



Q a) Describe atmospheric pollution and its types

Answer Atmospheric pollution

"Unwanted change in air quality, known as atmospheric pollution."

(- The WHO)

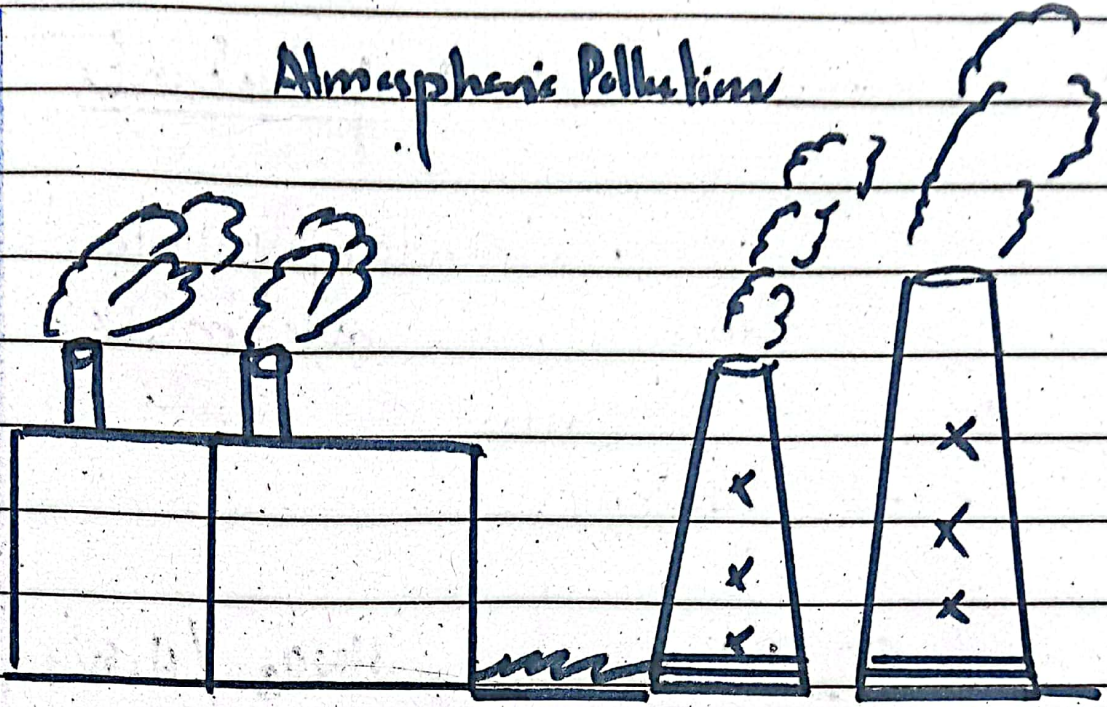
Atmospheric pollution is a global problem today. In fact, dirty quality of air is called atmospheric pollution. It is also known as air pollution.

"Pakistan is ranked at the 15th most polluted country in the world."

(- The World Air Quality Report, 2022)

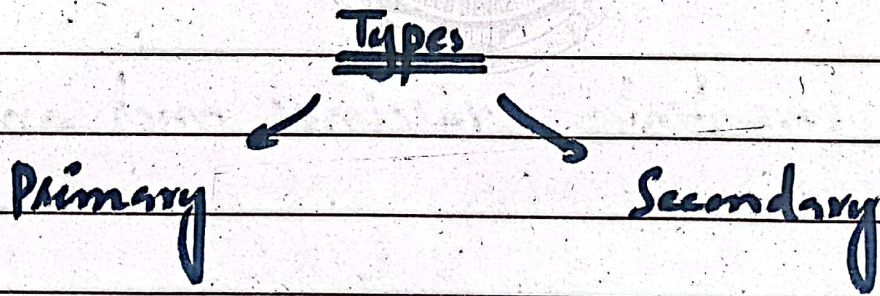
Therefore, atmospheric pollution is a global issue.

Atmospheric Pollution



Types of atmospheric pollution

There are two types of atmospheric pollutants:



a) Primary type of pollutants

Primary type of pollutants are more common prevailing. Such primary types including CH_4 , CO_2 , CO , SO_2 , CFCs etc.

b) Secondary type of pollutants

Secondary pollutants are produced from reactions of primary pollutants.

i.e., HNO_3



(Primary pollutants) \Rightarrow (Secondary pollutants)

Hence, secondary pollutants come from primary pollutants.

Qb) Differentiate vaccines and antibiotics

Answer Vaccines

"Vaccines are inactive forms of microorganism made of compounds."

Vaccines are dead or inactive compounds. These produces immunity to diseases and injuries.

Antibiotics

"Antibiotics are small compounds used in treating diseases of prokaryotes."

Antibiotics are small compounds. These are used in treating diseases produced by bacteria.

Comparison between vaccines and antibiotics

Following is comparison:

Comparison	Vaccine	Antibiotic
i) Meaning	Vaccines provide	Antibiotics

immunity against diseases or injuries.

used in treatment of certain bacterial diseases.

ii) Source

It is produced from bacteria and virus.

It is produced from only bacteria.

iii) Purpose

It is long-term protective.

It is used only for treatment during disease.

iv) Side-Effects

Vaccine may cause some allergic reactions.

Antibiotic may cause diarrhea and allergic reaction.

v) Mode of taking

Vaccines can be taken by injection or orally.

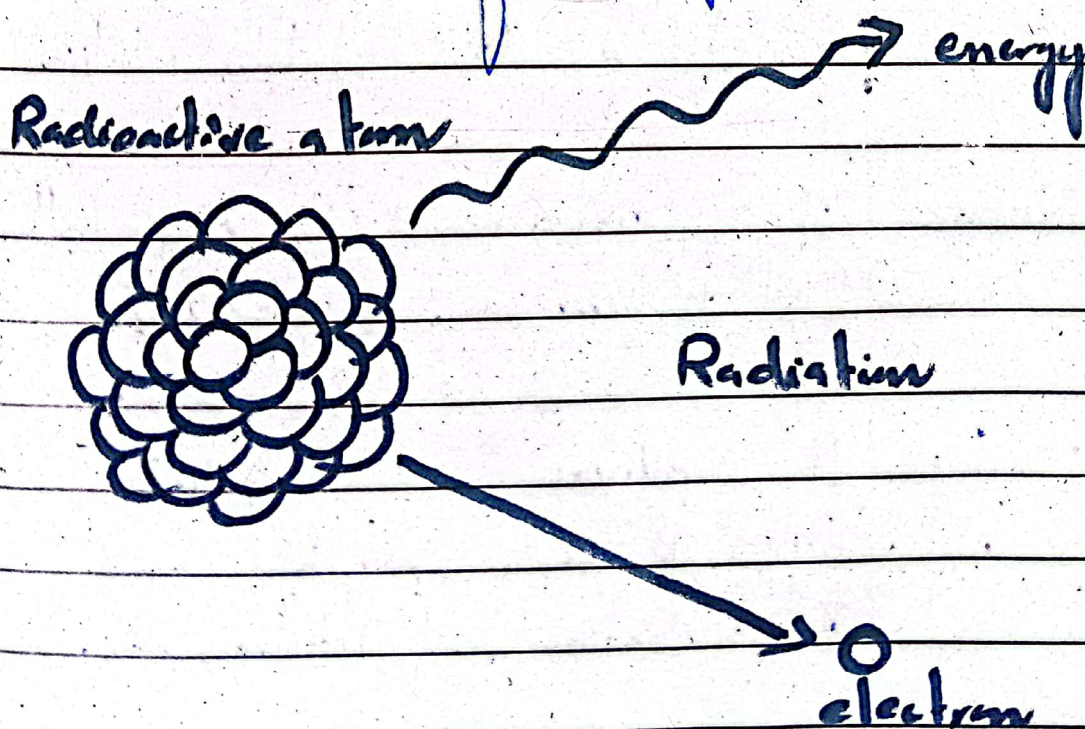
Antibiotic can be taken in the tablet form.

Qc Describe radioactivity. Also compare natural and artificial radioactivity

Radioactivity

"Process of disintegration of heavier nuclei into smaller nuclei."

Radioactivity is a process of disintegration of larger nucleus into smaller nuclei. In fact, it is a process of making unstable nuclei into stable form.



Comparison between natural and artificial radioactivity

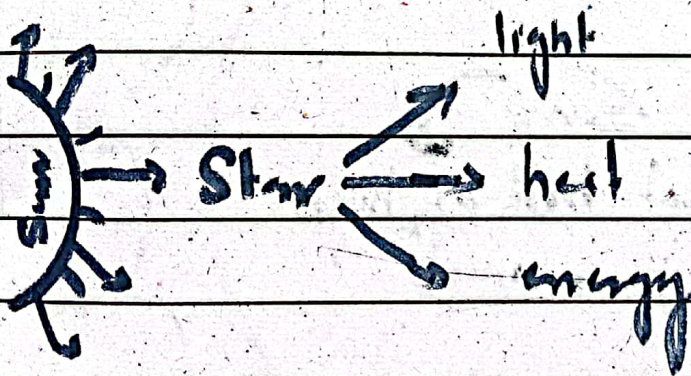
Comparison	Natural Radioactivity	Artificial Radioactivity
i) Meaning	It is a natural process.	It is a man-made process.
ii) Reaction	It is a spontaneous reaction.	It is a random reaction.
iii) Nuclei	It occurs in unstable nuclei.	It occurs in stable nuclei.
iv) Nature	It is uncontrolled process.	It is controlled process.
v) Example	It produces alpha, β and γ radiations.	It produces neutron and positron etc.

Q.1) Describe sun. Also describe its physical features. Describe its parts.

Sun

"Sun is a shining star."

Sun is a star. It produces light and gives heat and energy. Thus, sun is the brightest star.



Physical Features of Sun

Following are

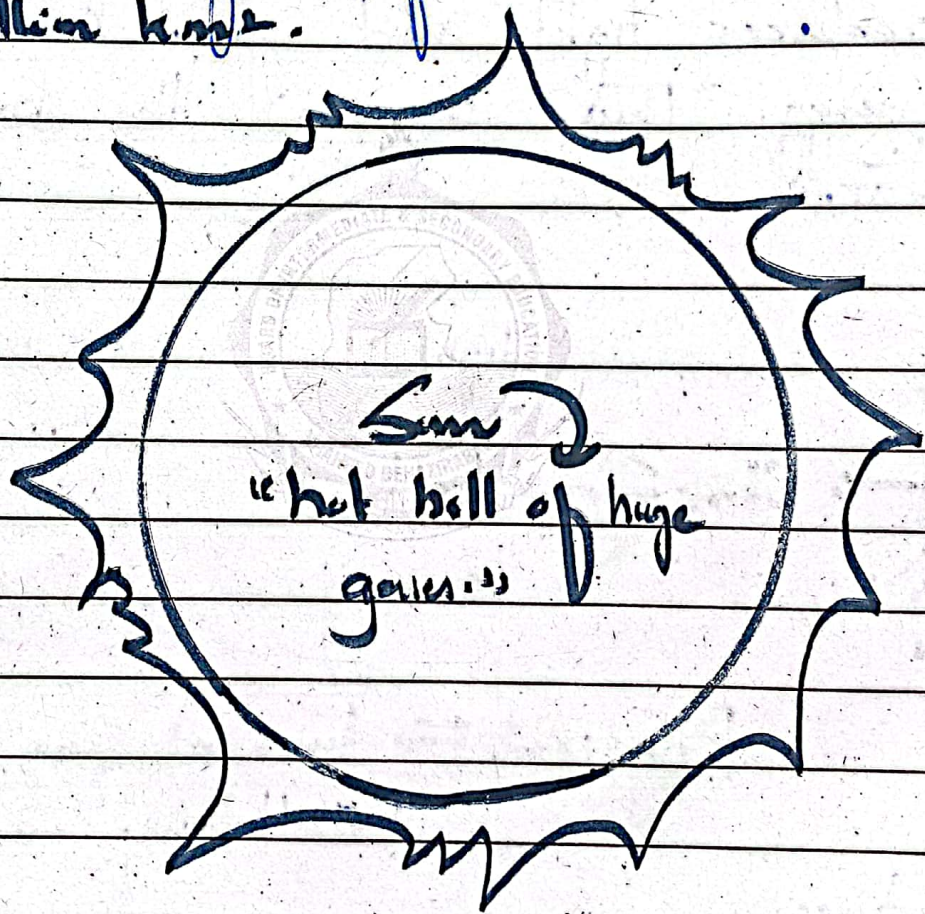
features:

- i) Mass of sun is 2×10^{30} kg.
- ii) Gravity of sun is (Gs) 879 km/s^2 .

(iii) Energy of sun reaches at the Earth in 8 minutes 20 seconds.

(iv) Sun is composed of 70% of Hydrogen and 30% of Helium.

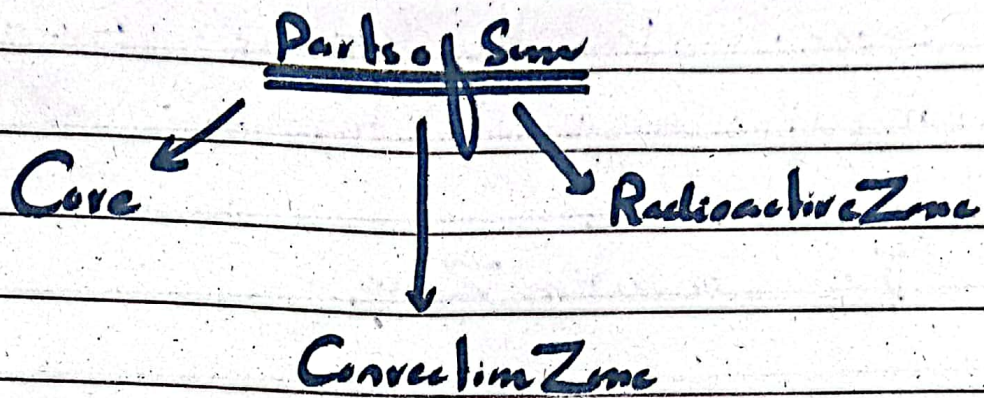
(v) Distance of Sun from Earth is 150 million km.



Parts of Sun

parts of Sun:

Following are



a) Core

"Core is the center of Sun."

Core is a center of Sun. It is extended 25 km from the center. It is a part where energy is produced by fusion reaction.



(balanced fusion reaction equation)

b) The Radioactive zone

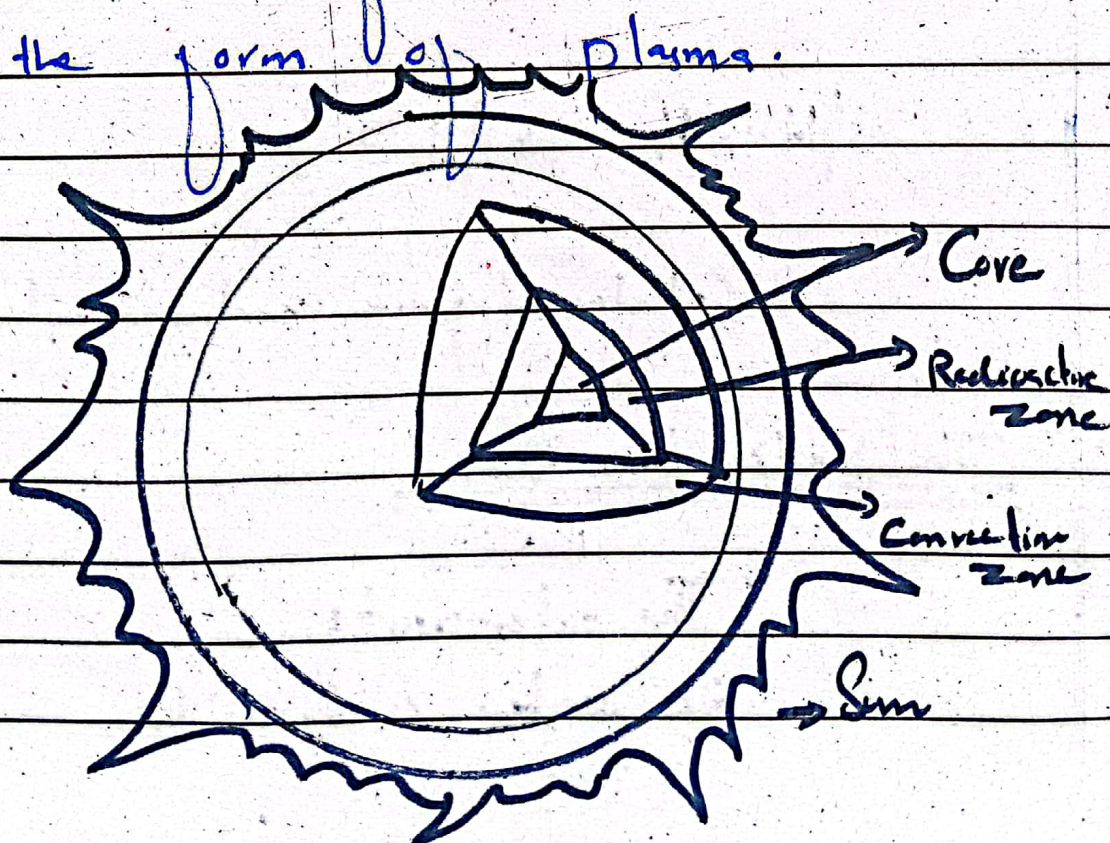
"The outer part from the center is radioactive"

zone. In this zone, energy is moving upward through radiation.

c) The Convection Zone

"Upward extended part of sun from its center is called the convection zone."

Convection zone is upward extended part of sun. In this part, energy is going outward from the sun in the form of plasma.



Qa

Define immunization by vaccine.
Also describe types of vaccine.

Immunization

"A dead or inactivated form of a compound which gives immunity to body against injury or disease, known as vaccination or immunization."

Immunization is a process of providing immunity to injured body. One immunization is preventive immunization.

Types of Vaccine

Following are

types:

i) Attenuated Vaccine

"Attenuated vaccine

is weakened form

gives immunity"

This vaccines gives
immunity against certain types
of diseases:

e.g., measles, mumps, rubella etc

- MMR vaccine

(i) Inactivated Vaccine

"Inactivated vaccine

also known as killing
vaccine."

Inactivated vaccine are
used especially against polio
virus.

e.g. Inactivated Polio Vaccine (IPV)

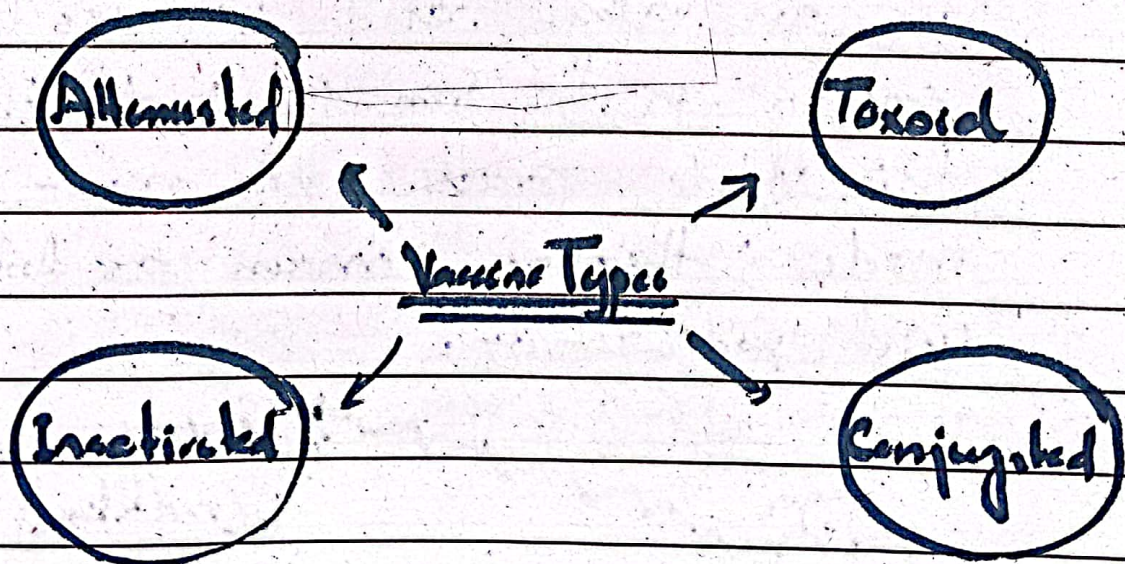
(ii) Toxoid Vaccine

"Toxoid vaccine contain

inactivated forms of bacteria
 Toxoid vaccine is
 used against bacterial diseases.
 e.g., diphtheria and tetanus

(v) Conjugated Vaccine

"Conjugated vaccine is
 a combination of bacterial
 parts and proteins."
 Conjugated vaccines are
 used against Haemophilus type B.

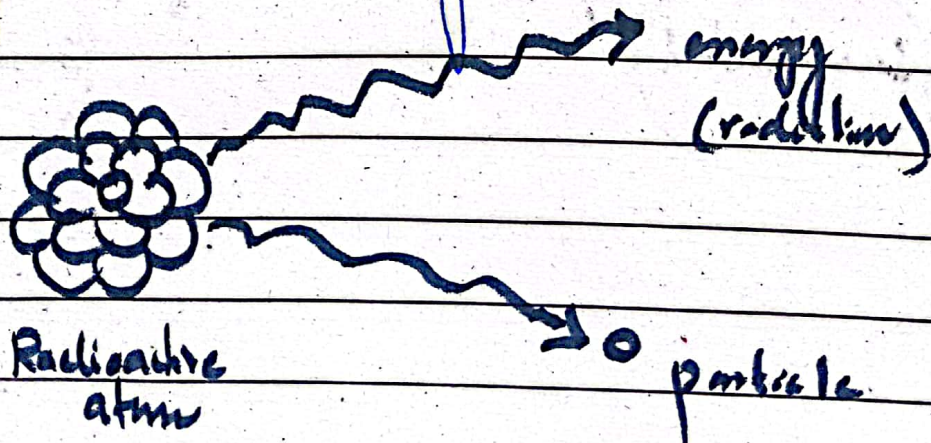


Q b) Describe artificial radioactivity and its types.

Answer Artificial Radioactivity.

"Artificial radioactivity is a process of slow moving neutrons bombarding on Uranium atom."

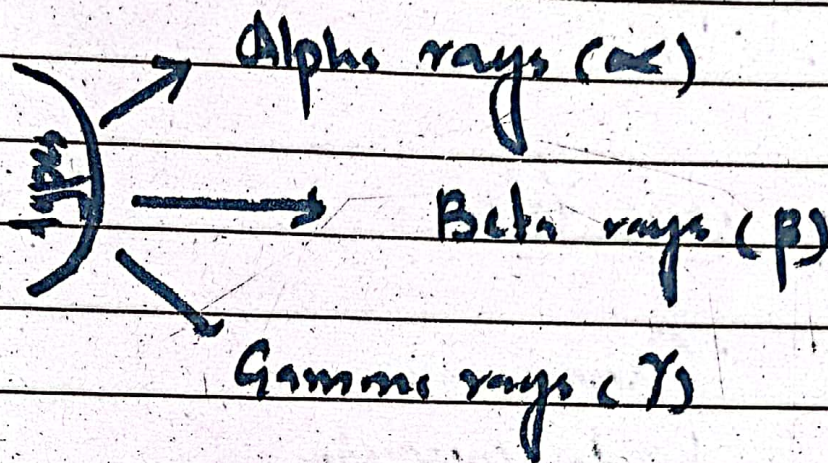
When a slow moving neutron is bombarded on Uranium atom, it causes instability in an atom and releases energy in the form of radiations, this whole process is man-made; therefore, known as Artificial radioactivity.



Types of Artificial Radioactivity

Following are

types:



1) Alpha rays (α)

"Alpha rays are positively charged."

Alpha rays are positive radiations. Alpha rays contain 2 electrons and 2 protons. These are same as Helium atom.



b) Beta rays (β)

"Beta rays are negatively charged."

Beta rays are negative radiations. These are similar as electron.

c) Gamma rays (γ)

"Gamma rays are highly energetic and penetrating radiations."

Gamma rays are highly energetic radiations. These are similar as X-rays.

Qc) Describe physical features of earth. Also describe its movement.

Earth

"Earth is the third"

planet of solar system"
 Earth is only the planet where life exist. It is also called sister planet of Venus. Thus, earth is a livable planet.



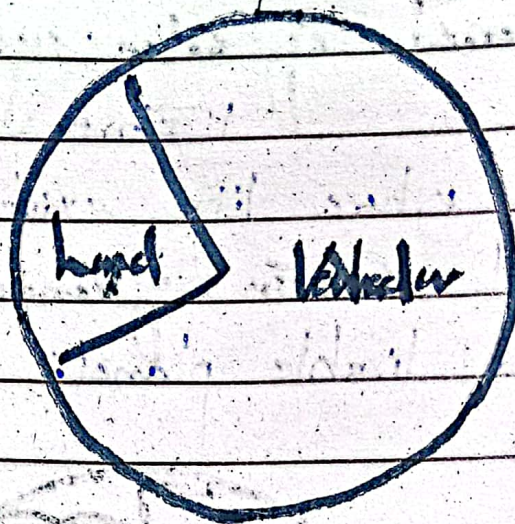
• Earth

Physical features of earth

following are

physical features:

- i) Mass of earth is $M_E = 6 \times 10^{24} \text{ kg}$.
- ii) Gravity of earth is $g = 9.8 \text{ m/s}^2$.
- iii) Radius of earth is $R_E = 6,400 \text{ km}$.
- iv) Satellite of earth is moon.
- v) Earth is composed of 70% of water and 30% of land.



Composition of Earth

Movements of Earth

Following are two important movements of earth

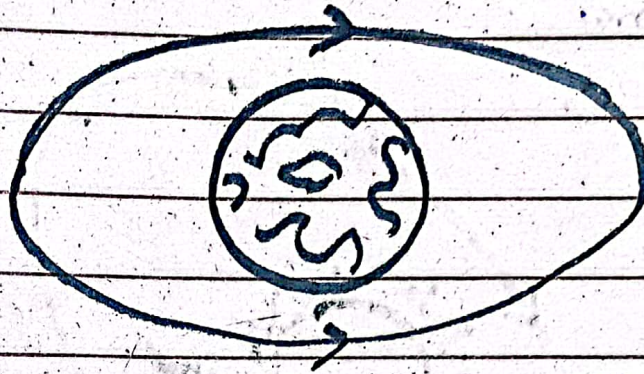
a) Rotation of Earth

"Rotation is a 'spin' movement."

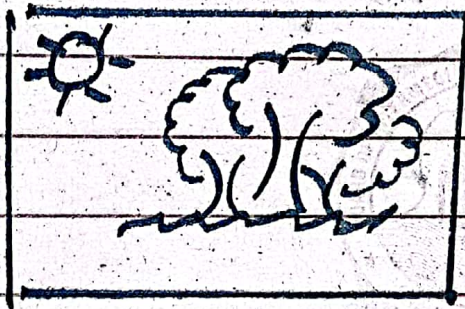
Rotation is a movement of Earth around its own sphere. Earth moves in clockwise direction.

Effects of Rotation

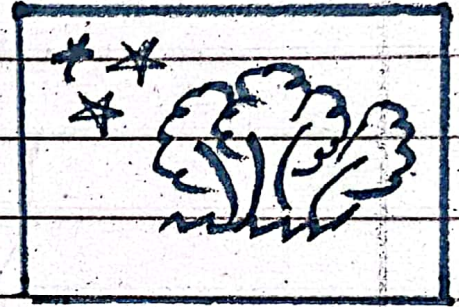
Rotation of earth cause's day and night, dawn and dusk, and tidal wave generation.



Rotation



Day



Night

b) Revolution of Earth

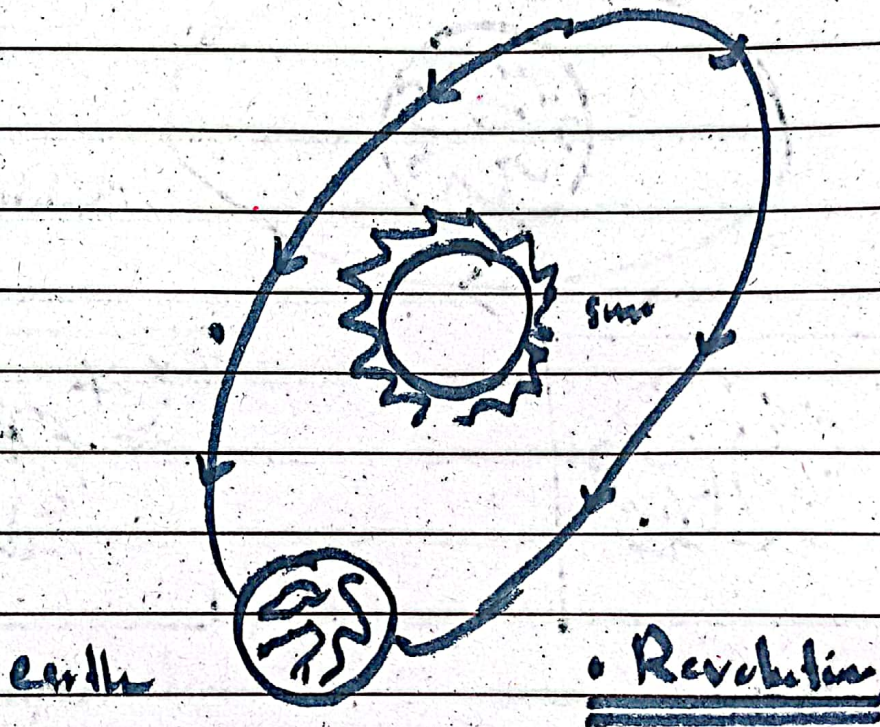
"Revolution is a movement around sun."

When earth revolves around sun, known as revolution movement. Earth moves in the

West to West direction. It takes 23 hours, 58 minutes, and 46 seconds.

Affects of revolution.

It causes year and seasons.



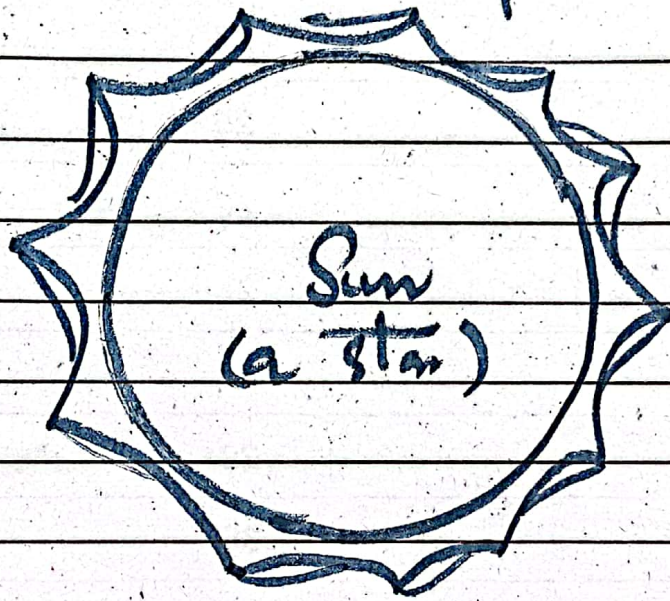
Qd) Describe a star. Also describe magnitude of a star.

Star

"Star is the brightest object."

Star is a bright and shiny object. It gives light and energy as it has own light. Moreover, star is a very hot object. Its temperature is in million $^{\circ}\text{C}$.

e-e, Sun and planet

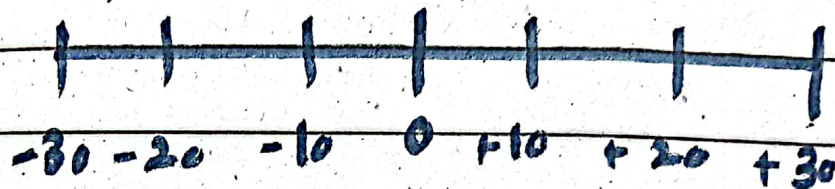


Magnitude of a star

'Magnitude determines the brightness of a star.'

The brightness of a star can be determined by knowing its magnitude. In fact, magnitude of a star is measured

in 'Stellar scale', ranging from
-30 to +30.



Minus magnitude represents brightness.
Positive magnitude represents faintness.

e.g., Sirius is the brightest
star with magnitude of
-1.46.