

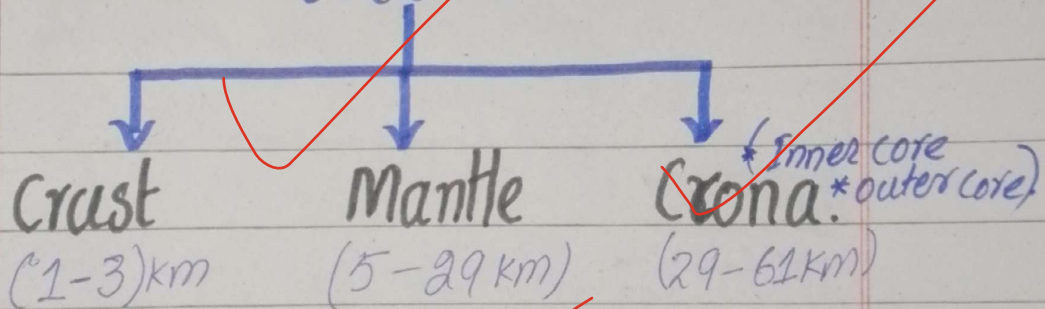
Question no. 1

Q. no. 1(b)

Internal structure of Earth :

Our earth is an elliptical planet in our solar system. The structure of earth comprises of three different layers. Each layer has specific properties and integrated to give structure.

Layers of Earth structure



Crust structure:

Crust is the outermost surface of earth containing two types:
1- under-oceans it is hard and usually composed of basalt.

2. In continental area, the crust is less thick and made up of granite materials.

Mantle:

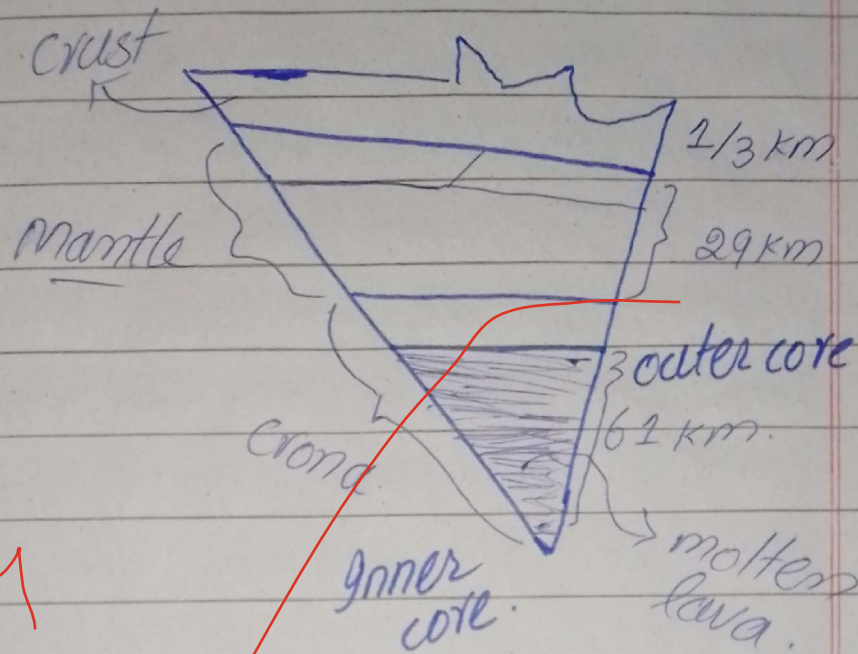
After crust, second layer of Earth structure called mantle. It is usually enriched in Iron; making giant and heavily integrated structure. The Upper mantle is usually somehow molten providing lubrication to tectonic plates while lower part of mantle is hard enough and maintaining the equilibrium and pressure.

Crust:

Note: The upper part of mantle and crust collectively called lithosphere.

Crust: (Inner core & outer core)
Crust is the last and underground of mantle,

usually enriched in silver and iron. The upper part is usually hard and lower part containing highly molten particles. It contains lava, magma and plasma.



Question no. 1(d)

Earth Quake:

Earth Quake is the vibration of Earth planet due to divergence in tectonic plates; further erupted by volcanic activity in the internal structure of earth.

Key Reasons:

1. The earth quake is basically happen due to diversion of Earth tectonic plate. The earth structure is not a continuous layered structure in crust and upper mantle, instead it consists of tectonic plates.

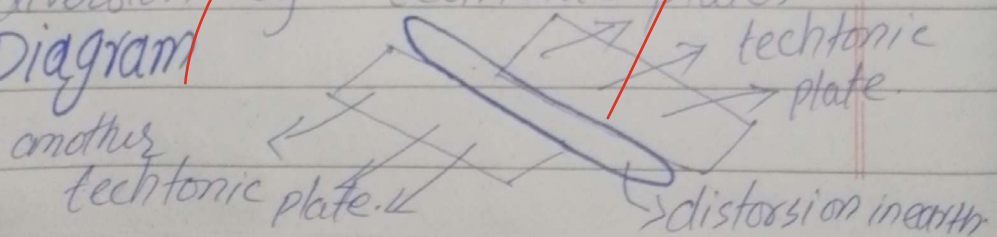
Why tectonic plates diverges:

1. Tectonic plates may diverge due to volcanic erupting, lava or molten plasma evacuation.

1. It can also be happen due to increase in internal pressure.

1. Moreover, human activities like digging of dams, civil nuclear reactors project or heavy landslides may cause diversion of tectonic plates.

Diagram

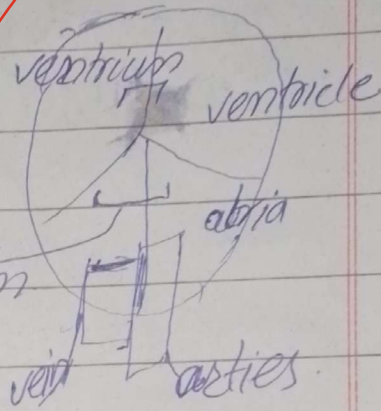


Question 1(a) Circulatory System:

Circulatory system is circulation of oxygenated blood from heart to other parts of body and returning de-oxygenated blood from body to the heart.

Working heart:

The function of human heart is to produce oxygenated blood to the body and purify the de-oxygenated blood. The purified blood is rushed through arteries and reach to the different parts of body through capesiries. Similarly de-oxygenated blood is returned through veins. The vein enter this blood to left ventricle. After



that blood is transmitted to left atrium where blood and oxygen from lungs mixed then it moves from atrium to left ventricle. the left ventricle is attached to arteries, hence blood (oxygenated) completes cycle.

Question: 1(c)

Bio-diesel:

Bio-diesel is a petroleum fraction which used for energy purposes. It usually contain $C_{17} - C_{31}$ carbon.

Process of Production:

Bio-diesel is a petroleum fraction obtain from earth through process called fractional distillation. Fractional distillation is process in which inner core crude oil is obtained

and it is purified at different temperatures. After complete process, different fractions of petroleum is obtained depending upon the concentration of carbon. Diesel oil contains carbons from C_{14} - C_{31} .

Bio-Gas:

Bio-Gas is a natural gas called methane used for burning purposes usually obtain from crude coal.

The coal has different types depending upon concentration of carbon. Anthracite is the highest quality of coal while peat is of lowest quality.

Highest quality is used for infrastructure purpose while low quality is employed in order to produce ^{natural} gases.

Different IPP's companies in Pakistan to convert it to natural gas for burning purpose.

Question no-3(b)

Solar system:

Solar system is system of celestial bodies containing sun, planets, stellar remnants, dwarf planets, satellites and comets, meteorites, asteroids.

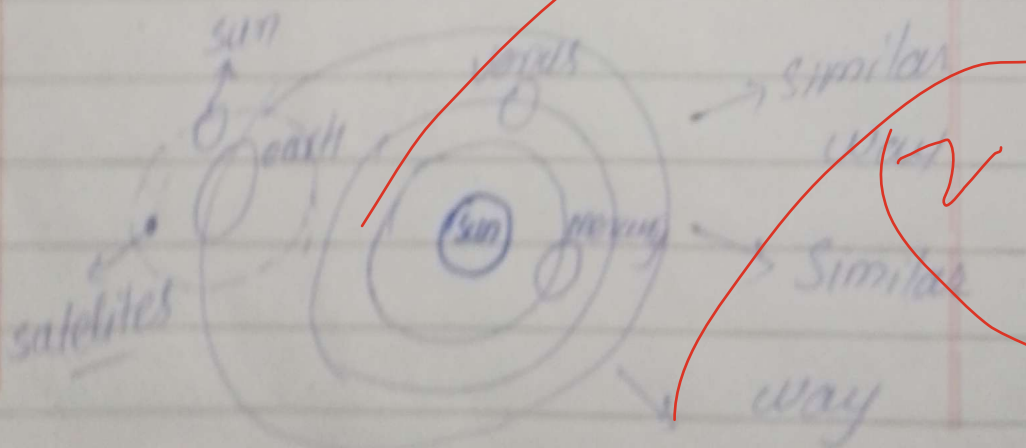
Address: It is present in cygnal arm of milky way galaxy.

Planets: mercury, venus, Earth, Neptune, mars, Jupiter, Neptune, uranus, saturn.

Dwarf planets: Pluto, ceres etc.

Satellites: Natural and Artificial satellites

Other bodies: comets, asteroids, meteoroids etc.

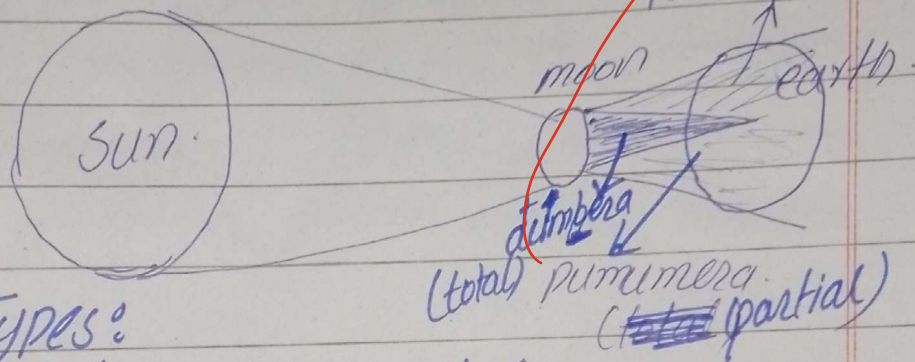


Question-3(d)

Solar Eclipse

Solar Eclipse is an astronomical event in which ~~earth~~ moon appears in between earth and sun; darkening sun when it is being seen from earth. condition: syzygy

Diagrammatically: alignment of earth, moon, sun



Types:

Total Solar Eclipse

When moon appears between moon and earth creating complete darkness, and not allow ~~earth~~ sunlight to reach earth then it is called Total eclipse

Partial Solar Eclipse:

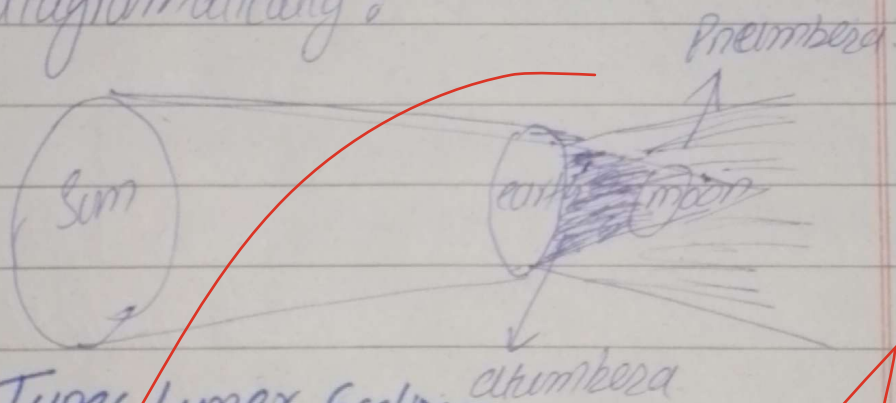
When moon appears between

sun and earth, so that complete stoppage of light is not done but creating dimming effect in light.

Lunar Eclipse:

For lunar Eclipse, also ^{syzy} must ^{be} formed. In astronomical event, when earth, sun and moon are aligned in syzygy is such a way that earth appear between moon and sun, then it is called moon ~~effect~~ eclipse or lunar eclipse.

Diagrammatically:



Types Lunar Eclipse:

Total Lunar Eclipse:

when in lunar eclipse moon completely disappears.

Partial Lunar

eclipse: when in lunar eclipse, moon partially disappears.

Question-3(c) Gaseous Exchange in human body:

There continuous exchange of oxygen gas and carbon di-oxide; other gases from our body during breathing process.

How it is done:

Major organs in breathing process:

1) Lungs

2) breathing vessels or veins.

3) Nose

Exchange Gases:

step 1: Respiration / breathing

step 2: Escape of other gases.

During respiration, human nose allows to enter oxygen like gases (required) to lungs through vessels or veins. In other step, those

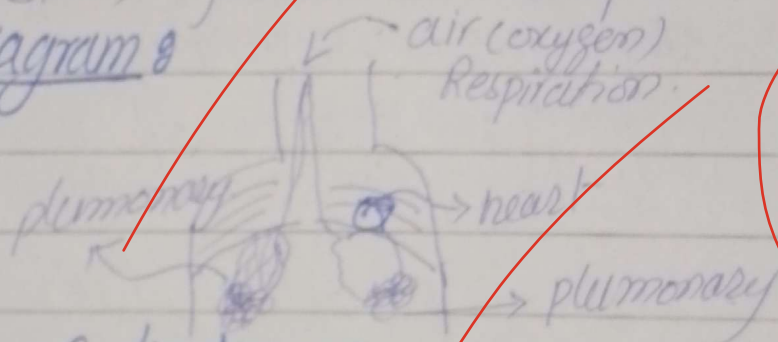
gases which are not useful for body escapes.

Function of Lungs:

As air reached to the lungs, it moves to numerous complex veins and tubules, capillaries which ends at pulmonary small airy packets. Our lungs have dual-process of working.

On one side it takes air and purify and then send to heart. Secondly, it takes un-useful gases and through diffusion, forces to escape.

Diagram



Role of diaphragm:

When we breathe (during respiration), the diaphragm rise upward and creates ease in respiration and effusion process. during condition of air, it relax down, exert pressure and diffusion.