Question - 2

a) **Lipids:**

A diversed group of organic compounds that are hydrophobic (water-soluble) ~~and~~ or amphipathic (partially soluble) are called lipids. These are made up of carbon, hydrogen and oxygen atoms, but they contain fewer oxygen atom compared to carbohydrates. lipids are essential for various biological functions, particularly in storing the energy, structural roles and signalling.

Major types of Lipids

Types	Structures	Functions
Triglycerids	Glycerol + 3 fatty acids	Energy storage, insulation and protection
Phospholipids	Glycerol + 2 fatty acid + PO4	Structural component of cell membrane.
Steroids	4 carbon Rings	Hormones, cholesterol and signalling.
Waxes	long chain fatty acids	water proofing and protection.
Glycolipids	lipid + carbohydrates	cell recognition and communication.

b) Measures for energy conservation and its sustainable use

1) **Promoting Renewable Energy Sources:**

- Use of solar energy, wind, and hydro and geothermal energy as to fossil fuels.
- Solar panels and wind turbines are clean and renewable options.

2) **Sustainable Transportation:**

Using low energy vehicles to reduce dependency on fossil fuels. Also reduces the Carbon emission.

Such as: e-vehicles, metro buses, electric scooty.

Public Bus → low energy use / person

Electric train → lowest energy use / person

Private car. → high energy / person.

تاریخ:

3) **Restructuring Building designs:**

Adopting the concept of sponge cities where urban area are designed to absorb, store and utilize rain water. It avoid urban flooding as well, enhance water resources, and improves eco-system. This concept designed to integrate natural systems like wetlands, green spaces and permeable surfaces with modern structure.

For instance China had built 30 spong cities.

- Moving from horizontal to verticle designed building to use rest land area for gardening, parks, and ~~forest~~ tree planting.
- Using energy effiecent building designs to minimize heating, cooling, and lighting needs.
- Installing Insulation, energy efficient windows, and passive heating (sular) technique.

تاریخ: _____

4) Energy Efficient Appliances:

Using LEDs, (light emitting diodes) bulbs, energy star rated devices and smart home techniques as converters.

Devices consuming less energy with quality performance.

⇒ Energy Consumption comparision

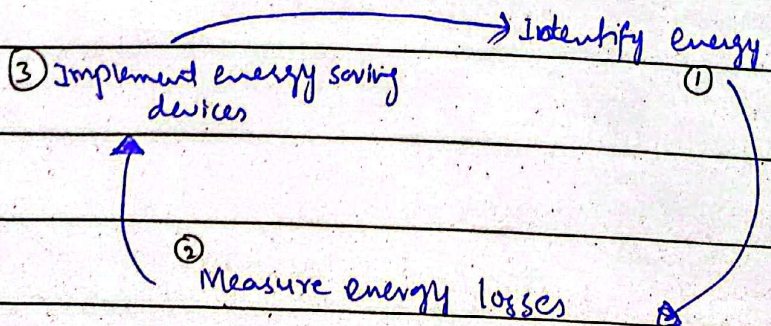
Traditional Bulbs: 60watts → LEDs: 10 watts

Inefficient Motor: 100 units → Efficient Motor: 75 units

5- Energy Audits:

Measures to conduct audits for buildings industries and homes to assess energy consumption patterns. implementing to corrective energy loss minimization measures.

Steps to Energy audit



6- **Policy and Regulations**

Government should enact policies like energy conservation building codes (ECBC) and provide subsidies for renewable energy adoption.

- Strict monitoring of Industries energy consumption is vital.
- Educating and aworing local people about the Energy Conservation.

→ For instance: adopting as habit to turn off lights when no one is in the room annually can save upto 10 - 15 % energy.

c) **Hydrogen Bonding :**

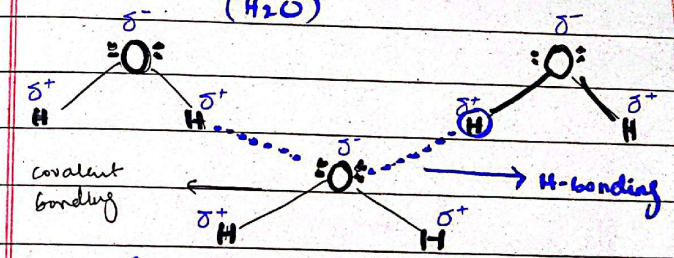
The bond between the hydrogen atoms chemically, and between the high electronegative atoms. Such bonds are very weak and its total strength is (5 - 10 Kcal per bond) is much less than strength of covalent bond.

The Hydrogen bonds are represented with dotted lines between two atoms (.....).

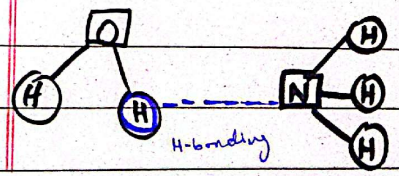
For example:

Hydrogen Bond between two molecules of water - (H_2O)

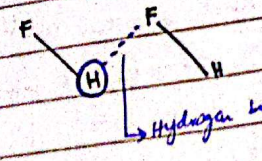
① (H_2O)



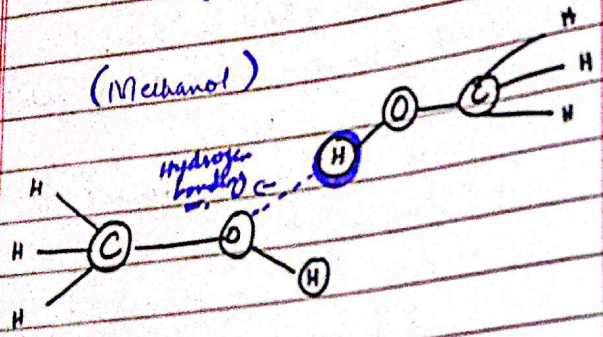
② (H_2O + Ammonia NH_3)



(5) (Hydrogen Flouride)



(4) (Methanol)



a)

Nervous System of the Human Body

The nervous system is made up of the central nervous system (CNS) and peripheral Nervous system (PNS). These systems work to collect and interpret the data from the body's internal and external environment and control responses.

→ **central Nervous System (CNS)**

It manages the body essential function
Made up of the brain, spinal cord
It receives the sensory information
and coordinates an appropriate response.

→ **Peripheral Nervous System (PNS)**

It connects the CNS to the rest of the body. Nerve branches out brain and spinal cord. extending to muscles and other parts of the body

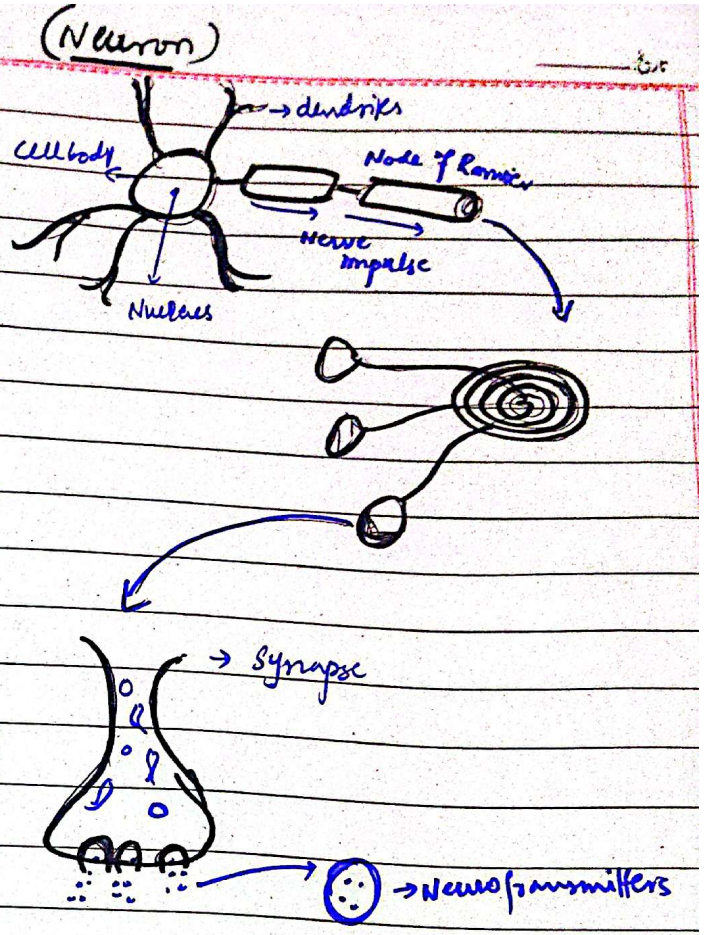
Neurons: highly specialised cells that transmit chemical and electrical information in the body - out of it use short branched extensions called "Dendrites" to recieve nerve impulses from surrounding cells. These messages then travel through the cell body (Somatic cells) to the Axon, a thread like structure. The impulse moves through the Axon and is transmitted via chemical or electrical signal that pass through a synapse.

→ **Neurotransmitters:** the chemicals that relay signals between neurons and bodily tissues - which includes Adrenaline, Dopamine, and endorphins.

Nerves:

Sensory	**vs**	**Motor**
Nerves which transmits the information from ~~body~~ brain to body.		Nerves which transmits signals from body to brain.

(Neuron)



(Diagram of Neuron).