

Question no: 024

(Part a)

⇒

Introduction:

An earthquake refers to the shaking of earth's surface caused by a sudden release of energy within earth's crust. One of the effects of earthquake is Tsunami which is series of waves in water body due to displacement of large volume of water. However, the effect and features of the two are different.

⇒

Generation of Earthquake:

The generation of earthquake involves a number of steps:

- (i) Stored energy accumulated within earth's crust is released leading to rapid movement and displacement of rock masses along fault lines.
(tectonic plate movement)



(i) Earth's crust is divided into large sections called tectonic plates which are constantly in motion.

(ii) Interaction of tectonic plates form boundaries convergent or divergent.

(iii) At convergent boundaries one tectonic plate may be forced beneath another, the process is called as subduction.

(iv) Immense pressure builds up and plate breaks and slip (tectonic plate movement).

(v) Sudden release of stored energy generates seismic waves resulting in earthquake.

(vi) In addition to tectonic plate movement other geological activities can trigger earthquake, volcanic activity due to magma rising creating seismic waves

Seismic waves

(a) Body waves
P-wave

(b) Surface waves

P-waves

S-waves

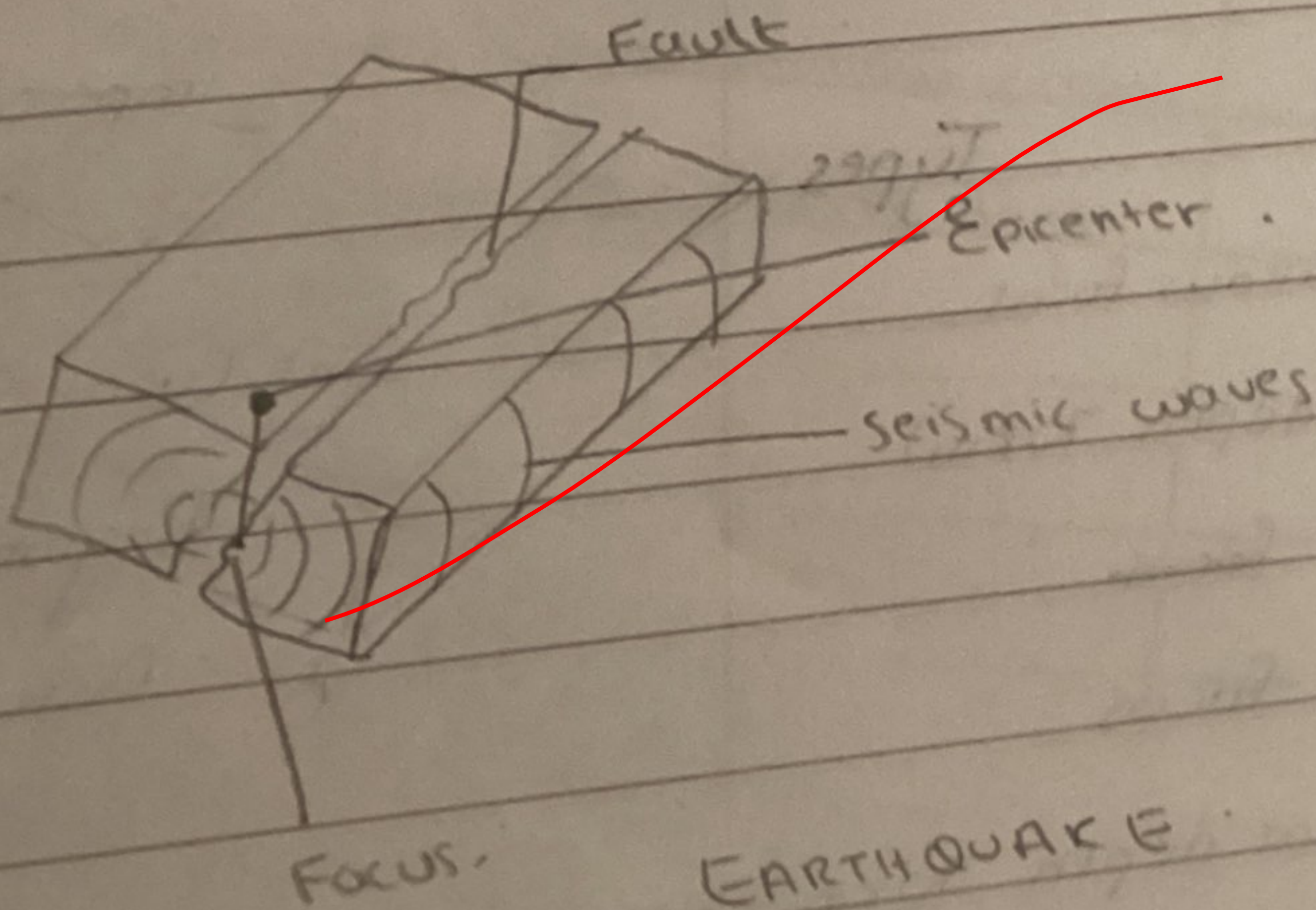
Love waves

Rayleigh waves

Primary waves

Secondary waves

Difference



⇒ Distinguish with Tsunami:

EARTHQUAKE

TSUNAMI

Origin

(i) Seismic waves in earth's crust due to tectonic plate movement or (volcano eruption)

(i) Seismic waves in sea due to earthquake or volcano eruption

Causes

(ii) tectonic plate movement
• Volcanic eruption

(ii) • Earthquake
• Underwater explosion
• Volcanic eruption
• Landslides
• Meteorite impacts

Types

(iii) - Shallow focus (focal depth 70km)
• Deep focus
• Mid focus (focal depth 70km-300km)
• Deep focus (depth 300-700km)

(iii) Local Tsunami
• Regional Tsunami
(a) • Distant Tsunami

br

Effects

- (iv) - Ground shaking
- Damage to infrastructure
- Fire and hazardous Chemical spills
- Landslide
- Avalanches
- Tsunami

- (iv) - Coastal flooding
- Powerful currents

Study

(v) - Study of earthquake is Seismology

(v) Study of Tsunami is hydrology

Intensity

(vi) - Earthquake depth, proximity to fault line, underlying soil and height.

(vi) More intensity in shallow ocean or water depth

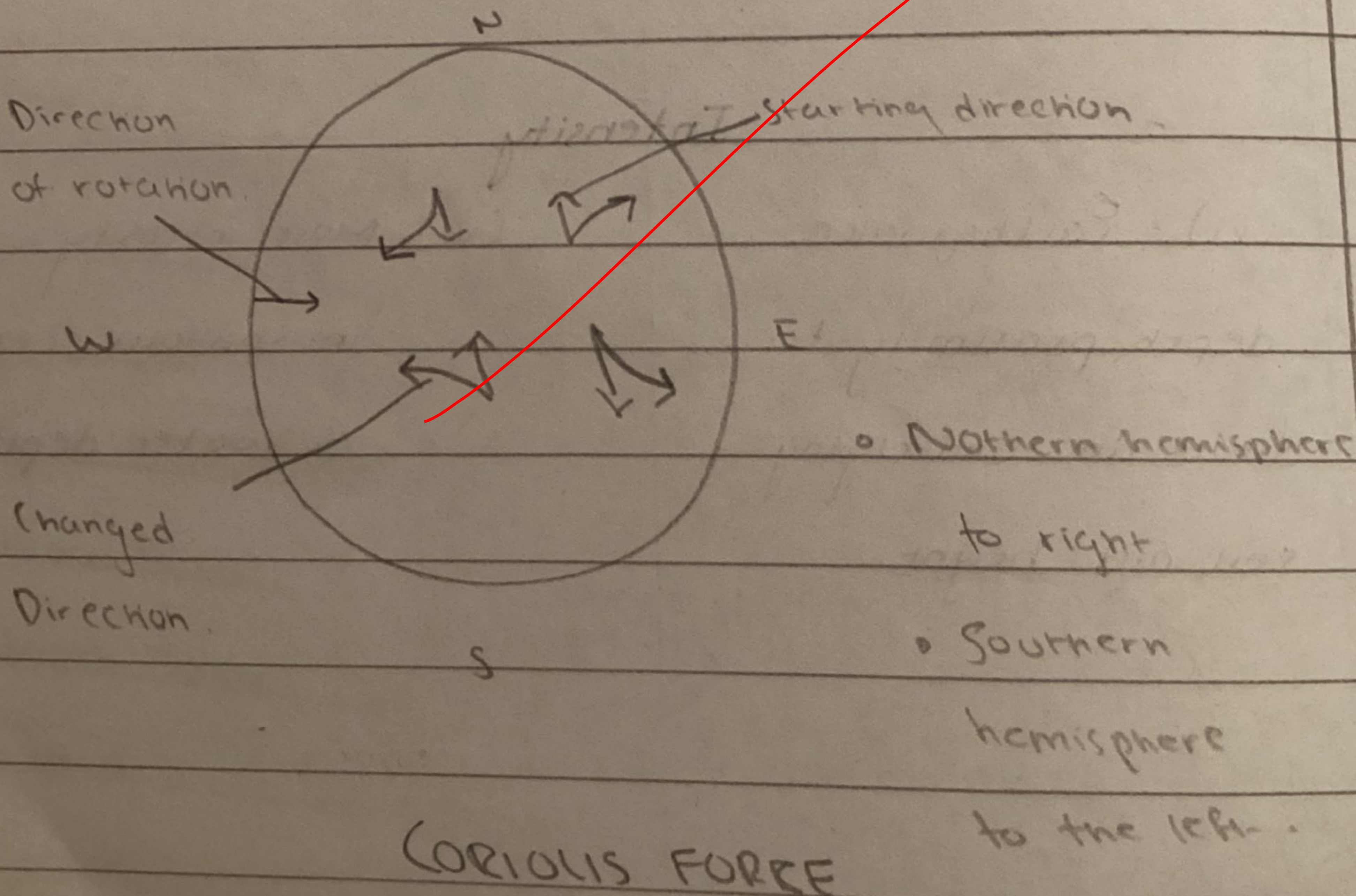
Part (b) ..

CORIOUS FORCE..

Coriolis force is an apparent force caused by the earth's rotation. It is responsible for deflecting winds towards right in northern hemisphere and towards left in southern hemisphere. This is also known as Ferrel's law.

Effect on hurricanes:

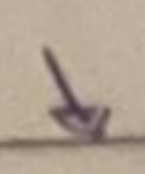
Hurricanes in Northern Hemisphere spin in a counterclockwise direction, while hurricanes in Southern Hemisphere (known as cyclones) spin in a clockwise direction.



GENERATION OF HURRICANE..

Formation of Hurricane involves the following steps:

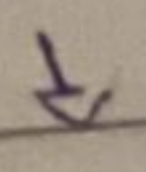
(i) Temperature above the sea is raised



(ii) Air above water gets saturated with moisture



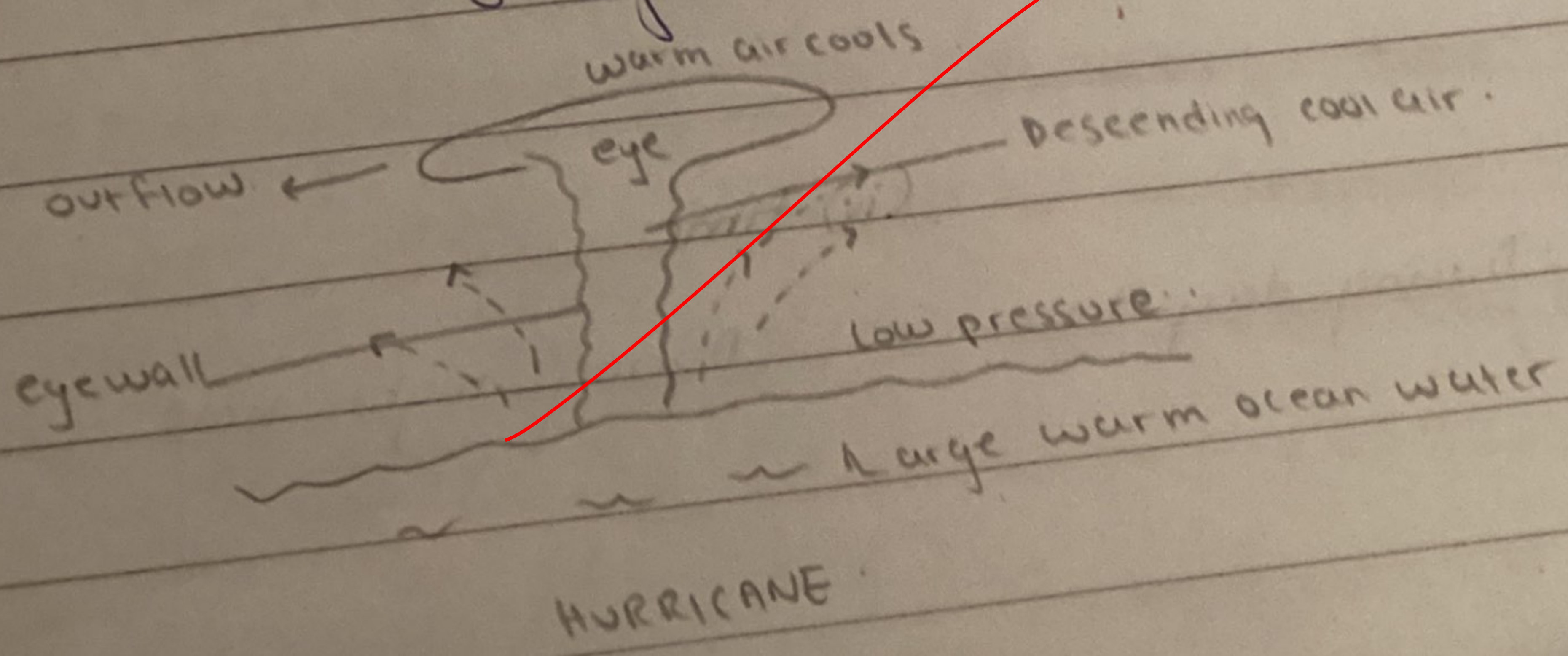
(iii) Pressure below is lowered surrounded by high pressure area



(iv) Next batch of cool air gets warmed and rises, and

the cycle continues with formation

of eye in center.



Part (c).

Distinguish Solar and Lunar eclipse:

SOLAR ECLIPSE

LUNAR ECLIPSE

(i) Occurrence

• Solar eclipse is the one in which the moon is in between the earth and sun.

• Lunar eclipse is the one in which the earth is in between sun and moon.

(ii) Interval

- Occurs once in 18 months

• Occurs twice a year.

(iii) Duration

• Last for about 5-7 minutes.

• Lasts for an hour.

(iv) time

During day time

• During night time.

(iv) Moon phase

• New moon phase

• Full moon phase

(v) Witnessing

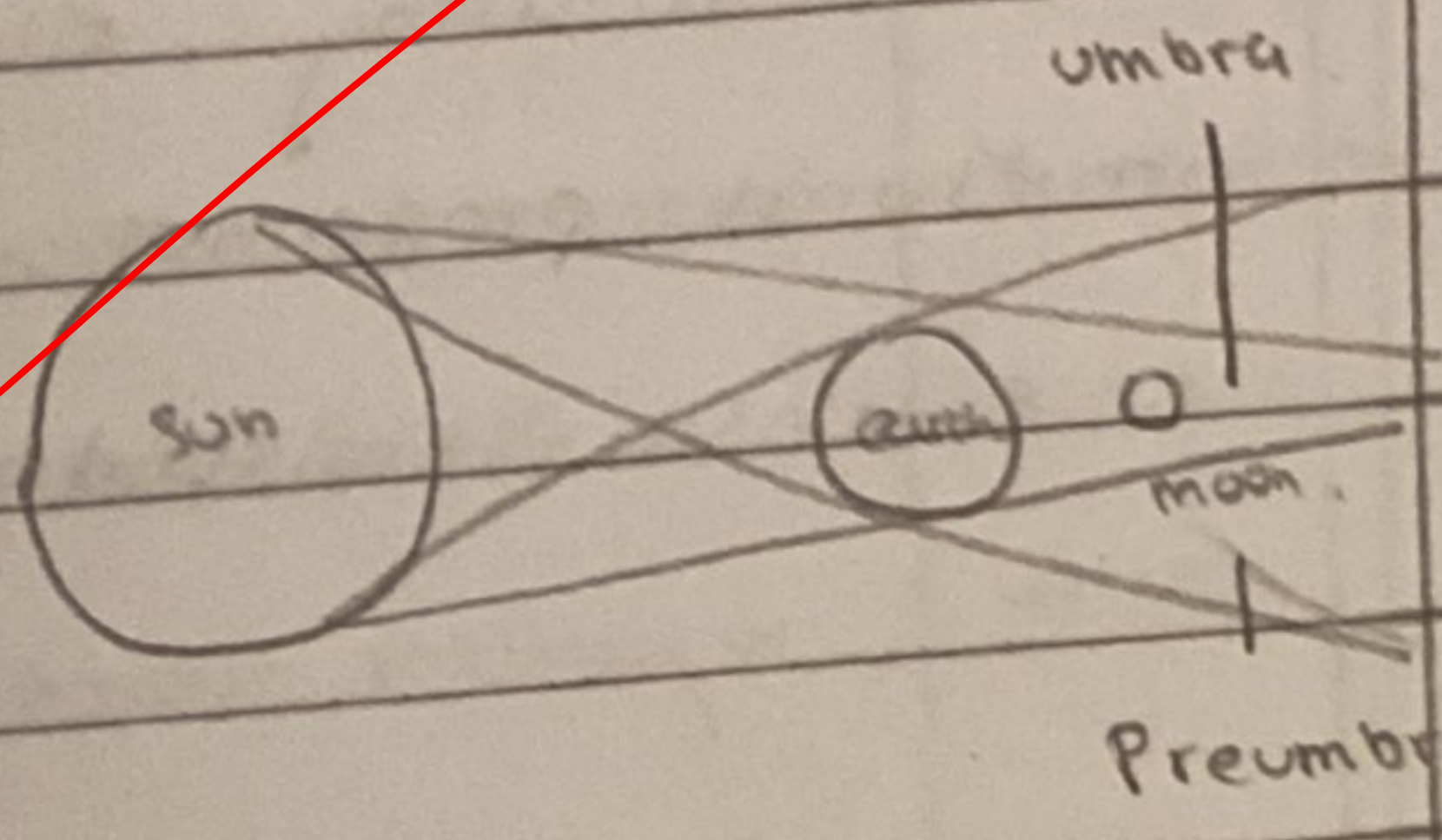
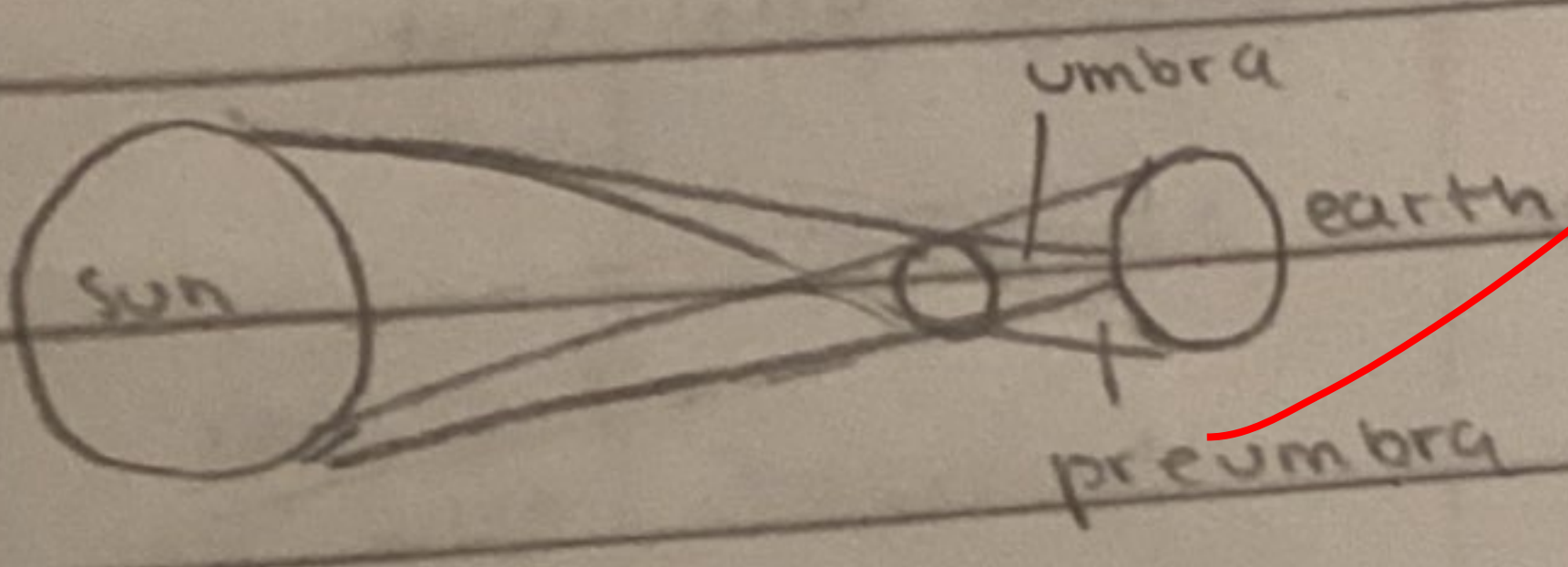
• Damage to witness when seen with bare eyes.

• No damage to vision

(vi) Types

• Partial, total, annular

• Partial, total



Part (d) ::

Doping in Semiconductors.

It is the process of adding some impurity atoms in a pure or intrinsic semiconductor to increase the conductivity of semiconductor.

Types of Doping

N-type

• Pentavalent dopant

added to intrinsic

semiconductor.

P-type

• Trivalent dopant

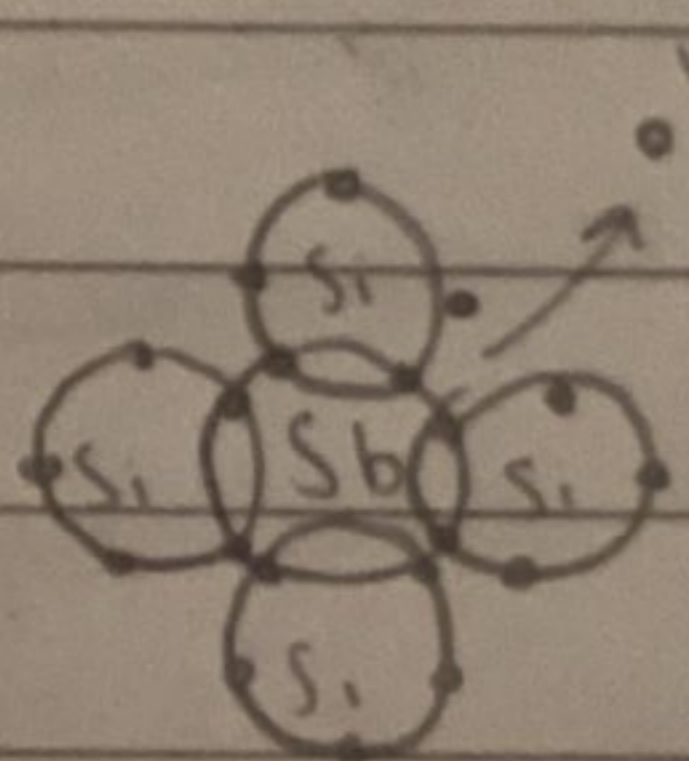
atom added

to an intrinsic

semiconductor.

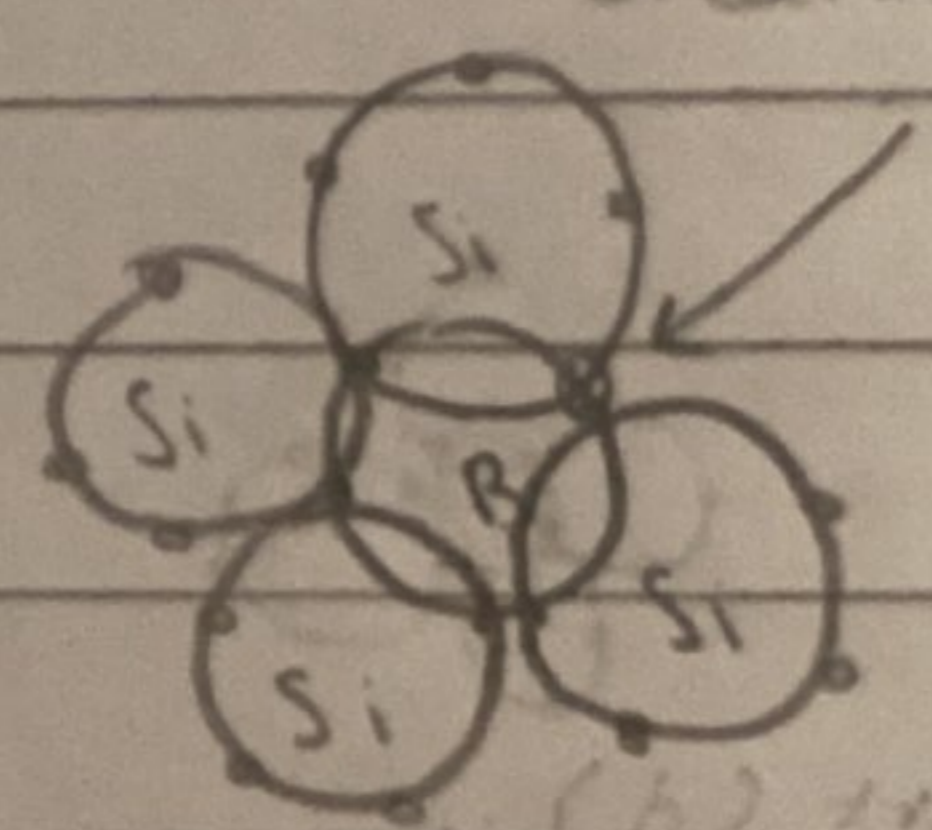
- Purpose of doping,

For modulating electrical, optical and structural properties, the doped material is extrinsic semiconductor.



"Donor impurity contributes free electron"

N-type



• Acceptor impurity creates a hole!

P-type

⇒ Different types of ceramics.

A ceramic is an inorganic non metallic solid mainly based on oxide, nitride and carbide that are shaped and then fixed at high

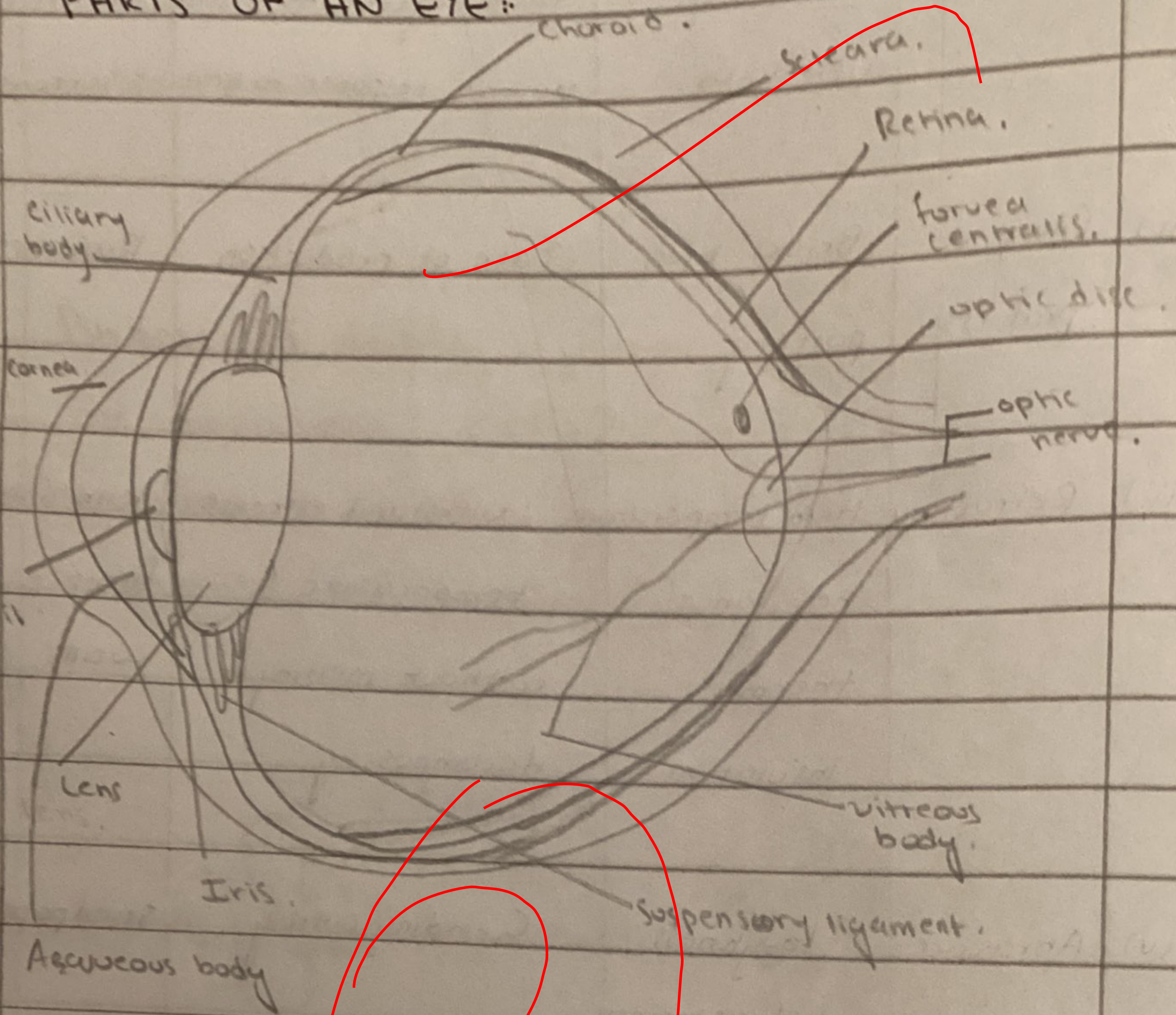
Different types of ceramic based on Application:

Type	Application	Properties	Example
(i) Glasses	Containers, windows	Non crystalline silicate, unique response to heat	Bottles, Screens
(ii) Clay products	Bricks, tiles, pottery	Ease of production	Roof tiles
(iii) Refractory	High temperature resistance, thermal insulation	Withstand extreme temperature without melting or decomposing	kiln lining, Furnace walls.
(iv) Abrasive ceramics	toughness, refractoriness	Grinding, cutting	Sand paper
(v) Cement	Slurry that sets and hardens when mixed with water	Virtually any shape can be formed with water	Paris, mortar
(vi) Advanced ceramic	electrical, magnetic property	specific applications.	heat engines,

Question no: 03

Part (a):

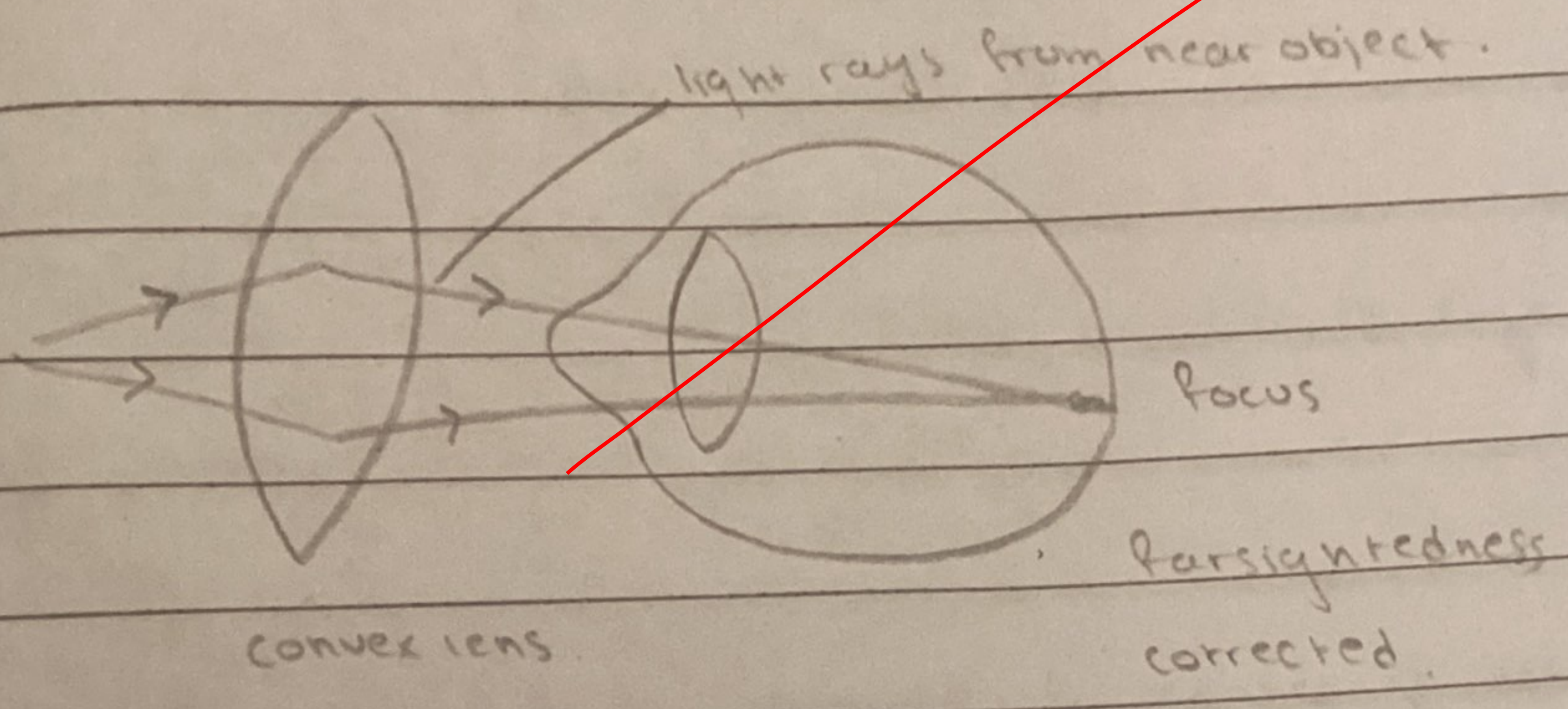
PARTS OF AN EYE:



EXTERNAL STRUCTURE OF AN EYE:

- 1) Sclera: White visible portion made of connective tissue
- 2) Conjunctiva: Lines sclera, keeps eye moist

Far sightedness: Hyperopia, inability to see close objects corrected with converging or convex lens



Part (b):

KIDNEY FUNCTION:

