

Q no-02  
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## ① Introduction:

Healthy environment is vital for the life on earth, otherwise the life of our earth will gradually lost. After the advent of industrialisation environment has been threatened with myriad pollutants and it make air, water and soil unfit for living organisms. The prime factors that are responsible for the environmental pollution are burning of fossil fuel, mine extraction, improper disposal of solid waste and excessive use of plastics. Environmental is essential for every living being but as the world is expanding and flourishing by making life easier for its habitants. Unfortunately it's degrading the environment heavily.

## ② Understanding the term pollution:

pollution occurs in the environment when the contaminated pollutants spread the environment and affect all the creature including our planet earth. Pollutants are main factor that makes the environment uninhabitable. Pollution disturbs the balance, behaviour and ecosystem of the environment, along with it

by raising global warming and fatal diseases

### ③ Factors responsible for environmental pollution:

There are a number of factors that are responsible for environmental pollution; few of them are discussed here briefly.

### 3.1 Burning of fossil fuels:-

The advent of industrialisation increases the use of burning of fossil fuels. Today industries are heavily run on fossil fuels which are responsible for emitting harmful pollutants in the environment. A variety of primary and secondary pollutants are emitted due to the burning of fossil fuels including air borne particles including  $SO_2$ ,  $CO_2$ , hydrocarbons, organic compounds, chemical and nitrogen oxide. It is not only affect the air quality, but also partly responsible for climate change.

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### Improper solid waste management:-

Industrialization led to the migration of people from rural areas to the urban pastures. Solid waste management is one of the significant task to keep the environment free from air borne diseases and contamination of water. Improper disposal of municipal solid waste can create unsanitary condition, and these condition lead to pollution of the environment by spreading disease like cholera, malaria and diarrhea.

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### Mine extraction:-

The process of mining and extraction generates varying degree of pollutants in the air, water and land respectively. Excavation of the mine site alone may produce waste material from sinkholes that results in loss of habitat. Mining industries also strip the ground of its strong structure, cause contamination of surrounding water bodies.

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### Excessive Use of plastics:-

In most developing countries plastics are usually used in shopping and storing of food items because of its strength and cheaper availability. Even the

bottles of sodas are now packaged in plastic bottles. After using of these plastic bags, bottle and other discarded indiscriminately in the environment make the environment polluted as they are non-degradable and block the sewage system and harm the aquatic life.

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### Nitrogen based fertilizers:-

Agriculture is important for every country's economy. However as the population has been increasing in no time the demand for food is escalating. So, the agriculture production is stressed to produce more in less time. Most of the time farmers are not trained or well aware of their soils requirements and to increase its yield, they use heavy amount of nitrogen based fertilizers which not only harm the soil by making it barren but also washing away its nutrient and contaminate the water.

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## Water logging:-

Water logging refers to a situation where the soil becomes submerged due to an increase in the groundwater level or excessive rainfall. This condition limits the amount of oxygen available to plant roots, causing the hindrance in plant growth, and even lead to death. From the gardening perspective it hardens the soil, preventing air and water to penetrating in the grounds.

## Reasons for water logging in Pakistan:-

Water logging is the serious threat to the agricultural productivity of irrigated lands in Pakistan. Since Pakistan is an agricultural state water logging is an existential threat to the economy. Water logging along with salinity is responsible for 25% of the affected irrigated land, resulting in the reduction of crops yields. Following are the reasons behind water logging in Pakistan.

(2.1)

## Heavy Rainfall and Inadequate Drainage of the Surface Run-off

During rainy seasons the upper layer of the soil becomes highly saturated with water. The inadequate drainage of the overland run-off causes the percolation level to increase, which in turn raises the water table.

(2.2)

## Over Irrigation of fields

Farmers, due to the lack of awareness, depends on excessive irrigation in cultivating certain crops. Excessive irrigation and lack of adequate drainage system cause an increase in waterlogging.

(2.3)

## Seepage from Canals

Seepage from earthen canals also adds a significant quantity of water to the underground reservoir continuously. In Pakistan, the canals are constructed in such a way that water level in them is much above the surface of the soil to be irrigated. Thus it results in waterlogging.

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By breaking hardpan at a canal bed:-

During cleaning season, the digging of canals breaks down the hardpan of the soil at the canal bed. It also enhances the seepage of water to adjacent soil and results in water logging.

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What is Ozone layer:-

Ozone, a gas found in the atmosphere in trace amount. The Ozone layer is the region in the earth's stratosphere that contains high concentration of ozone and protects the earth from the harmful ultraviolet rays of the sun.

Ozone depletion:-

Ozone depletion is the gradual thinning of the earth's ozone layer in the upper atmosphere caused by the release of chemical compounds containing chlorine, bromine, etc from industries and manmade activities. Ozone depletion is a major environmental

problems because it has increased the global warming by the increase of ultraviolet radiations from the sun.

### (3) Causes of ozone depletion:-

This happens when the chlorine and bromine atoms reaches in the atmosphere and come in contact with ozone layer and destroy the ozone molecule. One chlorine atom can destroy 100,000 molecules of ozones. Chlorofluorocarbons that are highly used by the industries and homes contribute heavily to destroy ozone layer. They themselves do not destroy the ozone, they decay the chlorine and bromine atom on exposure to high UV radiations and known as ozone depleting substance.

### (4) Solutions to ozone layer depletion:-

The depletion of ozone layer is a serious issue and various programmes has been launched by many countries to prevent it. The montreal protocol of 1987 is to stop the use, production and minimize the use of ozone-depleting substance. Some of the solution are discussed below that would help in preventing ozone layer depletion.



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## Avoid using ozone-depleting substances.

Reduce the use of ODS substances will be the right step towards betterment. For example, avoid the use of chlorofluoro carbons refrigerators and air conditioners and replace them with hydrofluorocarbon (HFC) as they have lowest global warming potential.

(4.2)

## Minimise the use of vehicle:-

The vehicles emit large amount of green gas house gases that leads to global warming. Use of vehicles should be minimise by the use of public transport or bicycle which not help in recovering the ozone but for a healthier lifestyle.

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## Eco-friendly cleaning products:-

Most of the ~~chlorine~~ cleaning products have chlorine and bromine releasing chemicals that find their way into atmosphere and affect the ozone layer. These should be substituted with natural and organic products.

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## Encouraged plantation:-

Deforestation is one of the cause that has resulted in the increase of temperature and disrupt the earth's natural balance. Plants are natural sinkers of carbon dioxide and reduce the temperature.

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## (1) Acid Rain:-

Acid rain as the name describes as the precipitation of acid in the form of a rain in the simplest manner. When the atmospheric pollutants like oxides of nitrogen and sulphur react with rainwater and come down in rain termed as acid rain.

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## How Acid rain produced:-

The acid rain can be produced by both dry as well wet deposition.

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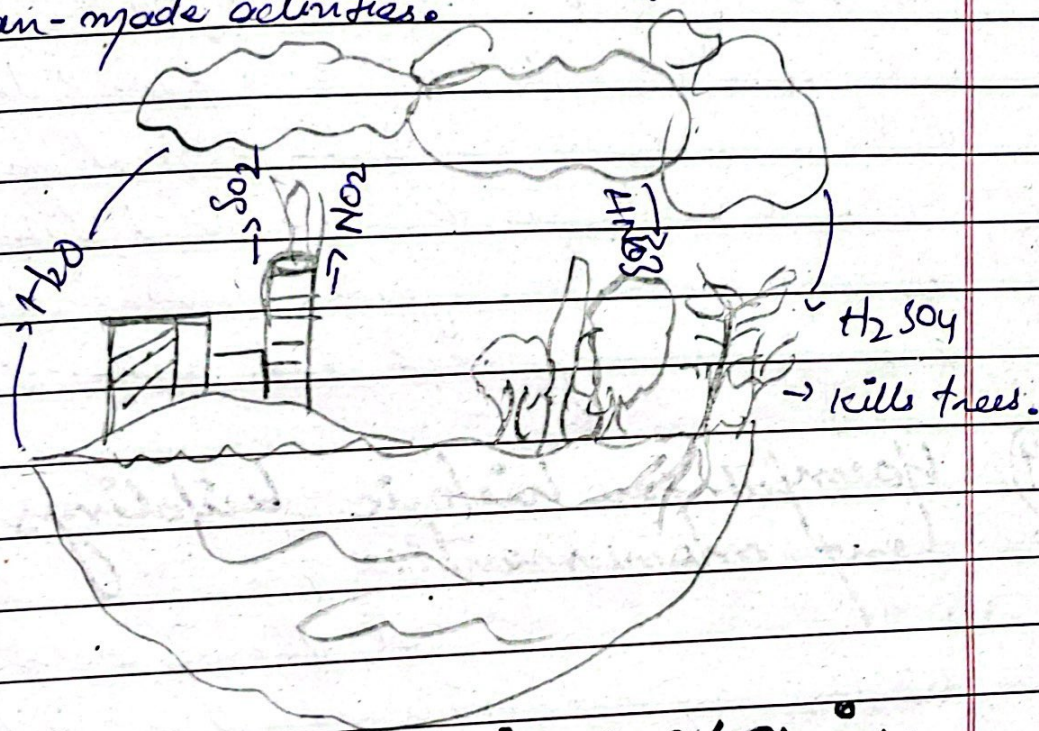
## wet deposition:-

The causes of the wet deposition of an acid rain are when sulphur and nitrogen particles get mixed with the wet composition of rain. Sulphur and nitrogen particles get mixed with water and form different acid i.e sulphuric acid and nitric acid.

(2.2)

## Dry deposition:-

The oxides of nitrogen are blown away by the wind along with the dust particles. They settle on the earth's surface after coming down to earth in the form of precipitation. Acid rain is essentially a by-product of man-made activities.



## (3) Dangers associated with acid rain:-

### (3.1) Risk for surface water and aquatic animals:-

Some minerals like aluminium are washed out from surface as a result of acid rain and as a result they poison lakes and affect the aquatic life. Such as low pH does not allow to hatch eggs and it causes the damage to fishes and aquatic animals.

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### Adverse effects on human health:-

Along with skin diseases and hair damage, acid rain can also cause some serious pulmonary as well as heart problems.

3.3

### Destructive vegetation & forest:-

The acid rain washes away some important minerals from soils which as a result cause the reduced growth of plants and forests. Moreover, acid rain makes it easier to fungi and insects to attack trees and eventually trees start to die.

3.4

### Harmful for historic buildings and monuments:-

It damages historic buildings and monuments as well as statues especially those made of rocks and the ones contain calcium carbonate. The acid present in the lakes react with calcium carbonate and make gypsum, which consequently flakes off.

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What is heart attack?

A heart attack (myocardial infarction) is an extremely serious condition that happens because you don't have enough blood flow to some part of heart muscles. This lack of blood occurs because of many different factors but it is usually related with the blockage in one or more heart arteries. Without proper blood flow, the affected area starts to die. If the blood flow will not quickly restore can cause permanent heart damage or death of a person.

Causes of heart attack

The causes of heart attack can be many, a few of them are discussed below.

**Atherosclerosis:-**

One of the significant cause of heart attack is atherosclerosis, which is the build up of plaque in the arteries over time. This plaque is made up fat, cholesterol, calcium and other substances. As plaque accumulates it can narrow arteries and reduce the blood flow to the heart. If plaque ruptures, a blood ~~can~~

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clot can form further blocking the artery and leading to chronic heart attack.

### High blood pressure or hypertension:-

High blood pressure and hypertension can also be the cause of heart attack. When blood pressure is constantly high, it can damage the arteries and put extra pressure on heart increasing the risk of heart attack.

### Obesity:-

Obesity and sedentary lifestyle can contribute to the failure of heart as well. Excessive weight can lead to the conditions like high blood pressure, diabetes and high cholesterol which lead to the heart attack.

### Anomalous coronary artery:-

In anomalous coronary artery was not formed correctly at the time of birth. In many cases, the coronary artery is in the wrong place or coming from the wrong place and this problem can affect right coronary artery, left coronary artery, left anterior descending artery. The main problem is the placement of the coronary artery.

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## Differentiate between drug abuse and drug addiction:-

### Drug abuse

### Drug addiction

- 1- It happens when drug including alcohol, illicit drugs are misused to get high or inflict self harm.
  - 2- Drug abuse can lead to negative consequences such as health, legal issues and relationships.
  - 3- It is the result of misuse of any prescription or medication.
  - 4- People of drug abuse do not experience intense craving of such and such substance or drugs.
- Drug addiction is known as SUD a brain disorder that manifests the uncontrollable use of substance.
- Drug addiction tore out the person that he had no idea of his actions and neither care for his people.
- It is the result of craving to look cool and start consuming it lead to the forever addiction.
- However, people of drug addiction are known for intense craving of drugs and become uncontrollable.

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## Human Ear:-

The human ear like that of other mammals, contains sense organs that serves two quite different functions: that of hearing and of postural equilibrium and coordination of head and eye movement.

Ears are the organs that detect and analyse sound, located on each side of your head, they help with hearing and balance.

## Structure of human ear:-

The ear includes three main parts that include outer ear, middle ear and inner ear.

### Outer ear:-

Outer ear is the part of ear that is visible to everyone, also called the auricle or pinna. The outer ear consist of rigid cartilage and skin and it contains glands that secrete ear wax. It's funnel shaped canal leads to your eardrum or tympanic membrane.

### Middle ear:-

The middle ear begins with the other side of the ~~tympan~~ tympanic membrane



(eardrum). There are three tiny bones in this area - the malleus, incus and stapes. These bones also referred as ossicles. They transfer the sound vibration from the eardrum to the inner ear. Middle ear also house the eustachian tube, which equalize the air pressure in the ear.

### Inner ear:-

The inner ear contains the two main parts: the cochlea and the semicircular canals. The cochlea is the hearing organ. This snail shaped structure contains fluid-filled chambers lined with tiny hairs. When sound enters the fluid inside the cochlea cause the tiny hairs to vibrate, sending electric signals to the brain.

### Function of ear:-

The ear has two main function: hearing and to create balance.

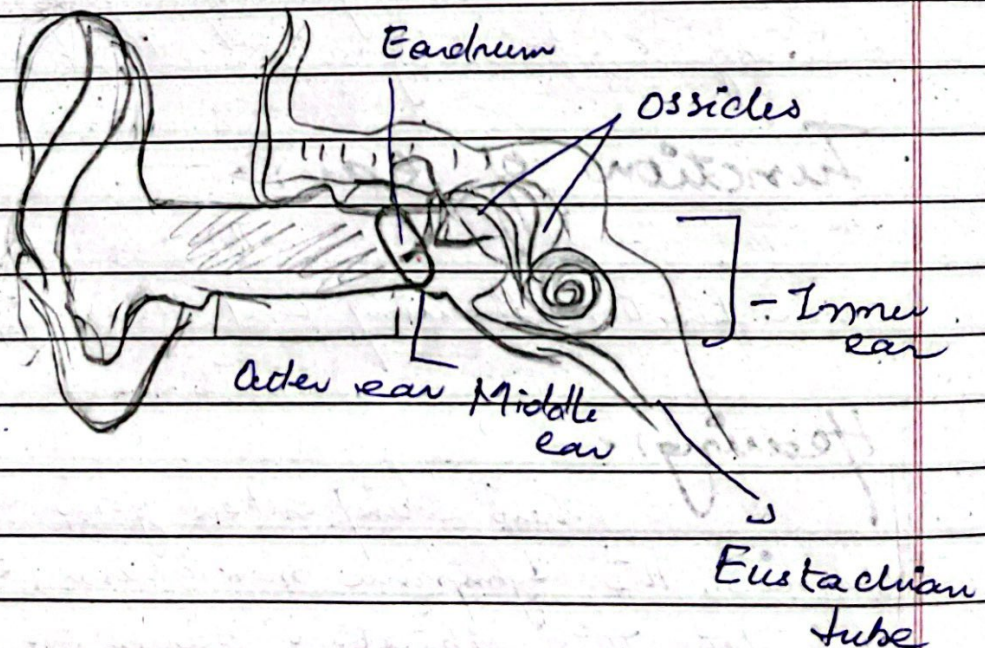
### Hearing:-

When sound enters your ear canal, the tympanic membrane (eardrum) vibrates. This vibration passes on to three tiny bones (ossicles) in your middle ear. These ossicles amplify and transmit

these sound waves reach your inner ear, tiny hair cells called stereocilia transform the vibration into electric energy and send it along the nerve fibers to the brain.

### Balance:-

The inner ear contains semi-circular canals filled with fluid and hair-like sensors. When we moved the head, the fluid inside these loop-shaped canals sloshes around and moves the hairs. The hair transmit this information along the vestibular nerve to the brain. Finally, the brain sends signals to the muscles to help to stay in balance.



(1)

## Vitamins:-

A vitamin is an organic molecule, an essential micronutrient that an organism need in small quantity for proper functioning. There are 13 essential vitamins that are required by the body for proper functioning.

## Significance of vitamins:-

Different vitamins have different job to keep the body working properly. Some vitamins helps our body fighting infections and keeps the genes healthy. Others help in generating the energy required by body to perform several function and a few for the healthy skin, nails and teeth.

## Sources of vitamins:-

Sources of vitamins are discussed below as the vitamins are classified on the basis of their solubility.

### Sources of water soluble vitamins:-

Vitamin C and all kind of vitamin B are water soluble and they found in.

- Vitamin B1 (Thiamine) found in all

nutritious nutritious food: pork, grain, breads  
cereals, nuts and seeds.

• vit B<sub>2</sub> (Riboflavin) commonly found in milk products and leafy vegetables.

• vit. B<sub>3</sub> (Niacin) found in meat, poultry, fish, whole grain and cereals.

• Biotin: Meat, fish and widespread in foods.

• vit C: citrus fruits and peppers.

Sources for soluble vitamins:-

• vit A: Cheese, cream, margarine and eggs.

• vit D: Egg yolks, liver, fortified milk and when exposed to sunlight.

• vit E: leafy green vegetables, whole grain products

• vit K: leafy green vegetables.

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## Deficiency symptoms of fat soluble vitamins :-

- Deficiency of vitamin A lead to blindness, hair loss, skin problems and poor immune function.
- Deficiency of vitamin D lead to the rickets and softening of bones and teeth.
- Deficiency of vitamin E is rare but long term deficiency can lead to anemia, heart disease and serious neurological problems.
- Deficiency of vit K will not let the blood clot and small injuries will increase the risk of fatal ones.