

**QUESTION : 01**  
**(A)**

**CELL AS A BASIC UNIT OF LIFE : STRUCTURE AND FUNCTION OF CYTOPLASM, PLASTIDS, NUCLEUS :**

Cell is a basic unit of life. It was discovered by "Robert hooke". It is the smallest structural and functional unit of living organism. The cell is composed of various organelles. Common organelles include Riboplasm, rough endo plasmic reticulum, lysosomes, golgi apparatus, mitochondria, plastids, chloroplast, vacuoles and Centrosomes.

**STRUCTURE AND FUNCTION OF CYTOPLASM :**

The living content of protoplasm that resides between plasma membrane and nucleus is called "Cytoplasm".

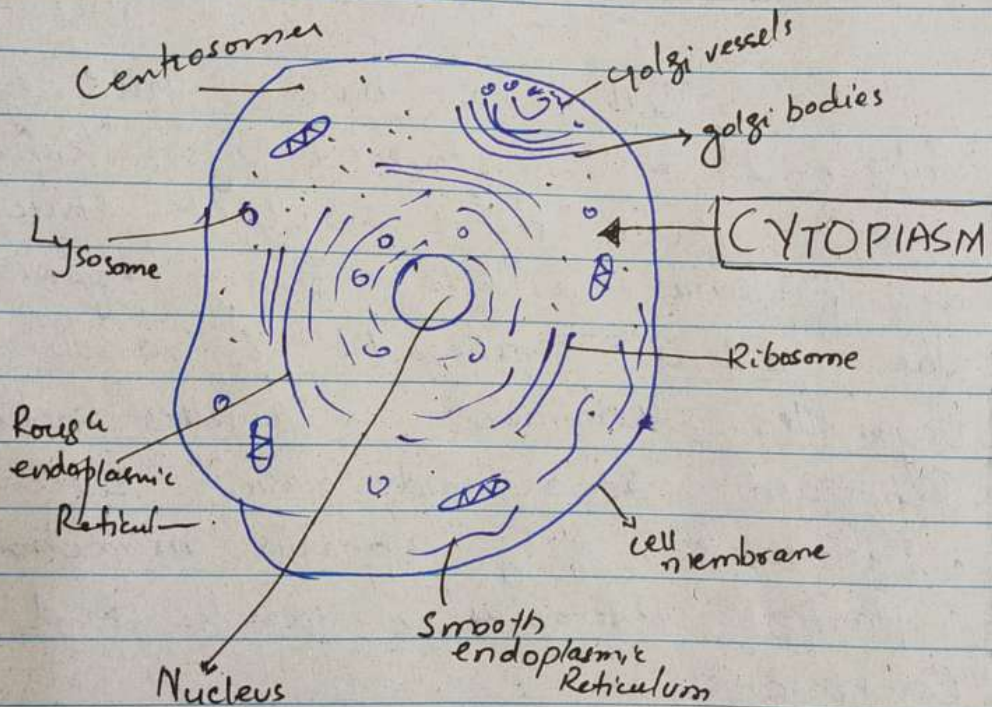


# Parts Of CYTOPLASM

There are two parts of cytoplasm

- 1 - Organelles
- 2 - cytosol

## Its STRUCTURE



All these mentioned organelles are present in cytoplasm, forming its organelle part while the soluble part of cytoplasm is called cytosol.

## FUNCTIONS OF CYTOPLASM

+ Cytoplasm acts as storage house,

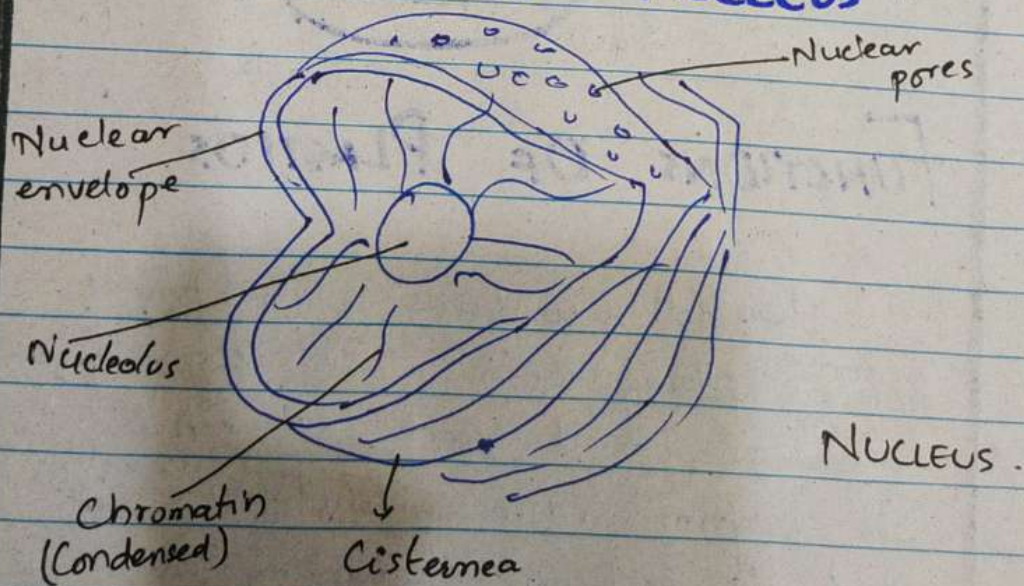


It stores important compounds like starch. Moreover various metabolic processes are taken place in cytoplasm. Cytoplasm contains several cell organelles and shows streaming movement, in which organelles float.

## Nucleus:

Nucleus was discovered by Robert Brown. It is of crucial importance as it contains cell's genetic material called DNA. It has irregular shape.

### STRUCTURE OF NUCLEUS





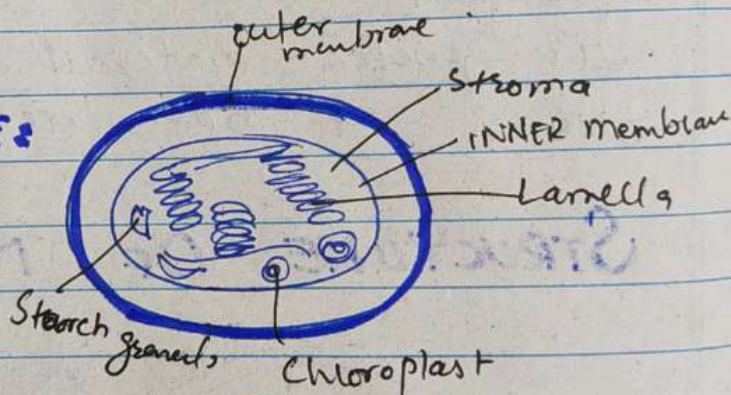
# FUNCTIONS OF Nucleus:

Nucleus contain genetic materia, controls synthesis of RNA, ensure proper cell replication, synthesize ribosomal RNA and regulates matabolic activities.

# PLASTIDS

Plastids are double membrane organelles found in the cell of plants and algae.

## STRUCTURE:



# FUNCTIONS OF PLASTIDS

Plastids contains chlorophyll ~~for~~ <sup>for</sup> photosynthesis, it synthesize pigments and store starch.

It perform various functions and aid in nutrient recycling in plants.



## QUESTION : 01

(B)

### NEPHRON BASIC FUNCTIONAL UNIT OF KIDNEY : STRUCTURE AND FUNCTIONS

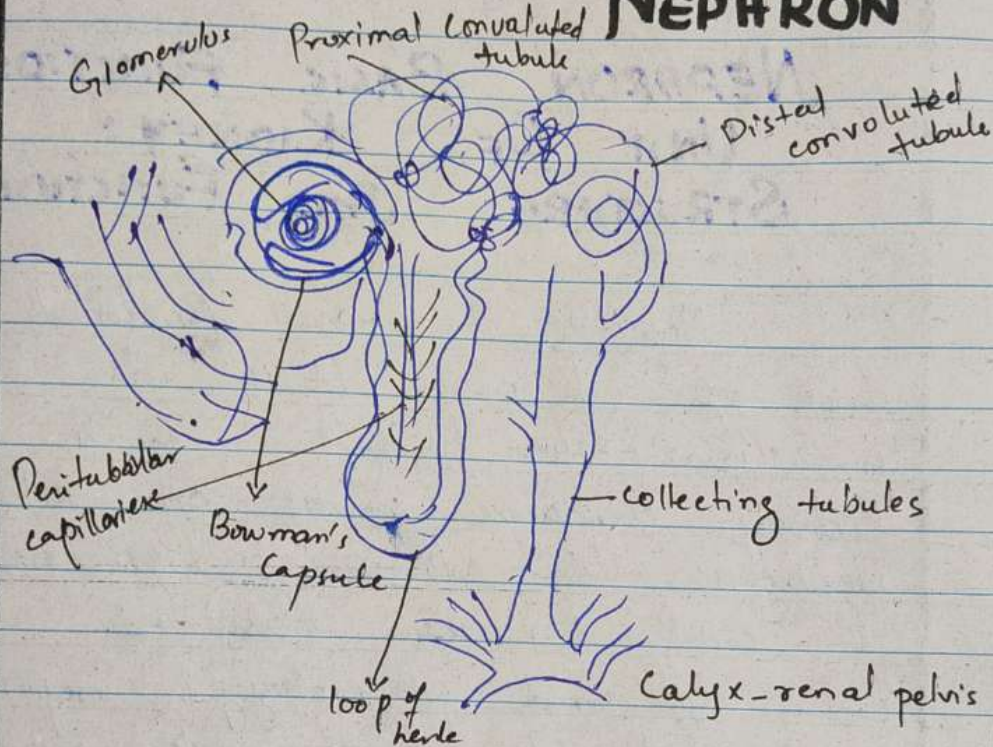
Nephron is basic functional unit of kidney. It is also known as uriniferous tubule. Each kidney contains about one million nephrons. The length of nephron is 3cm. On the basis of anatomy and physiology, nephron is divided into four parts/regions.

- ①- Bowman's capsule
- 2- Proximal convoluted tubule
- 3- Loop of henle
- 4- Distal convoluted tubule.

A Nephron is consist of twisted tubule closed at one end, open at the other with network of blood vessels. It also contains glomerulus which is consist of network of tiny blood vessels.



# STRUCTURE OF NEPHRON



## FUNCTIONS OF NEPHRON

The various functions of nephrons, for example, filtering, reabsorbing and glutamate secretion. It also secretes Carbohydrate and solutes. Addition, it ~~reabsorbs~~ excretes urine, maintain osmoregulation and balance of pH of the Blood.



## QUESTION 01. (C)

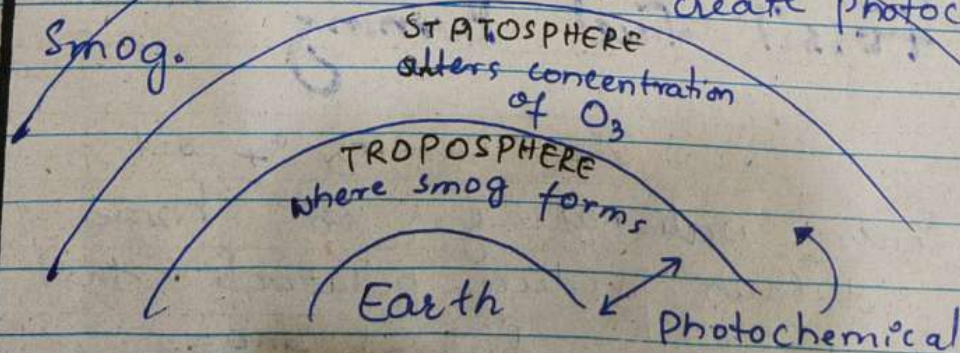
### Causes and Preventive Measures Of SMOG:

Smog is air pollution type results from combination of smoke, fog, chemical pollutants typically formed by reaction of sunlight with industrial or vehicular emission. There are various of it. However by taking certain measure this issue can be resolved.

### Causes Of Smog:

#### Natural Causes:

Pollutants like Nitrogen oxides and volatile organic compounds react under sun light to create photochemical smog.



∴ formation of smog in atmospheric layers.



Moreover, natural causes of smog are, forest fires, volcanic eruption and dust storms, can introduce particles and gases into atmosphere that contribute to smog formation.

### **Vehicular Emission:**

Combustion of fossil fuels in vehicles release  $\text{NO}_2$  and VOC, that cause smog.

### **Household Activities**

products like paints solvents, aerosols release VOCs and create smog.

### **Agriculture Activities**

Use of fertilizers such as pesticides releases ammonia and VOCs into the air, cause smog

### **Industrial emissions**

Factories and power plants release  $\text{SO}_2$  and  $\text{NO}_x$  which ~~and~~ create smog.

### **Fossil Fuel Burning**

The burning of oil, coal, natural gas in home industries produce pollutants that lead to industrial smog.



# Measures to Control Smog

## Reducing Vehicular emission

By implementing stricter emission standards for vehicles and promoting electric or hybrid vehicles, smog can be controlled.

## Switching to cleaner Energy Resources

Transition from fossil fuel to renewable energy resources like solar, wind, hydroelectric power control smog.

## Promoting green spaces:

Smog can be overcome by promoting plantation, green spaces, which absorb pollutants and improve air quality.

## Regulating Industrial Emission:

Smog can be controlled by enforcing strict regulations on emission from factories.

## Public Awareness, about disaster-

-ous impacts of on health can be



Spread in order to control smog.

## QUESTION : 01

### SOLID waste Management In Pakistan : Weaknesses:

SWM stands for solid waste management. It aims to minimize negative environmental impact of waste and promote sustainability. There are various weaknesses in Pakistan's SWM system.

### DEFINITION

It refers to collection, disposal, recycling and monitoring of solid waste materials produced by human activity. Solid waste management system have certain steps through which waste from its generation till treatment, go through various procedures.



## KEY COMPONENTS OF SWM

Waste generation



Waste collection



Waste segregation



Waste Recycling  
and Reuse



Composting



Waste Disposal



Waste Treatment



## Weaknesses in Solid Waste System of Pakistan

There are various issues in SWM, Firstly, lack of infrastructure, inadequate collection especially in rural areas, unreliable sporadic waste collection services, limited public awareness about proper disposal and related things. Insufficient recycling programs ~~for~~ to engage waste in sorting and recycling. Moreover, Over reliance on landfills, for waste disposal leads to environment degradation. Poor waste segregation of waste at the source and financial constraints ~~are~~ and limited funding are major weaknesses of solid waste management system of Pakistan.

## Conclusion

The collection and proper management of waste has several issues in Pakistan. However by taking certain measures this issue



can be resolved.

## QUESTION NO: 3

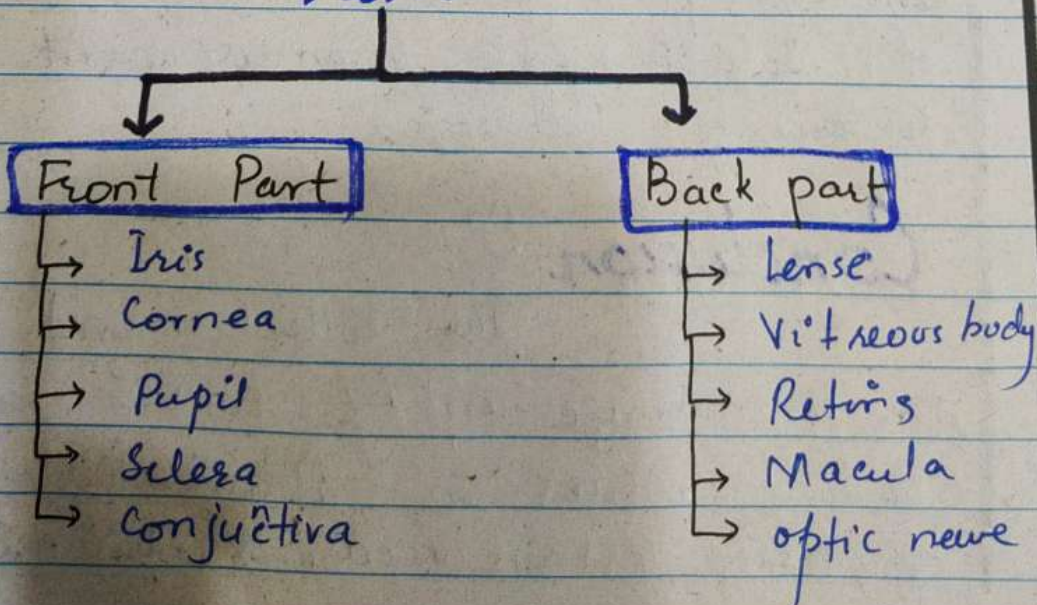
# Working Of Human eye:

## Introduction:

Our eyes are important part for seeing the beautiful world. The eye is slightly asymmetrical globe about 2.5cm in diameter.

The eye is divided into two parts

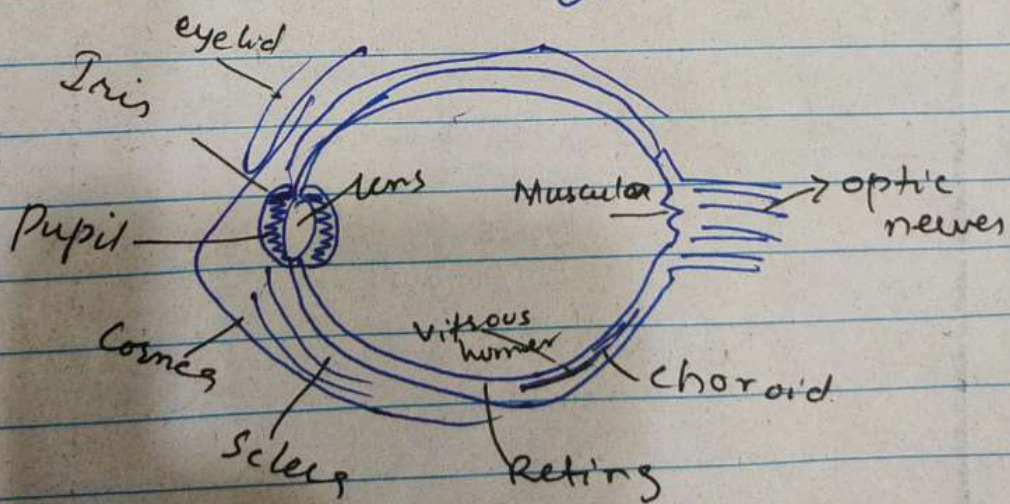
### Parts





# Working Of eye:

The eye functions by capturing light through Cornea which focuses it onto the Lens. The lens adjusts to further focus the light onto the Retina at the back of the eye, where light sensitive cells rods and cones convert light into electric signals. These signals are transmitted through the optic nerve to the brain, where they are interpreted as images. The Pupil regulates the amount of eye and the Iris controls size. The Ciliary muscles control the shape of the lens for focusing on objects at varying distances.



Structure of eye.



## QUESTION: 03 (B)

### SYMPTOMS AND PREVENTIVE MEASURES OF DENGUE AND MALARIA:

Dengue and Malaria, both diseases are spread by mosquito, of different species. Both ~~are~~ diseases resembles each other in symptoms. However the symptoms of dengue are more severe. By taking preventive measures this issue can be resolved.

### SYMPTOMS

Malaria	Dengue
Fever often associated with chills and sweats.	High fever (sudden onset) 104°F
Severe headach	Severe headach



Fatigue	Pain behind eyes
Muscle and joint pain	Joint and muscle pain
Nausea and Vomiting	Rash
Anemia	Nausea & vomiting
Sweating and shivering	Mild bleeding

## Preventive Measures for Malaria

There are measures to prevent malaria that includes, the following.

The use of insect repellents, use of the insecticides - treated bednets, indoor spraying with insecticides, preventing the Mosquito breeding and using the protective clothing and treatment by Antimalarial Medication when travelling to malaria endemic areas.



# Preventive Measures Of Dengues

There are various measures of Dengue prevention. Firstly, eliminating breeding sites, use of mosquito repellents, mosquito screen and Net, fogging and indoor insecticides, use of protective clothing and spreading awareness on proper management of waste and water.

## Conclusion:

Both diseases, dengue and Malaria are have mild to worst symptoms depending upon severity. However proper preventive measures should be adopted in order to get rid of the disease.



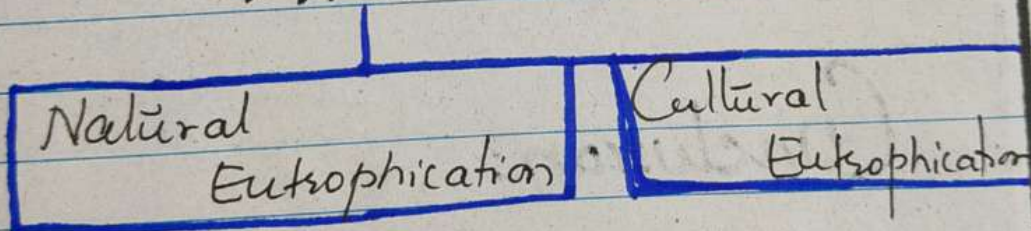
## QUESTION: 03 (C)

### EUTROPHICATION: Causes and effects

#### DEFINITION:

The excessive plant and algal growth on shallow stagnant water is called Eutrophication. It is form of pollution.

#### TYPES



### Causes of Eutrophication

Any activity which consumes Nitrogen, phosphorus, Carbon like agrochemicals remains, Soil system, water runoff add into natural water bodies cause uncontrolled growth of Algae on water. Additionally the



industries which uses agrochemical produce waste that cause eutrophication, Solid waste, organic waste, Sewage waste, municipal waste all these wastes causes eutrophication

## Impacts Of Eutrophication

There are various impacts of eutrophication. ~~are~~ Compromised quality of water, as color of water changed, color pH, taste, and suspended particles cause water pollution, Biodiversity loss, polluted environment, risk to public health, harms aesthetic value of water bodies.

Eutrophication → Decreased light penetration

↓  
Disruption in Photosynthesis

↓  
Oxygen depletion

↓  
Aquatic life suffocation

← Loss of Biodiversity

← Toxicity

↑ Altered economic balance



QUESTION: 03  
(D)

# GIS GEOGRAPHIC INFORMATION SYSTEM

## DEFINITION

A system designed for capturing, storing, analyzing, managing and presenting spatial or geographical data.

## FUNCTION

It is used to analyze

- geographic data
- create map
- visualize data patterns

## APPLICATIONS:

It is used in urban planning, environmental monitoring, disaster management and resource management, Agriculture, public health and wild fire conservation.



## QUESTION 03 (D)

# GPS GLOBAL POSITIONING SYSTEM

### DEFINITION

A satellite based navigation system, that provides geolocation and time information.

### FUNCTIONS

GPS determines exact location of an object or person by receiving signals from satellite and calculating its position using triangulation.

### APPLICATIONS

It is used in navigation, surveying, mapping and tracking system.

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