ARFA TARIQ

GSA- TEST-2

BATCH- 01/ONLINE.

Q1(a)
Ans.
Cell

→ The word cell derived from Latin word cellula which means small rooms

→ Cells are the basic building blocks of all living organism consider as basic unit of Life.

→ Human body consists of trillians of cells.

→ It consists of various organelles that work together to maintain life

Cytoplasm

Structure, Cytoplasm is a jelly like semi fluid substance found between the nucleus

and cell membrane.

→ It contains water, salts and organic molecules

→ It also called as house of organelles like Endoplasmic reticulum, Golgi apparatus, Mitochondria etc

Function

→ It provides support & shape to the cell.

→ It act as a medium for chemical reactions.

→ Also store nutrients and waste products

→ It act. as a mean of transport of genetic materials

→ It facilitate movement of materials within the cells.

ii) Plastids

Structure → only present in Plants

→ plastids are double membrane bounded organelles that contains pigments of different colours

→ There are 3 types of Plastids.
   a) Chloroplast (b) Chromoplast (c) Leucoplast

a) Chloroplast

→ These are Plastids that present in green parts of the plants.

→ It contains chlorophyll

(b) Chromoplast

→ These are the coloured parts pigments, that provide colours to plants other than green.

(c) Leucoplast

→ These are the colourless pigment and present in underground parts of plants.

Function:

→ Chlorophyll found in chloroplast take part crucial role in Photosynthesis.

→ Chromoplast that give colour to fruits & flowers helps to attract insects for pollination.

→ Leucoplast store essential nutrients including starch, oils or protein

iii) Nucleus

Structure

→ It is a Spherical organelle, Surrounded

by Nuclear membrane

→ It contains Nucleoplasm, Chromatin (DNA) and a nucleolus, & discovered by Robert Brown.

Function:

→ It controls all the cellular activities including growth, metabolism and reproduction

→ It stores genetic information (DNA), responsible for inheritance

→ Also regulates protein Synthesis through RNA.

x ——————— x

Q1(b)

Ans

Structure of Nephron.

→ A Nephron is the structural and functional unit of Kidney, responsible for blood filtration and urine formation.

→ Each Kidney contains approximately 1 to 1.5 million Nephron

→ The Structure of Nephron mainly consist of Bowman's Capsule & Glomerulus, PCT, loop of Henle, DCT, collecting duct etc

• Bowman's Capsule & Glomerulus

→ Bowman's capsule is a cup shaped structure that surrounds the glomerulus
→ A glomerulus is a network of blood capillaries.
→ It perform Ultrafiltration.

• Proximal Convoluted Tubule

→ PCT located after the Bowman's Capsule, it has microvilli to increase absorption.
→ Its reabsorbs glucose, Amino Acids, vitamins and salt into blood & maintain PH

• Loop of Henle

→ It consists of a descending limb (Permeable to water) and ascending limb (impermeable to water)
→ It concentrates urine by absorbing water & salt

• Distal Convoluted Tubule

→ It regulates ion balance (Na^+, K^+), PH, BP by responding to hormones like aldosteron.
→ It is a short nephron segment b/w loop of Henle and collecting duct

Collecting Duct

→ The last part of a long twisting tube that collects urine from Nephrons and perform final reabsorption under the influence of ADH hormone.

Functions of Nephron

- Filtration

It Removes waste, toxins and excess substance from blood i

- Reabosption

It reabsorbs essential nutrients, water and ions back into the bloodstream.

- Secretion

It actively removes additional waste and ions into the tubule and do Secretion

- Urine formation

It concentrates waste into urine also maintain water and electrolytes balance.

- Homeostasis

It also regulates blood pressure, PH, blood volume to maintain homeostasis

Q1(c)

Ans

Causes of Smog

Industrial pollution:

The main cause of smog is industrial pollution because factories emits Sulphur dioxide and other chemical matters during production processes

Vehical emission

→ The next cause of smog is the heavy traffic in cities like Lahore, Karachi produces large amount of Nitrogen Onide and also Volatile organic Compound. These emission contributing to smog.

Burning Fossil Fuels:

→ When fossil fuel are burned, they release large amount of CO_2, NO_2 and other GHGs.

→ Power plants burning coal in India and China create dense smog due to excessive emission.

Agricutural Activities

→ Agricultural activities like burning of crop also contribute to Smoge

→ Like each winter, an estimation is that 3.6-5 of 8.5 million tons of rice residue is burnt to plant wheat in punjab which ~~cau~~ is the main cause of smog largely in punjab.

Natural Causes

Natural Causes of smog includes Volcanic eruption emit SO_2, Forest Fires (california wildfire release smoke) and dust Storms.

Preventions.

→ <u>Reduce Vehicle emission</u>:
- Encourage people to use public transportation, carpooling and electric vehicles to lower emissions
- Promote cycling and walking for short distances, which not only reduce pollution but also improve health.
- Like London have implemented electric buses and bike-sharing system to reduce emission, we should also take this type of actions.

→ <u>Promote Clean energy</u>.
- The next step to prevent from smog is that replace fossil fuels with renewable energy resources such as solar, wind, hydropower to minimize emission
- like Germany has shifted to renewable energy, reducing relience on coal based power plants.

→ <u>Control of industrial pollution</u>.
- Government has to enforce strict regulation to monitor industrial emission

→ Also industries Should install filters or Scrubber to remove pollutants before releasing in air

→ Develop industrial zones far from the residential areas to minimize exposure of harmful gases.

Avoid Crop burning

→ Introduce modern agriculture techniques like mulching and composting to manage crop residues without burning.

→ Provide awareness programs and financial assistance to farmers for adopting eco-friendly practices

→ Also by promoting the use of Biogradable waste management System to replace burning, we can control Smog.

Increase Plantation

→ For this purpose, Launch tree plantation drives in Urban areas to absorb pollutant and improve air Quality, As trees are essential part to reduce pollution and Smog

Q1(d)

Ans.

Solid waste management

→ Solid waste management is the process of collecting, transporting, processing recycling and disposing of solid materials into a safe and eco-friendly manner.

→ Its objectives to reduce negative impacts of waste on public health and on environment

Weaknesses of SWM

Lack of Proper planning

→ The main weakness of SWM of Pakistan is the absence of a national-level strategy and effective policies for waste management.

→ It is due to the poor coordination among government authorities.

Insufficient Infrastructure

→ The next weakness is inadequate waste collection vehicles, equipment and dumping sites, even most of the cities lack sanitary landfills and proper disposal system.

Poor recycling Practices.

→ The another weakness of SWM is recycling depends mainly on informal workers rather than organized system
→ These workers collect recycleable materials like plastics, metals, papers etc however they lack training

No waste Segregation

→ Another or main weakness of SWM in Pakistan is that waste is not separated at the source, mixing recyclable, organic and hazardous waste.
→ This makes recycling and treatment more difficult.

Low waste Collection rate

→ In Pakistan only 50-60% of waste is collected in urban areas, while in rular areas no formal waste collection and management system exist.

Financial Problem

→ The government does not provide enough funding for modern wast management technologies due to this, most of the work relies on manual labor which is less efficient.

Weak Law enforcement

→ In Pakistan, the laws related to waste management such as pakistan environmental protection act (PEPA) are not strickly followed, which lead to violation

Lack of Awareness

→ Many people are unawer of proper waste disposal methods. So, there is need to educate people about recycling and reducing waste.

Q3(a)

Ans.

Human Eye Working

→ The human eye works like a camera allowing us to see by focusing light onto a sensitive layer called Retina The detail of working of eye are as follows :-

Enterance of light

→ In human eye, light first enters through the cornea
→ Cornea is the transparent outer layer
→ The cornea bends and the incoming light help to focus them properly

Control of light

→ After the "light" passing through the cornea, light enters into pupil.

→ pupil is the opening in the center of Iris.

→ Then Iris (coloured part of eye) control the size of pupil to adjust the amount of light entering the eye.

→ However in bright ligh, pupil become smaller to reduce light entry while

→ In dim light, pupil becomes larger to allow more light inside.

Focus (Lense)

→ After that light then passes through the lens, which focuses it further onto the retina.

→ For this, the ciliary muscles surrounding the lense change its shape to adjust focus for near and far objects.

Image formation

→ Retina is a light sensitive layer located at the back of eye

→ It contains Photoreceptor cells called rods and cons.

→ Rods detect dim light and help in black - and white vision.

→ Cons detect bright light and allow us to see colours

→ Then retina converts light rays into electrical signal.

Signal Transmittion

→ After that the optic nerve carries these signals from retina to brain.

→ The brain processes these signals to form a clear and upright image of the object we see.

x —————— x

Q 3 (d)
Ans:-

GIS	GPS
→ It is abbreviate as Geographic information System.	Its abbreviation is Global positioning System.
→ It can be define as A system used to collect, store, analyze and display geographic data.	It can be define as A setellite based system used to find out exact locations on earth.
→ It helps in mapping, analyzing trends and managing & spatial data	It provides location, direction and navigation information
→ Its components include hardware, software, maps and users for managing data.	Its components includes satellites, recievers and signals for positioning.

Its function is that it is used for Creating maps and studying geographic pattern.	Its function is that it is used for tracking positions, guiding routes and measuring distance.
→ Examples of use: Urban planning, disaster management and environmental studies	Example of use: Vehicle navigation, and military operations

Q3(b)
Ans

Malaria

→ Malaria is the world's largest Parasitic disease. It is caused by the plasmodium (Parasite) through the bite of mosquito in human.

→ Every year 300—500 million people affect from this disease . 3 million people die, most of them are child under 5 years.

Symptoms

→ The Symptoms of Malaria are below,

- High fever with chills and sweating is the first symptom
- Headach and muscle pain also feel by the patient.
- Fatigue with weakness can also feel.
- In severe cases Anemia and Juandice also see in patients.
- Nausia, Vomit and may be diarrhea.

Preventive Measures

Use of Nets

→ The main prevention is that to use mosquito nets and repellent to prevent from mosquito bites.

Use of Sleeved clothes

Another prevention is that use long-sleeved

clothes and also use covered shoes to prevent from mosquito biting on open areas of body.

Drain Stagnent water

→ It is the most important prevention to drain Stagnent water where mosquitoes breed like ponds and puddles.

Use Spray

→ To prevent from Malaria, should spray insecticides and also use mosquito coil.

Take Medicines

→ At last, should take Anti-Malarial medicines when travelling to malarial affected region

Dengue

→ Dengue (The break bone fever) is a infectious viral disease. It is a mosquito bite disease caused by one

of four closly related virus known as DEN-1, DEN-2, DEN-3 and DEN-4 virus.

→ This disease is endemic in more than 100 countries throughout Africa, America, Asia etc

Symptoms :-

→ The 1st main symptom of Dengue is suddenly high fever (upto 104°F) with Severe headach and pain behind the eyes.

→ Next symptom is the pain in Joint and Muscle

→ Skin become rash and red spot found on skin.

→ Nausia, vomiting and fatigue are also the Symptoms.

→ In Severe cases, bleeding from nose, gums or under the skin which may lead to dengue hamorrhagic fever.

Prevention

Use of nets and repellent :-
→ Avoid from mosquito bites by using repellents, mosquito nets and screens on windows and doors.

Wear light coloured clothes
→ To prevent from mosquito, should wear light coloured clothes with long sleeves and pants.

Use insecticides
→ Next prevention is that Use insecticides and keep surroundings clean and dry.

Eliminate Standing water
→ Also eliminate standing water in pots, tires and containers to stop mosquito breeding