

Q2

Plant cell

Plant cell is a basic structural and functional part of plants.

They have cell-walls made up of cellulose, pectine, and semi-cellulose.

They have large vacuole at center.

They have plastids.

Chloroplast is present.

Nucleus

Nucleus lies on one side of the cell.

Tonoplast is present around vacuole.

Plasmodesma is present.

Animal cells

Animal cell is the basic functional and structural part of animals.

They do not have cell walls ^{just have} semi-permeable cell membrane.

They may have or not vacuoles, if have very small.

They do not have plastids.

Chloroplast is absent.

Nucleus lies at the center.

Tonoplast is absent.

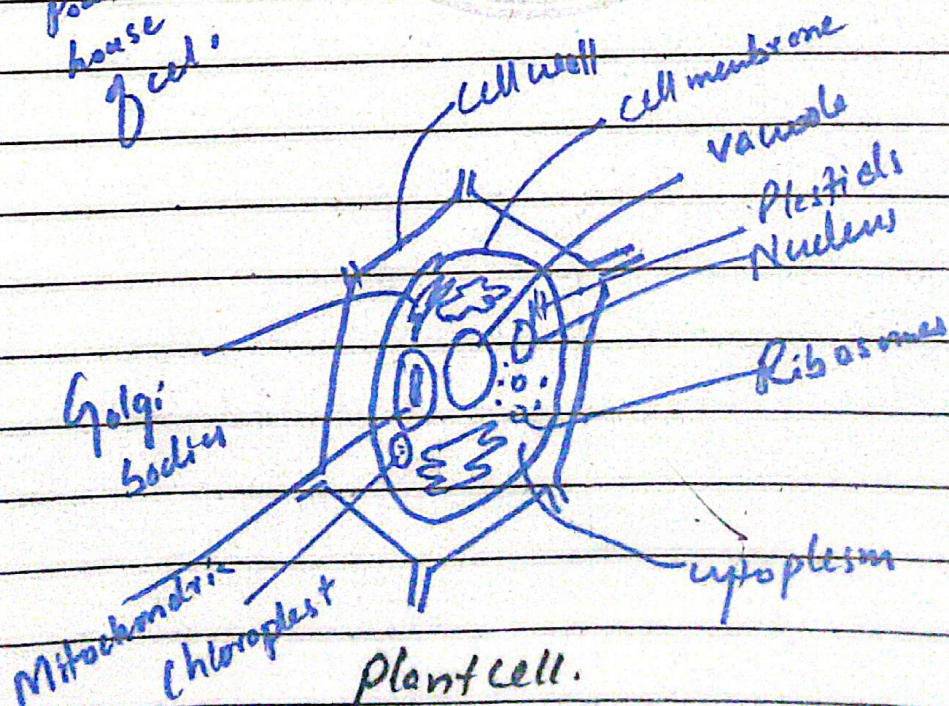
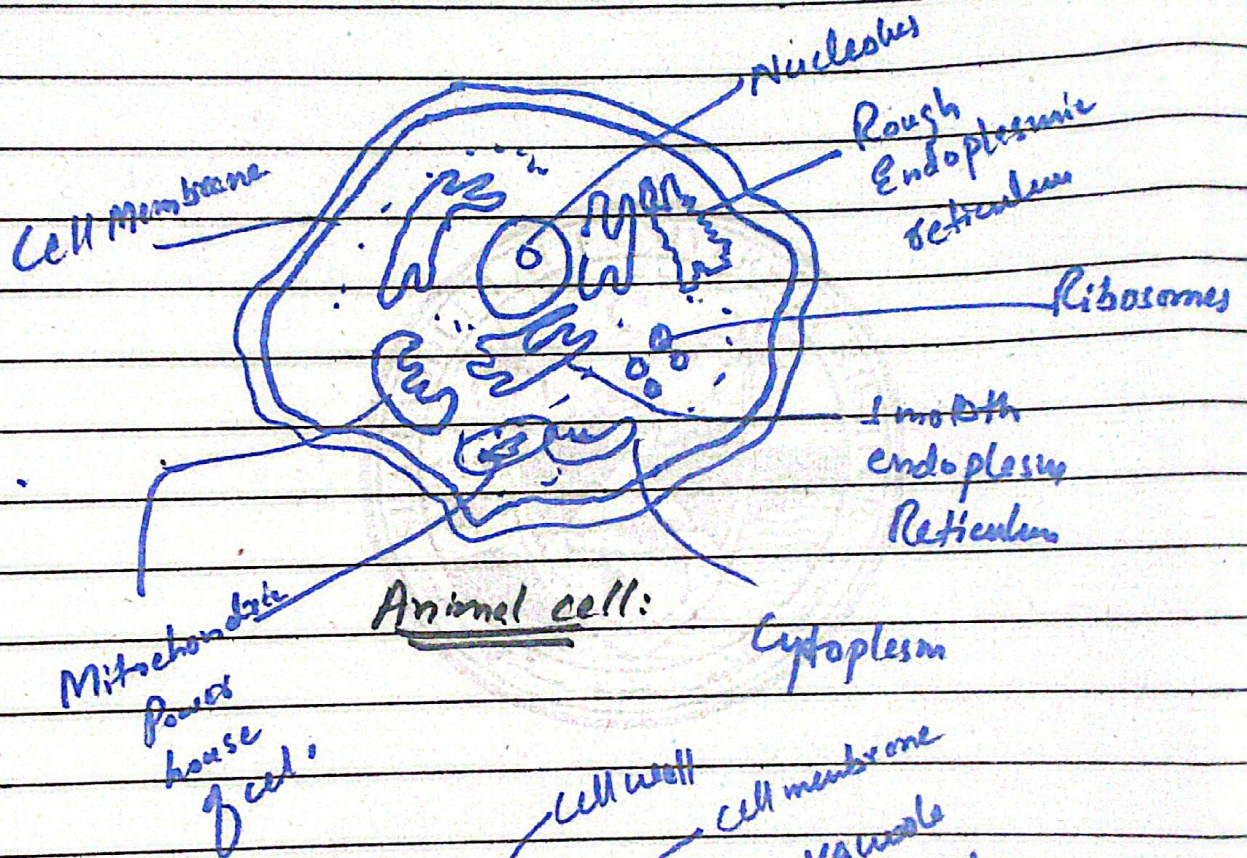
Plasmodesma is absent.

Lysosome is found in it.

It Does not have
Centrioles

lysosome is rarely
found in it.

Having paired
centrioles within
the centrosome.



Q. 2/
(d)

Ceramics, types and applications:

Ceramics:

It is non-metallic, inorganic material made up of clay with the combination of earthen metals, and it is hardened by giving high temperature. They are brittle, rigid, corrosion free, and resilient to heat and electricity.

Examples:

Tiles, watch glass (quartz), Sanitary wares, plates, etc.

Types of Ceramics:

(1) Earthen ware:

They are made of clay, very easy to break, they can't resist heat, and need glaze for water.

Example, pot, bowl, flower pots, etc

2) Stone ware:

It is strong, tolerate high heat and not easily break. It don't break easily and good for daily use.

Example, coffee mugs, plates, cooking bowls.

3/ Porcelain:

They are made up of fine clays.
They are very smooth and shiny,
but are strong and delicate.

Examples: tea cups, fine plates, show pieces.

4/ Bone china:

It is special type of porcelain. It
is very smooth but thin and strong.

Examples: Expensive dinner sets

5/ Advanced special ceramics:

They are not used for kitchen but
for machine and medicine. They
are very hard and resistant.

Example: tooth caps, carbide set

Applications of Ceramics:

1/ Automobile:

They are used in automobile
parts, such as carbide, catalytic
converter, etc.

2/ Domestic:

They are used in domestic purposes, such as in plates, crockery, dinner set, etc.

3/ Medicine:

They are used in medicines, likewise bone joints, heart stents, bone screws, etc.

4/ Aerospace:

They are used in rocket parts and satellite parts, such as rocket windows due to heat resistivity.

Q2/

Urine formation: in human body.

Urine formation is a basic and natural human phenomena. Through this body remove waste ^{metabolic} products from the body.

In human, kidneys (nephrons) perform these functions through complex process. Each Kidneys has 1 million nephrons, which is used to filter blood.

Structure of Nephron:

1/ Bowman's Capsule:

It is the capsule of glomerulus - blood capillaries

filter waste.

2/ Glomerulus: — filtration:

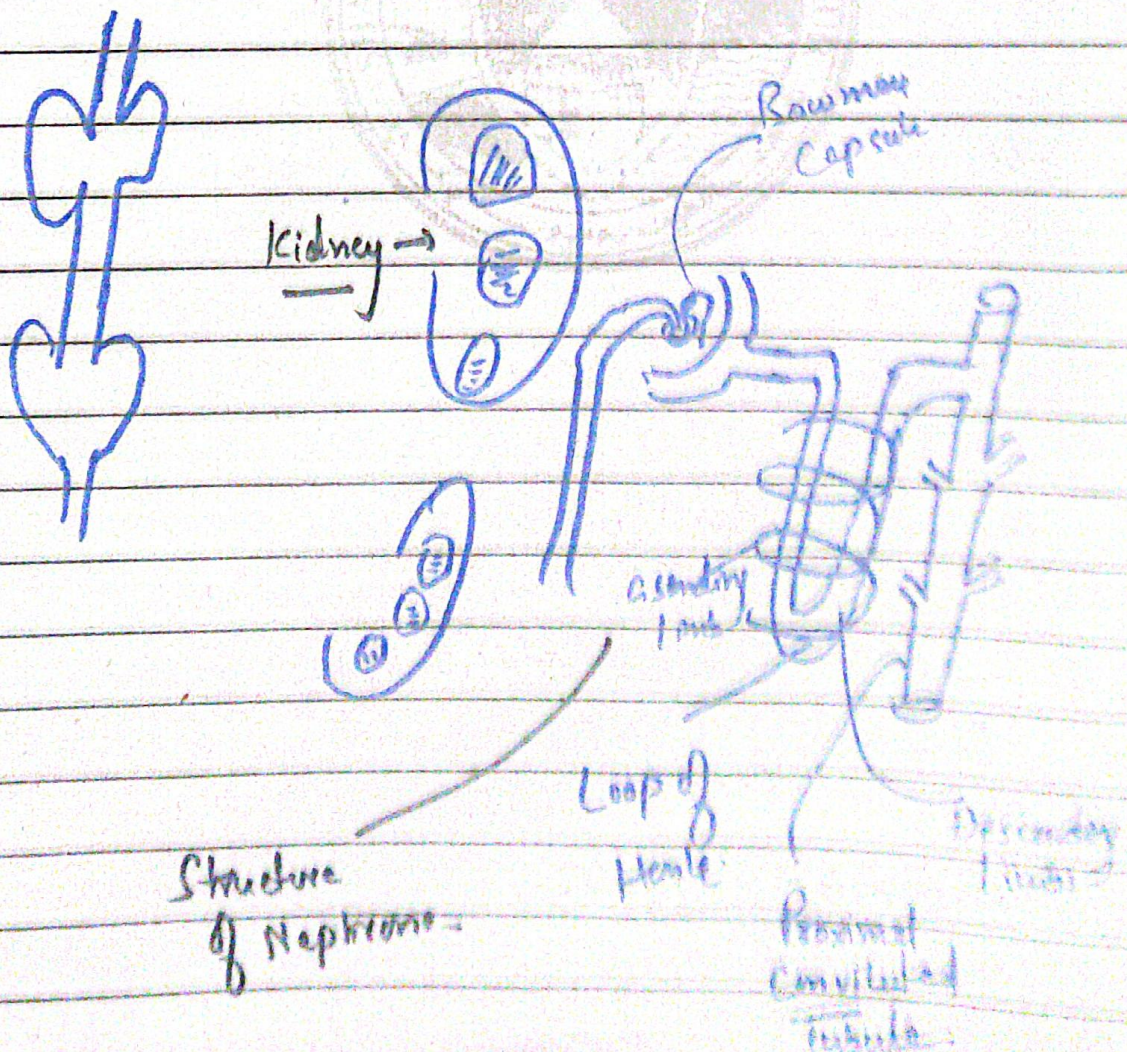
It filter water, salt, blood cells, and protein from the blood.

3/ loop of Henley: — ascending and descending limb:

98% of water and salt and proteins goes back to the body, remaining waste would pass through urinator/urethra.

④ Secretion — urethra:

Extra water, creatinine, and salts go outside the body.



Q2

(c)

Disaster Risk Management:

It is the planning and action to reduce the damage done by the disaster, such as Earth quakes, floods, volcanoes, etc.

This includes steps:

Before disaster: Warning, planning, and preparation.

During Disaster: Relief ^{operations}, response, and management.

After Disaster: Rebuilding, rehabilitation, etc.

Weakness in Pakistan:

① Lack of coordination among institutions:

Lack of coordination among national and provincial disaster risk management, resulting slow and weak response. Recently, in 2025 flood, provincial government blames federal government and vice versa.

② Lack of funds:

These disaster risk institution lack fund to response timely and effectively.

③ Poor infrastructure:

weak dams, embankment, and drainage system.

4/ Weak Early warning System:

weak warning system - warning often comes after damage done.

5/ Low public awareness:

Public have low awareness regarding danger. People often ignore government's warning.

6/ Poor planning and Climate pressure:

Government has poor planning about upcoming threats. Climate change has imposed undue pressure on the limited resources.

Q3/
(a)

Hepatitis:

It is the inflammation of the liver, which disturbs the production of bile and formation of enzymes and, minerals, and vitamins formation in the body. It weakens the metabolism rate of the body.

Types of Hepatitis:

- (1) HAV - A
- (2) HBV - B
- (3) HCV - C
- (4) HCV - D
- (5) HCV - E

Each virus is different and different side affects.

Symptoms:

- (1) Soariness in throat
- (2) Paleness in skin.
- (3) Pyrexia - slow to moderate
- (4) Allergy, rashes.
- (5) dark spots below eyes.

Causes:

- (1) Virus infection
- (2) Drinking too much alcohol - alcoholic hepatitis
- (3) use of harmful drugs
- (4) Contaminated blood needles.
- (5) poor hygiene sanitation.
- (6) Weak Immune System.

Preventive Measures:

- (1) Vaccination - A and B.
- (2) Clean food and water.
- (3) Good hygiene.
- (4) Safe injections and blood.
- (5) Avoid alcohol and drugs.
- (6) Safe personal habits.

Q3)
(b)

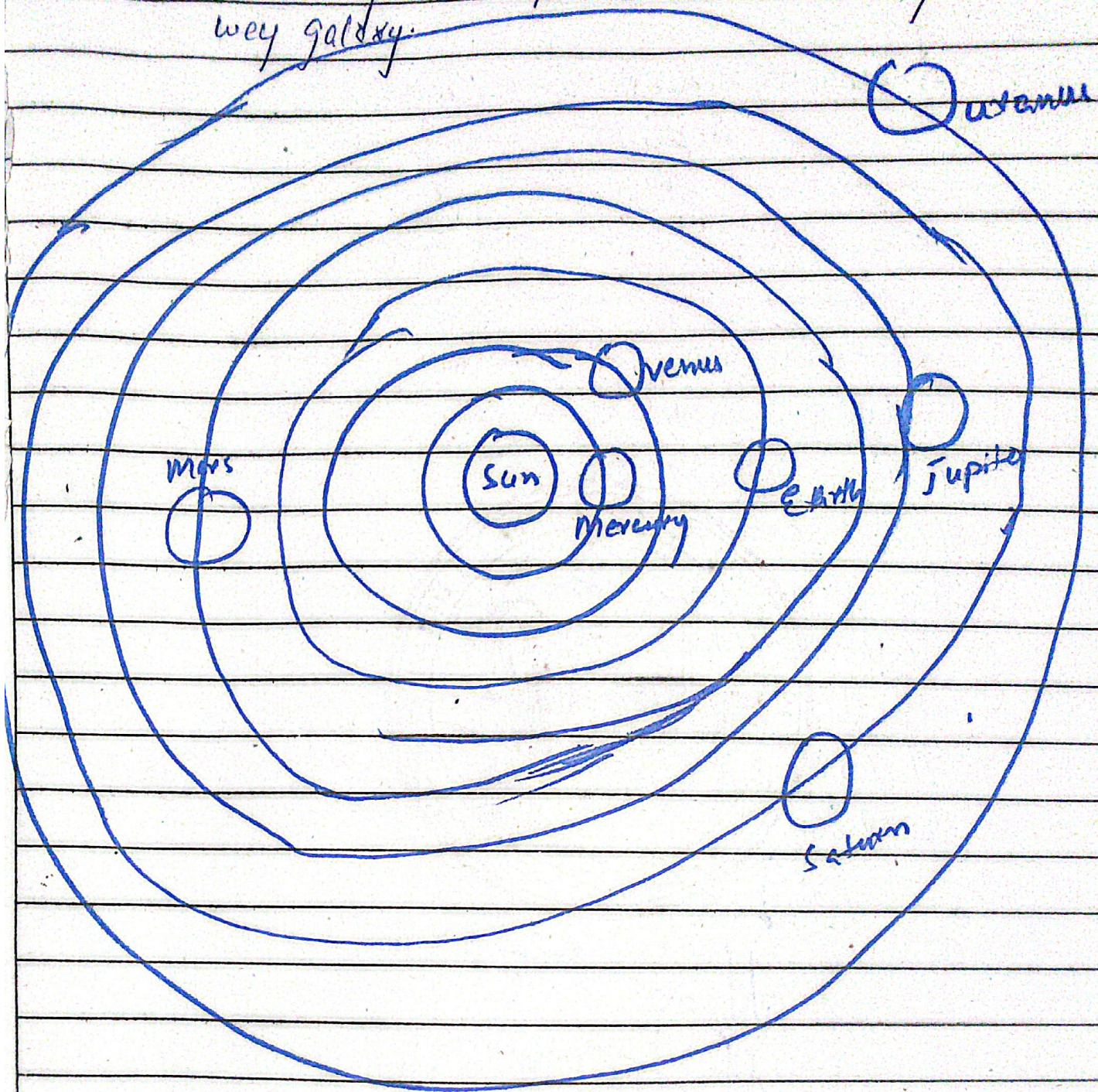
Solar System:

It is a system made up of one star (sun), around star planets revolve in their orbits due to strong solar magnetic and gravitational fields. Each planet has different number of moons - such as Earth has one moon Luna.

Name of planets:

- | | |
|-------------|-------------------------|
| (1) Mercury | (7) Uranus |
| (2) Saturn | (8) Neptune |
| (3) Earth | (9) Pluto-dwarf Planet. |
| (4) Mars | |
| (5) Jupiter | |
| (6) Venus | |

Our solar system is present in the milky way galaxy.



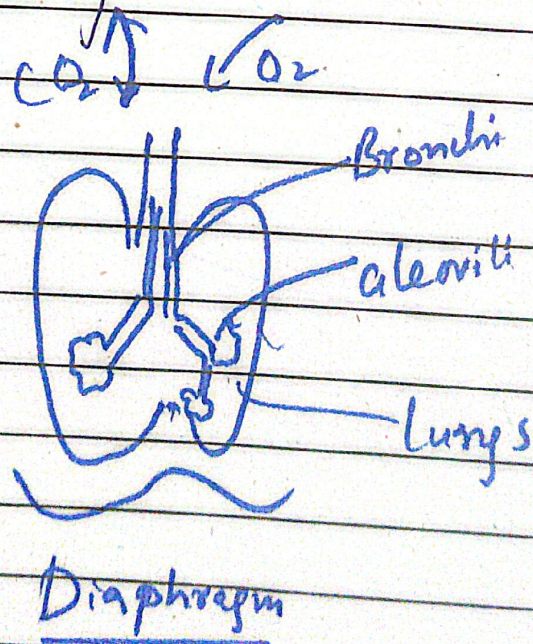
Solar System

Q3/

(c)

Gaseous Exchange in human body:

In human gaseous exchange takes place through respiration or lungs. Lungs inhale O_2 and exhale CO_2 to maintain body function. Human inhales O_2 through nose, then it goes to Bronchus, then Bronchioles, then alveoli then it adds to the blood. Through some process, it emits energy (CO_2) outside the body.



Human Lungs

83/

(a)

Solar and Lunar Eclipse:

Solar Eclipse:

when moon comes between the sun and the Earth. The moon blocks sunlight and sun looks partially or fully covered.

Types of Solar Eclipse:

① Total Solar Eclipse:

The sun completely covered.

Day becomes dark for a short time.

2/ Partial Solar Eclipse:

The sun is partially covered.

Only a portion looks dark.

3/ Annular Solar Eclipse:

The moon does not fully cover the sun.

A ring of light is seen around the Moon.

Lunar Eclipse:

The Earth comes between the sun and the

Moon. Earth's shadow falls on

the moon, and moon looks dark.

or reddish. It is safe to

watch with naked eyes.

Types of Lunar Eclipse:

1) Total Lunar Eclipse:

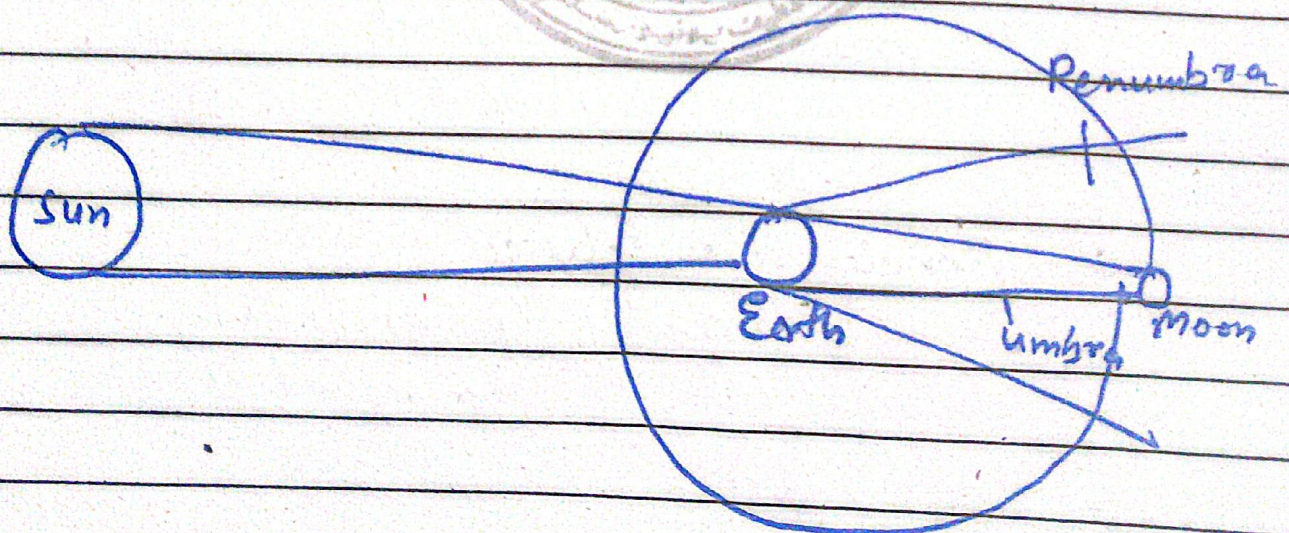
The moon is fully covered by Earth's shadow. Moon looks red (Blood moon)

2) Partial Lunar Eclipse:

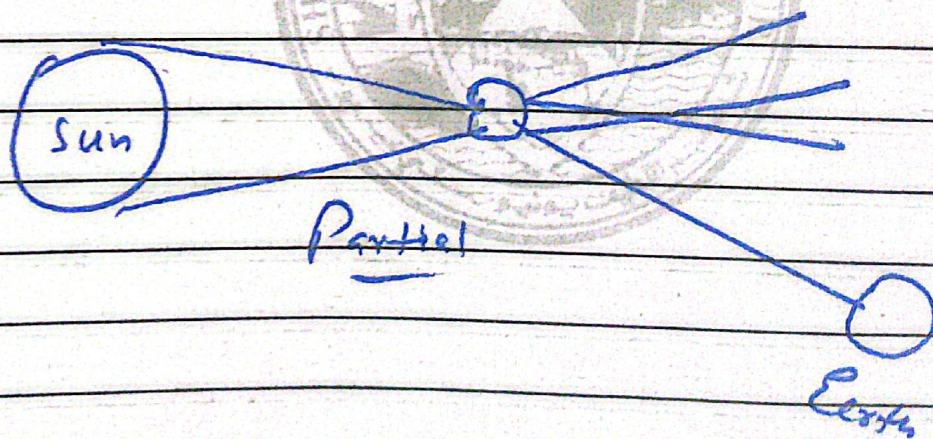
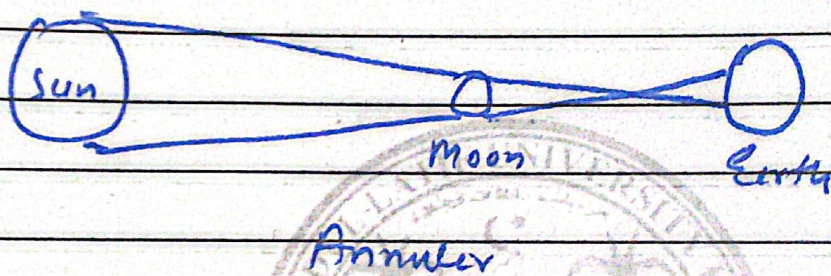
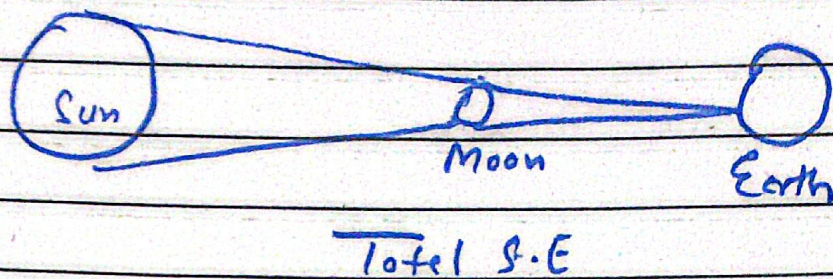
Only a part of Moon is covered.

3) Penumbral Lunar Eclipse:

Shadow is very light, and Moons look slightly dim.



Lunar Eclipse



Solar Eclipse: