General Science and Ability.

Name: Saliha Malik.

Q2- **a-** Briefly explain lipids. what are some types of lipids? what are their functions?

. Lipids:

Lipids are organic compounds. Lipids are hydrophobic means they do not dissolve in water. They involve in biological processes like cell membrane structure, signalings. etc.

. Types of Lipids:

There are major four types of lipids:

1- Triglycerides:

Triglycerides composed of glycerol and three fatty acids. They are also called fats. They are responsible for insulation and long term energy storage in the body.

2- Phospholipids:

Phospholipids composed of glycerol, two fatty acids, and phosphate group. It is bilayer lipids in the cell membrane which provides structure and protection to the cell.

3- Steroids: Consist of fused rings. Steroids and cholestrol hormones like estrogen or testosterone are involved in this type of lipids. They are helpful for energy storage.

4- Waxes:

Waxes consist of fatty acids. They are responsible for the signaling and transportation method. They are helpful for the insulation as well.

6- Enlist a few measures of energy conservation and its sustainable use.

. Energy Efficient Appliances:
Utilization of energy efficient appliances can reduce the energy consumption. Appliances involve LED, energy saver bulbs, energy-efficient refrigerators, etc.

. Small Grids and Energy storage:
Small grids and energy storage can optimize the energy distribution which can reduce the energy consumption and wastage of energy.

. Efficient Energy Usage in Transport:
Use of electric transportation or public transportation can reduce the investment of energy in the transportation sector.

. Behavioral Changes:
Behavioral changes is the major or important measure of energy conservation. Changing habits like turning off light, disconnect the device, etc when

not in use can save the energy at optimum level.

- **Support of policies:**
  Government should make policies for energy conservation. Government should set incentives for those who take precautionary measures for energy conservation. This will reinforce all citizens for taking measures for energy conservation.

- **Energy - Efficient machinery.**
  In industrial sector, there should be energy storage machinery like waste heat recovery machine. Such type of machinery conserves major portion of energy.

- **Promoting Renewable Energy Source:**
  Utilizing more and more renewable energy sources like hydroelectric power, solar energy, wind energy, etc. It reduces the dependency on fossil fuels. It helps in reducing or using the energy efficiently and saves the economy as well. Because dependency on fossil fuel is very expensive.

c- **what is hydrogen bonding? Give elaborating structures as example.**

Hydrogen bonding is a bond between hydrogen atoms which are covalently bonded with highly electronegative

atoms which pulls the electron density and makes it partially positive and it attracted towards the lone pair of electrons of another electronegative atoms.

• Structures as examples:
• Water: Water (H_2O) is a classical example of hydrogen bonding. In H_2O, oxygen is highly electronegative atom which pulls the electron density towards itself and become partially negative and hydrogen becomes partially positive atom. This hydroge atom of one water molecule is attracted towards the oxygen atom of another water molecule.

• Ammonia (NH_3):
In NH_3, nitrogen is highly electronegative atom. It pulls the electron density and becomes partially negative and hydrogen atom becomes partially positive. It attracted towards the nitrogen of another ammonium molecules.

• Functions:
→ DNA:
In DNA, there is hydrogen bonding between adenosin - thyamine, cytosine which is crucial for the double helical structure of DNA.
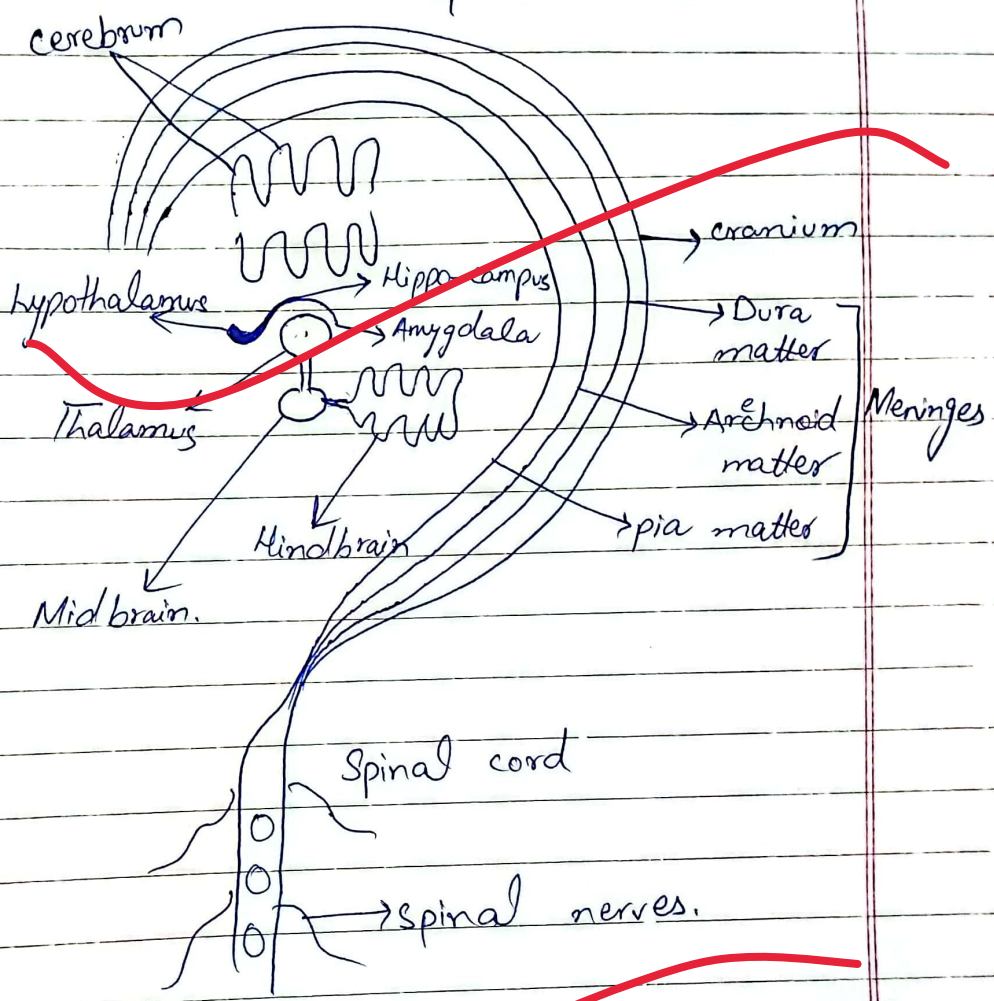
d— Discuss the nervous system of human body.

→ Nervous System:

Nervous system consist of two systems; central nervous system and peripheral nervous system.

· Central Nervous System:

Central nervous system consist of brain and spinal cord.

cerebrum
hypothalamus
Thalamus
Midbrain.
Hippocampus
Amygdala
Hindbrain
cranium
Dura matter
Arehnoid matter
pia matter
Meninges
Spinal cord
spinal nerves.

1— Brain:

Brain is the major part of central nervous system. It controls the body system and maintains the human body.

• **Cranium:**

Cranium is the bony structure which provides protection to the human brain.

• **Meninges:**

Meninges is the fluid-filled region. It provides cushion to the brain. Dua matter, Archenoid matter, and pia matter are collectively called meninges. They are also called "Shock Absorber".

• Brain is divided in further three parts:

1- **Forebrain:**

Forebrain is further divided into three parts:

• **Cerebrum:** Cerebrum is responsible for memory storage, intelligence, learning processes, etc. The 10% of brain consist of cerebrum part.

• **Limbic System:**

Hypothalamus: Hypothalamus is responsible for control of hunger and thirst, temperature, and heart rate.

Hippocampus: Hippo-campus is responsible for memory.

Amygdala: It is responsible for emotions like emotions of sadness, happiness, anger, fear.

• **Thalamus:** Responsible for the transfer of sensory information to

to the limbic system

2- **Mid brain:**

Mid brain is used as a connecting point between forebrain and hindbrain. It controls eye movement.

3- **Hind brain:**

. Medulla Oblangata: It controls the breathing, heart rate, overall all the involuntary actions.

. Pons: It controls the reflex & sleep cylce. It is responsible for the transition of slep and wakefulness.

. Cerebellum: It controls the voluntary actions. It is responsible for body coordination.

2- **Spinal Cord:**

Spinal cord is the backup. It connects the brain and all other peripheral parts of body. It has spinal nerves which connects the brain and other body parts and transmit messages.

. Peripheral Nervous System:
It has two divisions :
Sensory Division
Motor Division.

. Sensory division transfer the message from body to the central nervous system.

- Motor division transmits the message to the muscles and glands.

→ Somatic Nervous System:

It controls the voluntary actions like heart rate, breathing muscles movement.

→ Autonomic Nervous System.

It controls the involuntary actions like blinking of eyes, heart rate, breathing, etc.

It is further divided into two parts:

1- Sympathetic system: It is responsible for keeping the body in fight or flight position like increase in blood pressure, heart rate, etc.

2- Parasympathetic System: It is responsible for relaxation of body like low heart rate, blood pressures etc.

Q4- a- what is hepatitis? Explain it causes, symptoms, and preventions.

- Hepatitis:

Hepatitis is the liver inflammation disease. It can be acute or chronic liver disease. It leads to liver damage.

→ Causes:

- Viral Infections:

Hepatitis A: Hepatitis cause through hepatitis A virus. It is due to

contaiminated food or water.

Hepatitis B: It is cause by hepatitis B virus and due to the bodily contacts, blood-to-blood transfusion, transfer of semens, etc.

Hepatitis C: It is caused by hepatitis C virus and due to the infected syringe or contaiminated water.

Hepatitis D: It is due to the hepatitis B. A person having hepatitis B, may have hepatitis D. It can worsen the symptoms of hepatitis B.

→ **Symptoms:**
Hepatitis can cause symptoms like jaundice, vomiting, abdominal pain, fever, itchy skin, black stool, etc.

• **Non-Viral Causes:**
Excessive consumption of alcohol
Use of contaiminated water and food.
Having no proper sanitation.

→ **Prevention:**
• Proper use of Sanitation.
• Avoid alcohol consumption.
• Use clean water and food.
• Adopt safety behaviors like using new syringes.

b- Elaborate a few methods of food preservation.

Food preservation is necessary to ~~elaborate~~ prevent the food from spoilage. It maintains the flavour and texture of food and prevent it from micro-organisms that deteriorate the food.

• Refrigerator and freezing:
Refrigeration and freezing of food keeps the food preserve. It kills the micro-organisms and prevent the food. Fore example, eggs, milk, meat, etc.

• Salting:
Salting is an ancient method of food preservation. Addition of salt in food to keep it prevent from spoilage. Salt is acidic in nature so it prevent the food from micro-organisms. Fish and meat can be preserved through this method.

• Pickling:
In this method, food is immerse into acidic solution. It prevents the oxidation of food.

- Canning:

In this method, food is preserve in air tight container. It removes the air which prevent the food from being deteriorate.

- Drying:

Drying involves the dry of food which prevents the growth of yeast, molds, bacteria and grow water. Air dry, sun dry, etc can be used in this method.

For example, dry meat, dry raisions, apricots, etc.

c- Explain fertilizers. What are their types?

- Fertilizers:

Fertilizers are added to the soil that helps in plant growth and crop yeild. It provides nutrients. There are two types of nutrients; organic and inorganic fertilizers.

1- Inorganic Fertilizers:

Inorganic fertilizers are chemical fertilizers that are more concentrated. It speeds up the plant growth.

- Nitrogen fertilizers:
  Nitrogen fertilizers provides nitrogen which is vital for leaves and plant growth. For example, ammonium nitrate, nitrious, etc.

- Phophoric fertilizer:
  It provides phosphorus which is responsible for fruiting and roots growth.
  For example, ammonium phosphate.

- Potassic fertilizer:
  It provides potassium. It is vital for overall plant growth and water regulation.

2- Organic Fertilizers:
  Organic fertilizers are natural fertilizers. They are less concentrated than chemical fertilizers.

- Plant-based:
  Plant based fertilizers involves the plants composts, seaweed extracts, leaves composts, etc. They are natural fertilizers which provide nutrients to soil.
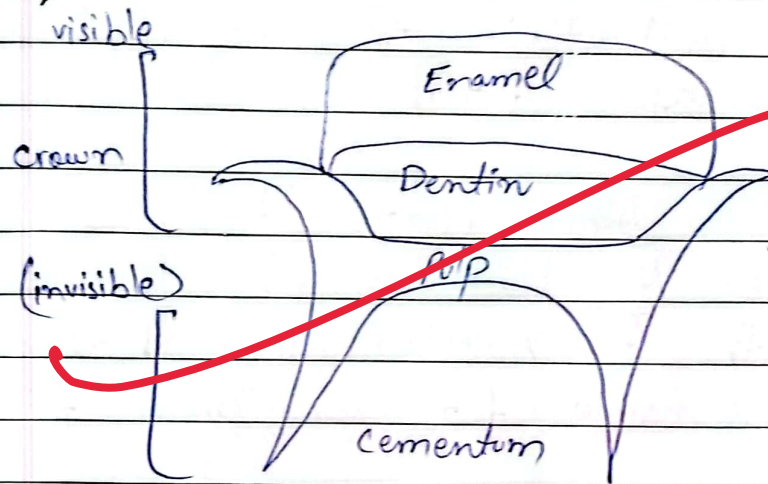
- Animal-based:
  Animal based fertilizers involves animal manure, fish manure, blood meal, etc. It provides naturally nutrients to soil and keep the soil rich in minerals and nutrients.

• Bio-fertilizers:

Bio-fertilizers involves the decomposition of fungi, algae, micro-organisms, molds, yeasts, etc. They also provides nutrients and important for crop yeilding.

d- what is anatomy of human tooth?

→ **Human Tooth:**

visible
Crown

(invisible)

Enamel

Dentin

Pulp

Cementum

• Types:

→ **Incisors:** These are frontal teeths. Responsible for cutting of food.
There are total eight incisors.

→ **Canines:** These are next to the incisors. They are four in numbers. They are pointed teeths which are responsible for tearing of food.

→ **Premolars:** They are eight in numbers and are flat teeths. They help out in grinding of food.

→ **Molars:** They are next to premolars. They are twelve flat

teeths which are responsible for chewing of food.

- Structure:

→ Enamel:
It is outermost part of teeth. It is stronger part. It provides support to tooth.

→ Dentin:
It is strongest part and provides protection to internal content of teeth.

→ Pulp:
It is inner part. It has capillaries. It helps in nourishment of teeth. It has nerves that are responsible for sensation of teeth.

→ Cementum:
It is anchored part. It helps the teeth to attach with the jaw bone.