.





CO_2 is given from blood due to higher concentration into Alveoli.

O_2 is taken from Alveoli as it is high in concentration there.

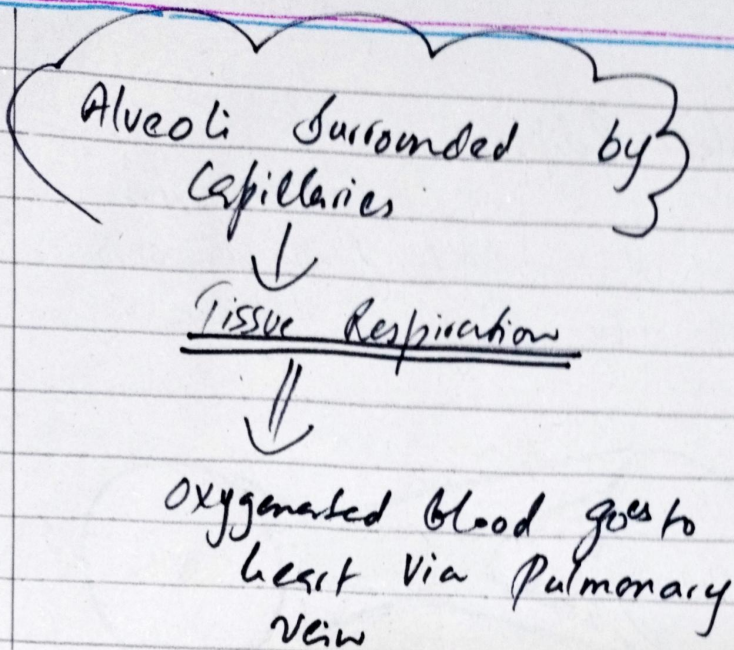
O_2 maximum
 CO_2 minimum

Inhalation /
Inspiration

CO_2 maximum
 O_2 minimum

Exhaled /
Expiration

- 1) External Respiration $\Rightarrow$ Inhalation / Exhalation
- 2) Internal / Tissue Respiration $\Rightarrow$ Exchange between blood and Alveoli



(d) Solar and Lunar Eclipse.

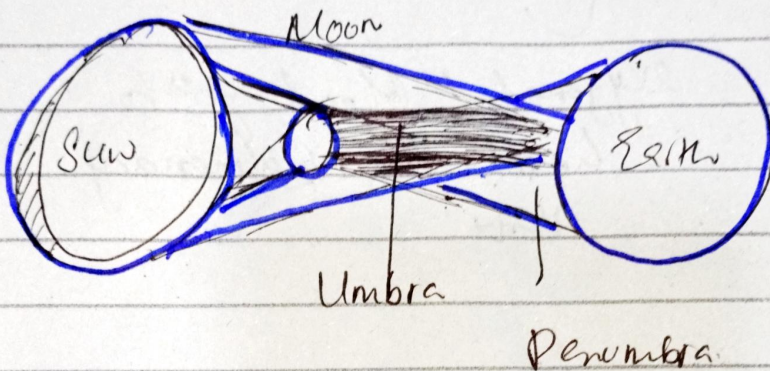
The block of light from one celestial body like earth or moon, it is referred as Eclipse.

Solar Eclipse : Moon is between Sun and Earth

Lunar Eclipse : Earth is between Sun and moon.

Solar Eclipse :

It occurs when moon blocks light from sun onto earth by being in between.



3 Main types of Moon's Shadow during Eclipse

- 1) Umbra : where moon completely covers the sun and light is blocked on earth.
- 2) Penumbra: Area where portion of moon is front. It can't fully block the light on this region.
- 3) Antumbra: The edge of a light source that appears on earth.

Lunar Eclipse:

Earth is between moon and sun.

Types

Annular



Sun can be seen around edges of the moon.

Partial



Only portion of sun is blocked.

Hybrid



Shift between Annular and Partial Eclipse

