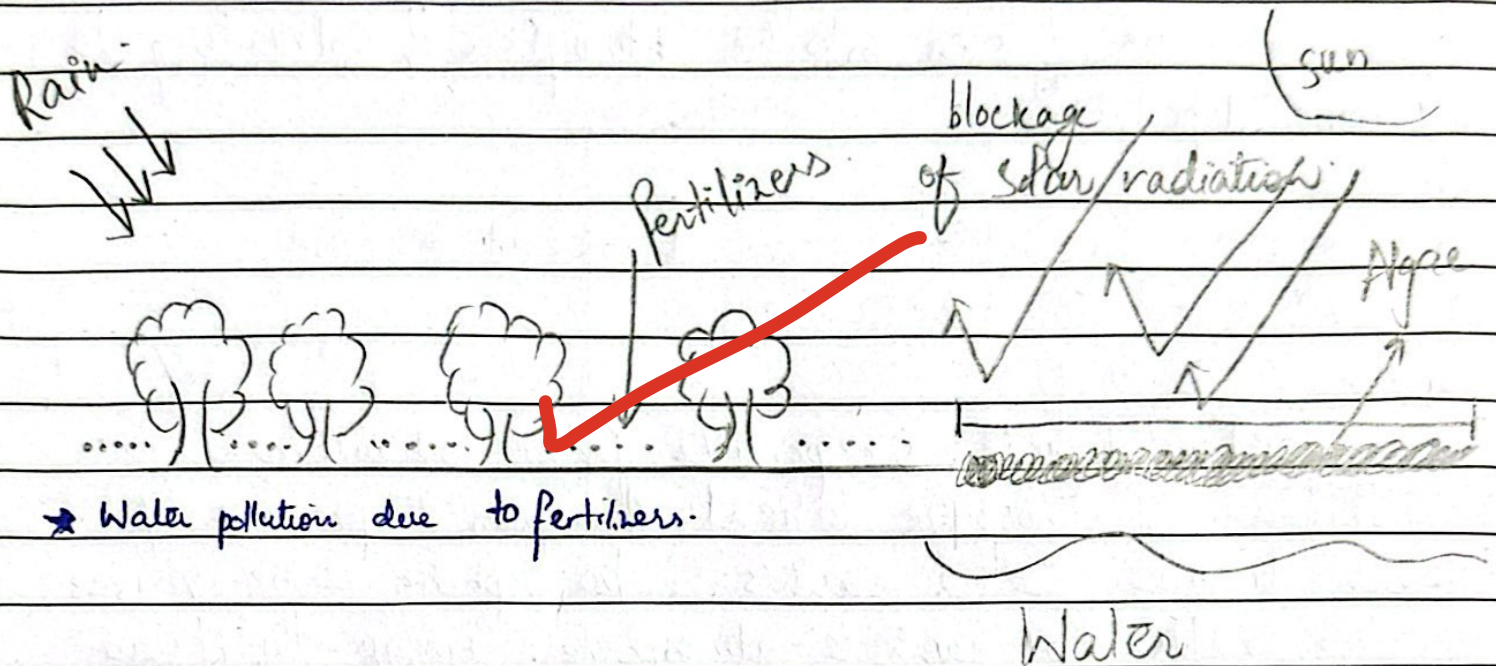


Q.2(c) Why the excessive use of chemical fertilizers should be avoided?



## 1. Chemical Fertilizers

Chemical fertilizers are substances containing chemical elements that increase the fertility of the soil and improve the growth and productivity of crops.

## 2. Hazards associated with excessive use of fertilizers

1. Chemical fertilizers affect micro-organisms living in the soil by disturbing its pH more acidic.
2. Since fertilizers are chemical based, their inappropriate use can cause eutrophication - the phenomenon of accumulation of nutrients building a layer of green algae over water resources - that endangers the existence of aquatic life.
3. The excessive use of chemical fertilizers depletes the



soil of natural essential nutrients. Consequently, the produced foods have less nutritious value.

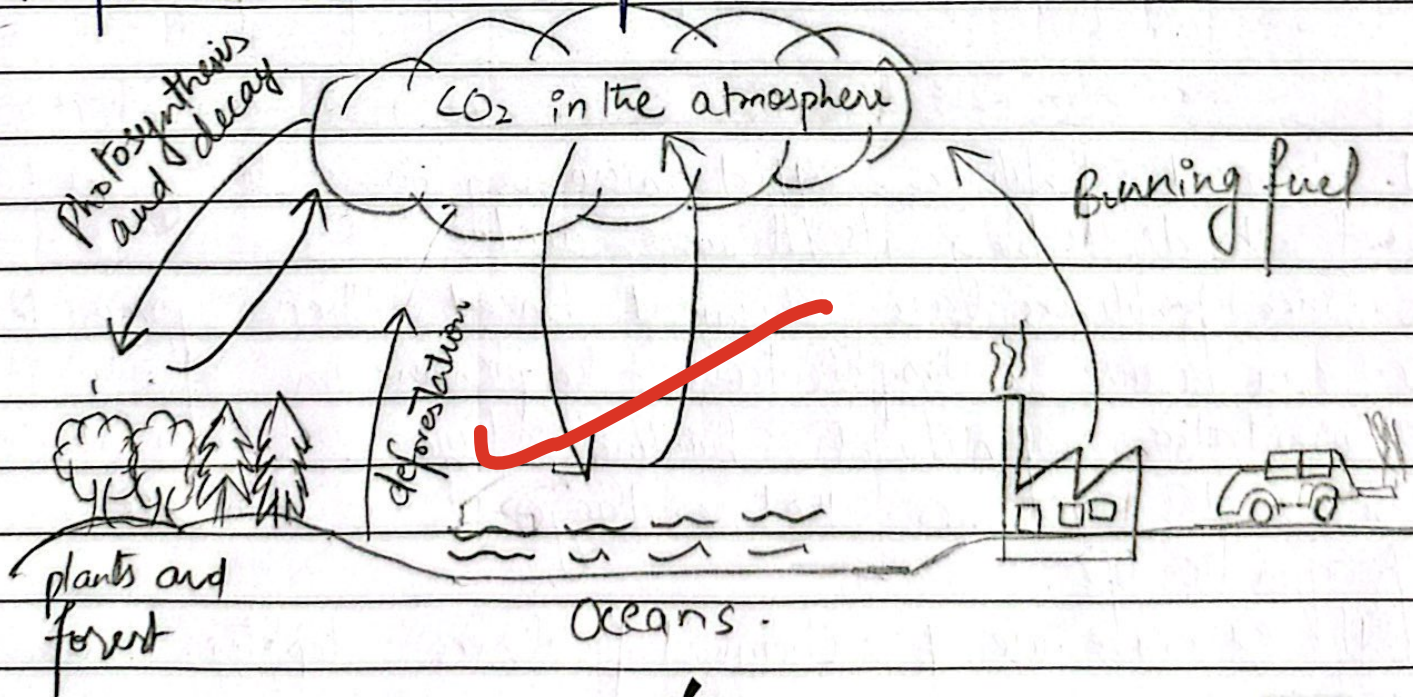
4. Excessive nitrogen used in the chemical fertilizer can emit greenhouse gases into the atmosphere, contributing to environmental pollution.

discuss these in a bit more detail.

Q2  
d) Why are Scientists worried about the increase of  $\text{CO}_2$  in atmosphere?

Answer.

Carbon dioxide is responsible for the enhancement in the ability of atmosphere to heat. Moreover, the presence of carbon dioxide in the earth's tropospheric zone raises the temperature of earth's atmosphere. Consequently, it can have devastating outcomes for the inhabitants of the planet earth i.e. global warming and climate change. Thus, Scientists are worried about the increase of  $\text{CO}_2$  temperature in the atmosphere.





CO<sub>2</sub>, being the most important greenhouse gas (GHG), helps in trapping the heat in the atmosphere. One can say that without CO<sub>2</sub> our planet would have been inhospitably cold. However, the staggering increase in the level of CO<sub>2</sub> in the past few decades is a great concern to scientists because of the phenomenon of global warming and climate change. According to NASA, an increase of 1.5 degrees Fahrenheit in the global temperature has been recorded which made year 2021 the 6<sup>th</sup> warmest year in the continued trend.

To sum it all up, with carbon dioxide enhancement in the atmosphere, the temperature has increased to an alarming level that has become a formidable challenge for the only inhabitable planet Earth.



Q.3(a) Differentiate between the renewable and non-renewable sources of energy giving example of each one of them

Ans.

| Renewable                                                                                                               | Characteristics       | Non Renewable                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| These resources that are continuously replenished and can never run out                                                 | Definition            | Resources that can be <sup>not</sup> replenished or recycled and deplete over time                                                    |
| They are environmental friendly as they produce naturally and do not emit any harmful gases that can damage environment | Environmental Impacts | They are not environmental friendly, emit carbon monoxide and carbon dioxide, thus causing pollution and ozone depletion respectively |
| Water<br>Sunlight<br>Wind<br>Geothermal                                                                                 | Examples              | Fossil Fuels<br>Coal<br>Natural gas<br>Petroleum                                                                                      |
| Low                                                                                                                     | Efficiency            | High                                                                                                                                  |
| Requires less maintenance less efforts                                                                                  | Maintenance Cost      | Requires more maintenance and takes considerable effort                                                                               |



Q. 3c, What are the most dangerous part of hurricane and how do cyclones affect humans?

Ans.

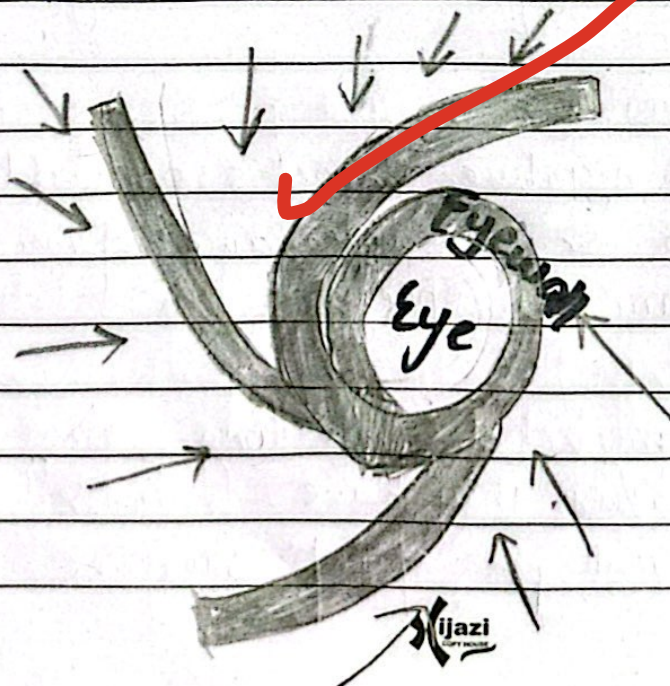
### Hurricanes

A hurricane is a weather phenomenon that is essentially a rapidly rotating storm system with characteristics such as low pressure centre, strong winds, and thunder storms that produce heavy rain.

The most dangerous part of a hurricane -

1. Structurally, the eye-wall of a cyclone surrounds the eye or base of the storm where the most damaging winds and intense rainfall is found.

2. Cyclones are often accompanied by strong winds, torrential rains and storm surges among which storm surge is the most dangerous part of a hurricane. It is an abnormal rise of water generated by hurricanes, over and above the predicted astronomical tide.



= Simplified diagram of a hurricane.



## Effects of cyclones on humans

### 1. The rise in sea level

Cyclones out at sea can also destroy ships and cause shipwrecks which can cause many deaths.

Money can also be lost if the ship is carrying expensive cargo.

### 2. Damage to the human infrastructure

The cyclone's strong winds can rip the roof of a house or destroy it entirely. It can send flying debris into houses. Any objects that have not been tied down will get sent flying most likely never to be found again.

### 3. Migration of people

After a cyclone has struck and the strong winds and flooding have subsided, people start to return to their houses to inspect the damage. Often the damage they find is devastating as almost everything is destroyed.

### 4. Loss of bio diversity

Cyclones leave negative impacts on biodiversity, causing the decline or disappearance of various varieties of plants and animal species.

### 5. Psychological impacts

A disaster of any kind has long-lasting fear in minds of the masses. They have witnessed a large number of deaths, collapse of infrastructure, cries, pain and sorrow.



Q. No 4a) What is the importance of forests in the economy of a country?

Ans. Forests are the most valuable assets for every nation. They provide timber, firewood, forage and medical plants.

## Significance of Forests in the Economic Development of a country.

### 1. Monetized and cashed valued contributions from forests.

A lot of people are engaged as wood cutters, sawyers, carters and craftsmen, and therefore are full-time employed because of the presence of the forests. This sector is an important source at both formal and informal jobs, particularly in remote areas.

For example:- In Pakistan, 500,000 workers are employed by forest-product industries such as furniture, village carpentry, pulp and boats.

### 2. Forests economy at the household and community level

Wood grown in forest serves as a source of energy for rural households. Wood is used for furniture, infrastructure and interior of houses as a construction material, environment-friendly products, tools, weapons, and fuel.



### 3. Sustainability Supply chains and forest.

Forest, being the store house for carbon, are solar-powered and renewable resources of energy and they also have the potential to mitigate climate change by replacing non-renewable materials and can act as a substitute for fossil fuels. Hence they work as a sustainable supply chain for any country.

### 4 - Paper obtained from woods

According to some reports the degree of economic development of a country is determined by its per capita consumption of paper. Hence, whenever a country gets economically developed, paper is utilized as packaging material in communication and in scores of other uses.

Q. NOS (d) Why do atoms form bonds? Name three major types of chemical bonds.

Ans. ~~Atom~~ Definition of atom.

Atom is known as the smallest particle that can take ~~participation~~ participation in chemical reaction.

Why do Atoms form Bonds?

Atoms form bond to gain stability state via donating, accepting, or sharing of electrons.

or to fill their valence shell with electrons and satisfy both duplet and octet rule.

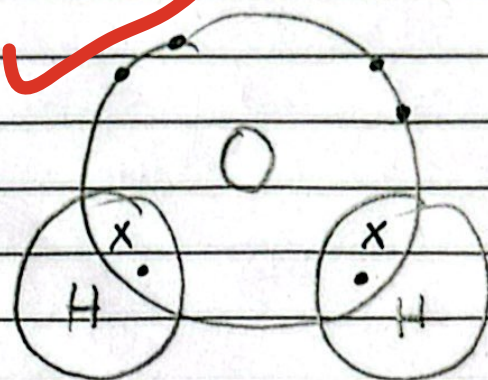


## Types of Bonds -

### 1. Covalent Bond.

A covalent bond is the force of attraction that holds together two non metals / atoms that share a pair of electrons.

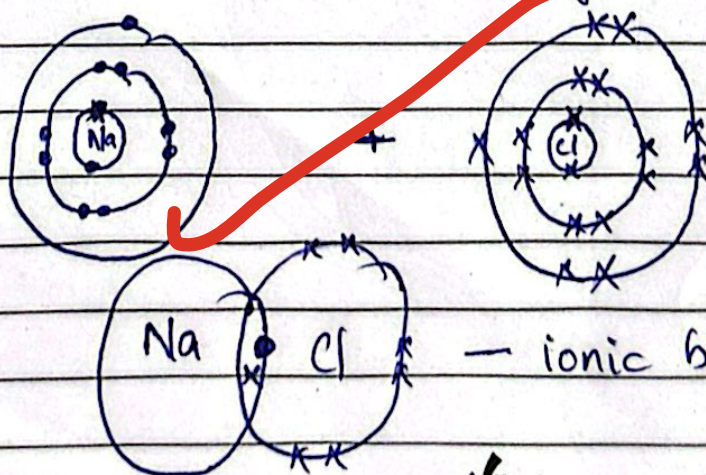
For example: In the water molecule, hydrogen and oxygen form covalent bonds.



### 2. Ionic Bond

An ionic bond is the force of attraction that holds together oppositely charged ions. Ionic bonds form crystals instead of molecules.

Example: Sodium Chloride Crystals



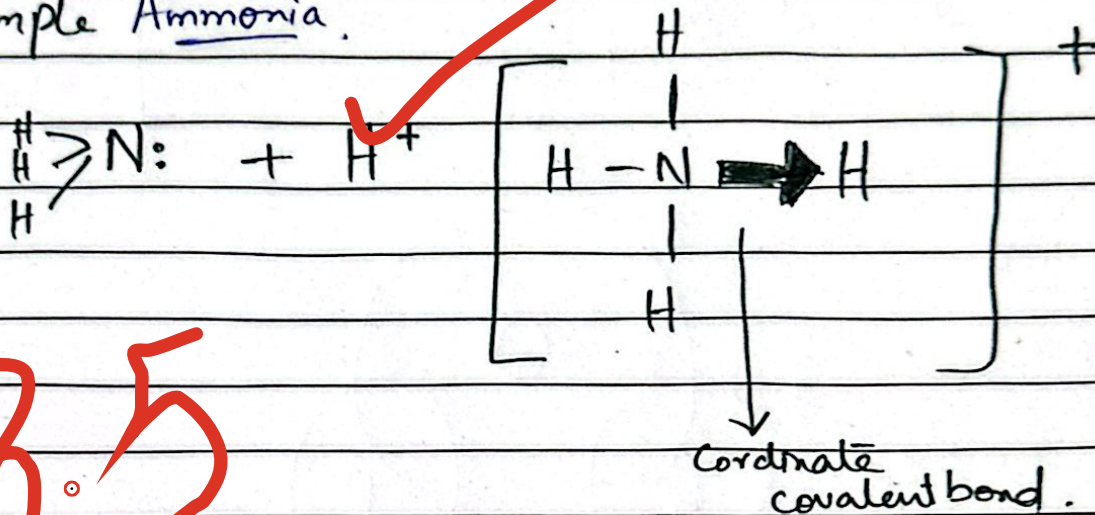
— ionic bond formation.



### 3. Coordinate covalent bond.

A coordinate covalent bond is a bond between two atoms in which one atom donates a lone pair of electrons to form the bond.

example Ammonia.



3.5