

Part II

Q.2 Section-I

9 Floods:

Floods occur when there is a overflow of water onto normally dry land. They can be caused by heavy rainfall, melting of snow or even dam failures. In the case of Pakistan, heavy floods in 2022 resulted in the loss of \$40 bn.

COP-

COP stands for conference of parties, which is an annual gathering of countries that are part of UN frame work convention on climate change (UNFCCC) to discuss the global efforts to combat the risks of climate change.

Significance of COP-28 For Pakistan

It is significant for the Pakistan as it provides an opportunity for the country to address the issue of climate change finance, raising the concern of financial support provided by developed countries to help developing countries as they may adapt and mitigate the impacts of climate change. This support can help Pakistan to rebuild the losses.

after floods and implementing measures to prevent future damage.

Q:-2

b Water Soluble Vitamins

Water soluble vitamins are those vitamins that dissolve in the water. These vitamins are the vitamin C and B complexes. Such vitamins are not stored in the body for long period of time, they need to be consumed regularly to meet the body's requirements.

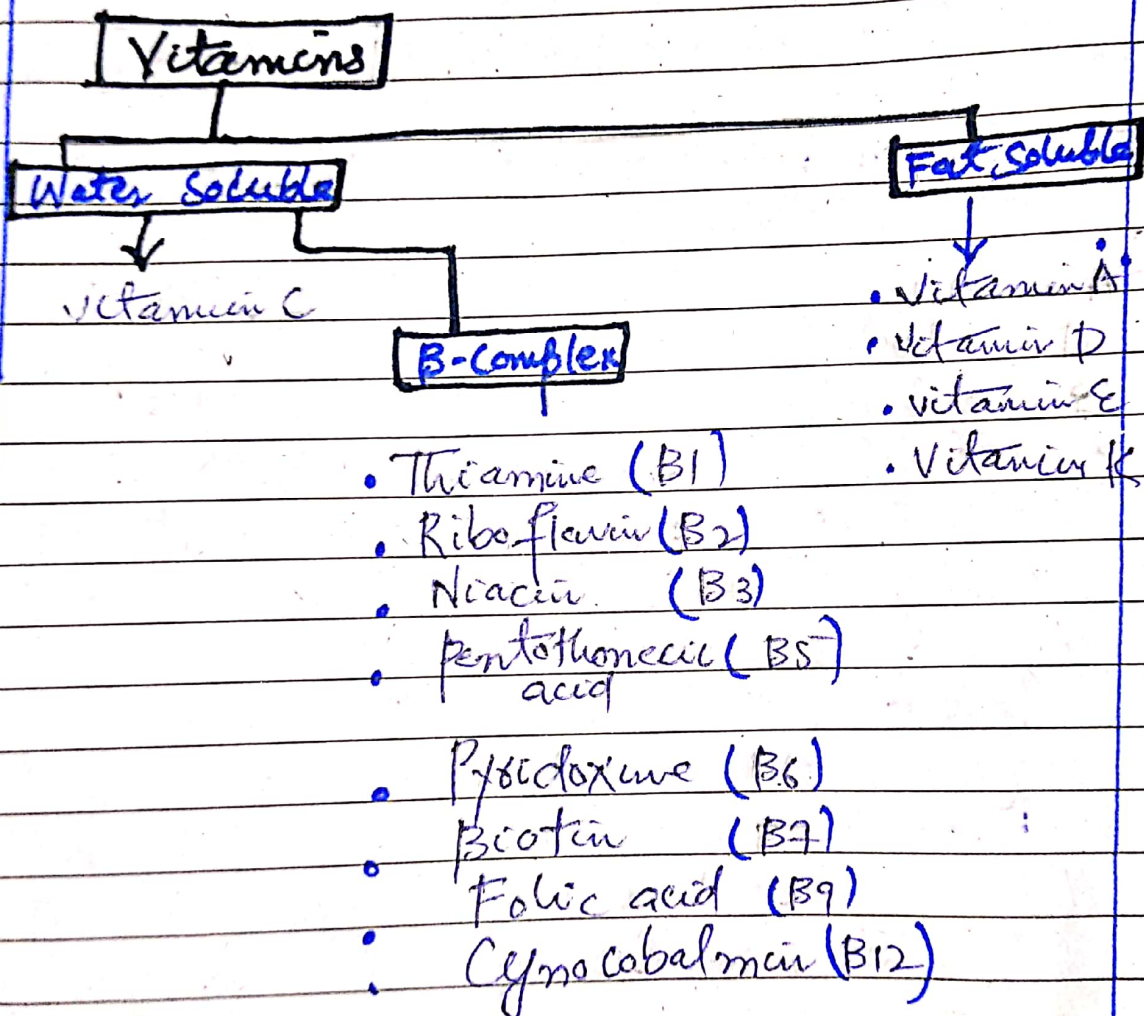
Fat Soluble Vitamins.

On the other hand, fat soluble vitamins are those that dissolve in the fat. Such as vitamin A, D, E and K. These vitamins can be stored in the body for longer period of time and can be used as per need. These vitamins are stored in body's fatty tissues.

Diet containing different vitamins

A diet rich in water soluble vitamins could include fruits like oranges, strawberries, kiwis for **vitamin C**, and whole grains, legumes leafy vegetables for **vitamin B**

On the other hand, a diet having fat soluble vitamins might include -
 foods like carrots, sweet potatoes, and spinach for vitamin A, fatty fish and dairy products for vitamin D, nuts and seeds for vitamin E, and leafy vegetables for vitamin K



Q:-2

C

Structure of Eye

Eye is a fascinating organ and most sensitive part of the ~~world~~^{body}, that allows us to see the world around us. It has several important parts that work together to help us to perceive light and form images.

Cornea : At the front of eye there is an structure called cornea which is like a clear window, helps to focus the light onto retina.

Retina : Retina is located at the back of eye. It contains special cells called photoreceptors that detect light and send signals to the Brain through the optic nerve.

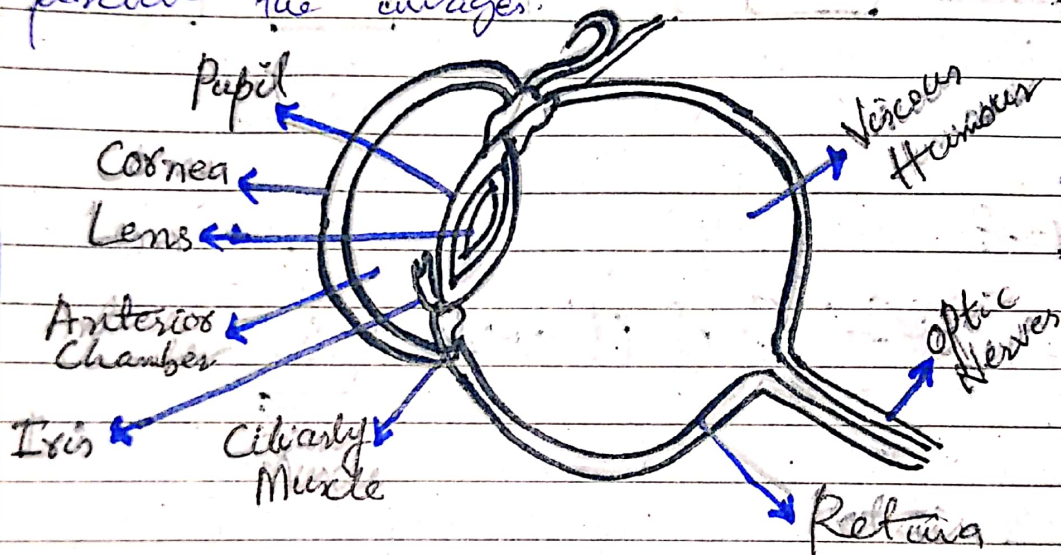
Iris : Iris is the colored part of eye, controls the size of pupil.

Pupil : Pupil is the black hole in the center of Iris and it adjusts the size to control the amount of light that reaches the retina.

Sclera - Sclera is the tough, white outer layer of eye that helps to protect the eye and maintains the shape of the eyeball. It covers most of the part of eye.

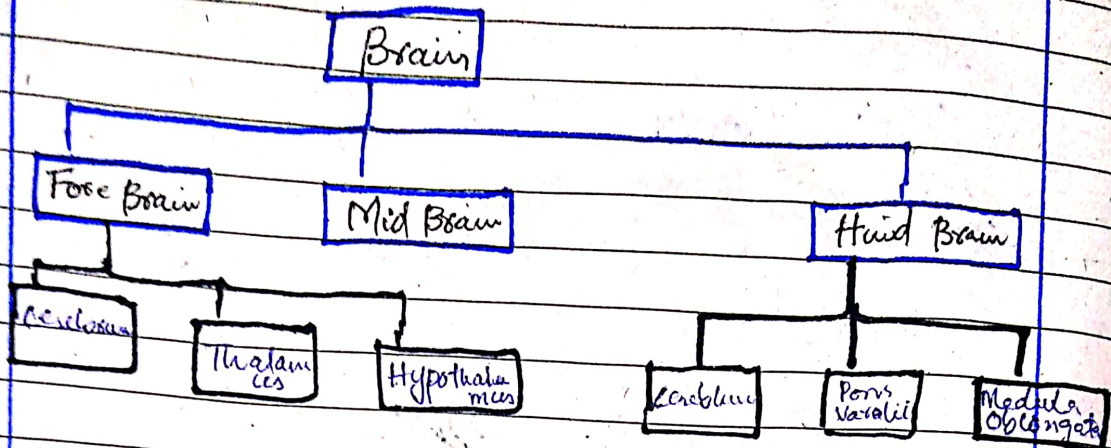
Vitreous humor: Inside the eye there is a gel-like substance called vitreous humor, which helps to maintain the shape of eye and provide support to retina.

Optic Nerve: Bundle of nerves in the eyes that carry visual information from retina to brain. This is how the brain processes the signals sent by photoreceptor cells in the retina and allows us to perceive the images.



Structure of Eye.

Flow chart of Brain



Q.No. 3

Global Warming

Global warming is a long-term increase in Earth's average temperature due to greenhouse gases in atmosphere and fossil fuels like coal, oil, natural gas, releases CO₂ and other gases into atmosphere. These gases trap heat from sun, causing earth's atmosphere to rise.

Global Warming a pressing issue

Global warming is definitely a pressing issue that affects all of us. It's like a wild beast that humans are trying to tackle, by poking at sticks means

taking small initiatives at individual level to address the issue, but it's - such a complex issue that requires more comprehensive attention and coordinated efforts.

Justifying the perspectives, it can be said that at individual levels the actions like reducing CO₂ foot prints, conserving energy, shifting to renewables may not be enough to combat the issue, it requires the collective action on the global level from governments, industries and communities to implement the sustainable practices, develop renewable energy resources and reducing greenhouse gases on a larger scale.

b Origin of the Universe.

Origin of the universe can be traced back to the **Big Bang theory**, which states that life began around 13.8 billion years ago from a singularity, a point of intense density and temperatures. This theory suggests that universe rapidly expanded into and is ever evolving since.

Calculating the age of universe

Two methods are used for calculating the age of the universe.

- a. By looking for the oldest stars
- b. By measuring the rate of expansion of the universe.

Looking at the oldest stars.

Life cycle of stars depends upon its masses. High mass stars are much brighter than low mass stars, then they rapidly burn and decay. Thus the low massive stars exist which leads to the estimations of life of universe.

By measuring rate of expansion.

Another method of determining the age of universe is using Hubble's constant. That is to measure the current expansion rate of universe that leads back to the Big Bang. Using this method, scientists work backward in time and calculate how long it would have taken for the universe to expand from a single point.

Q3

c Semi Conductors.

Semi conductors are the type of materials that have the properties between those of conductors and insulators.

Types of Semi conductors.

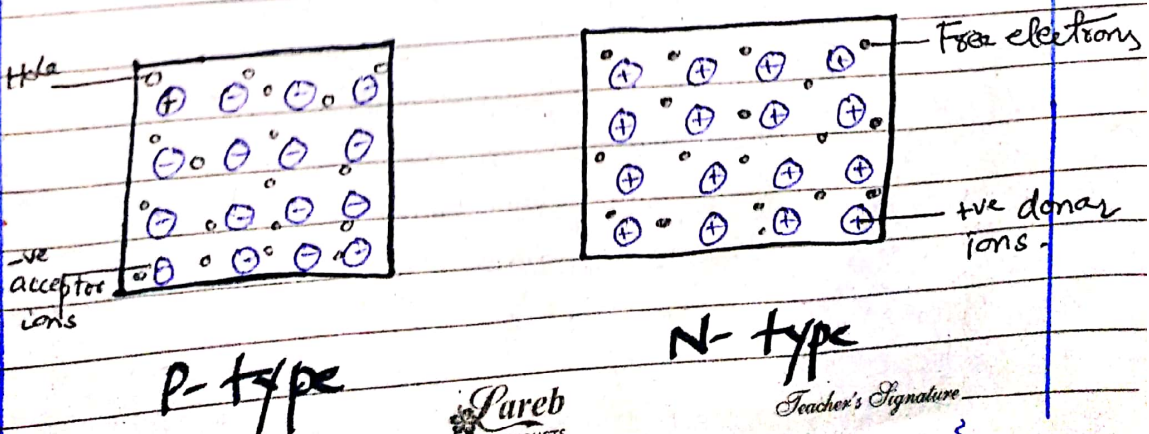
- a) P-type semi conductors.
- b) N-type semi conductors.

P-type semi conductors.

- These semi conductors have excess of -
- positively charged particles called **holes** which move through the materials. These holes act as the charge carriers, allowing the flow of positive charge.

N-type semi conductors.

These have excess of negatively charged particles called **electrons**, which can move through materials and allow the flow of negative charges.



Q:- 3

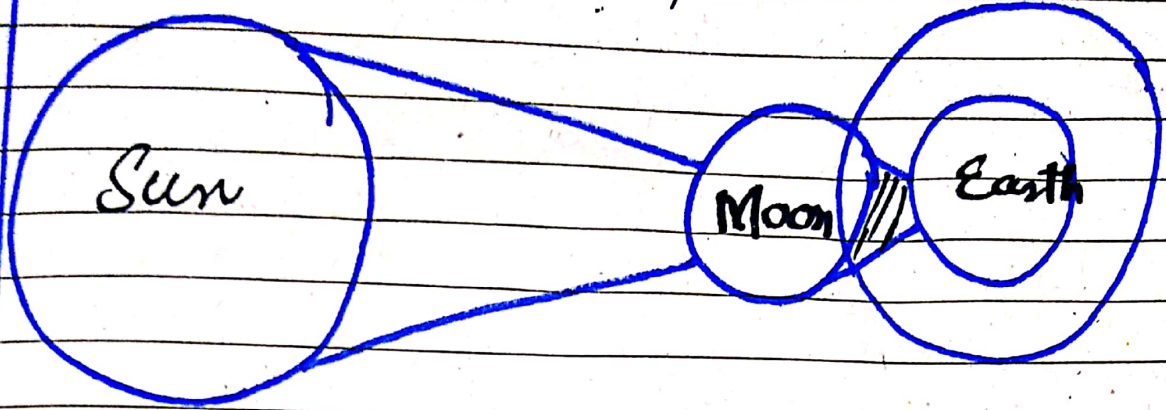
d Eclipse

Eclipse is an astronomical event when one celestial body moves into the shadow of another celestial body.

Difference

Solar Eclipse	Lunar Eclipse
Solar Eclipse ^{happens} when moon comes in between the earth and the sun.	Lunar Eclipse happens when earth comes in between moon and the sun.
Moon hides the rays of sun partially or fully for few minutes to reach the earth.	Earth blocks the moon partially or fully or particular time to restrict its light reach on earth's surface.
It occurs ⁱⁿ 18 months and in a day time, requires new moon.	It happens two times in a year when moon is full and in the night time.
Solar Eclipse is harmful to the naked eyes, protective glasses are used for it.	Lunar Eclipse is not that harmful, can be seen through naked eyes without using protective glasses.

Solar Eclipse



Lunar Eclipse

