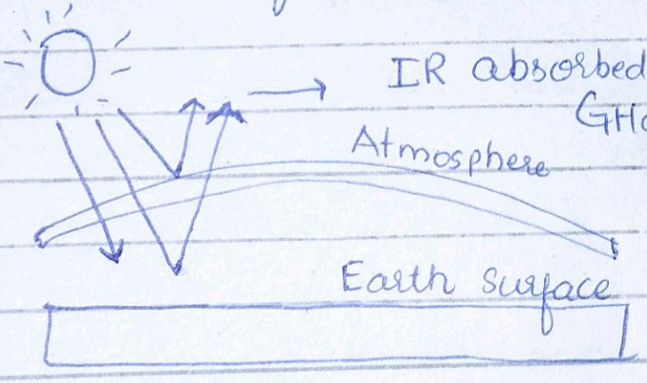
Question 1

(a)

Enhanced GHE in context of global warming.

(A) Introduction

When Sunlight reaches the earth it might be reflected or absorbed by the earth. Once absorbed, planet releases some of the energy back into the atmosphere called Infrared Radiations. Greehouse gases CO_2, CH_4, N_2O absorb energy preventing the loss of heat thus warm the atmosphere called **green house effect**. Thus, it globally warm the atmosphere called global Warming.



(B) Industrial Revolution contribution to global Warming

Since the industrial Revdution began around 1750, human activities have contributed substantially to climate change by adding **CO_2** and other gases. The green house gas emmission have increased the greenhouse effect and cause earth's Surface temp. to rise

called enhanced green house effect.

(C) Anthropogenic factors contribution to GHE:

Radioactive and nuclear waste increase the emmission of CO_2 and other greenhouse gases. Landfills release a vast amount of CH_4, which is a major contributor in global warming. Fertilizers and industrial process release N_2O gas. Tropospheric O_3, CFC-12, HCFC-22 from liquid coolants, foams, refrigirators, SF_6 from dielectric fluids are the major GHGs released by human activity.

(D) Evidence of global warming:

Rising global warming resulted in floods, droughts or increase acid rain. The planet's oceans and glaciers are also melting, rising sea levels, cyclones, and hurricanes are because of global warming. **Sea level change** has been gauged by tide gauge measurements, **Arctic Sea loss**, **Ice cores** analysis and **pollen** analysis to infer the rapid climate change because of Greenhouse gas emmission.

(E) Treaties to overcome GHE:

Koyoto protocol (1997) and Paris agreement (2015) are the major treaties to limit the greenhouse effect.

(b) Role of heart in human Body:

Heart supplies, clean and transport blood to all parts of the body. It is one of the vital organ in an living organism. Everyday, heart pumps **7600 ℓ** liters of blood and beat about **100,000 times**

1- Chambers: A human has four chambers of heart, two upper articles and two lower ventricles. Articles collect blood from the body and send to the ventricles and ventricles pump blood to the vessels and veins to carry it away.

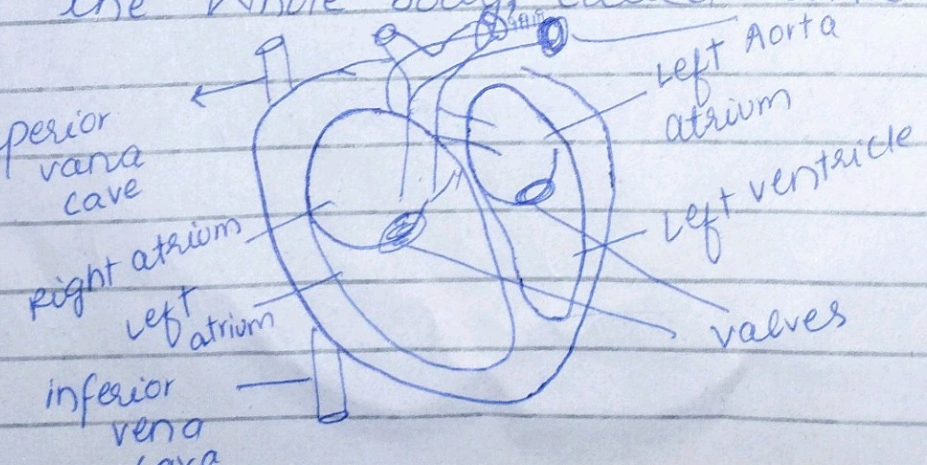
2- valves: Four valves within the heart prevent blood from flowing backward.

The Right atrio-vententricular valve has three flaps called the tricuspid valve.

The left atrio-ventricular valve called the bicuspid valve.

The right semilunar valve between the right ventricle and the pulmonary artery to lungs to carry deoxygenated blood.

The left semi-lunar valve between the right ventricle and aorta to carry oxygenated blood and to distribute it to the whole body, called aortic valve.

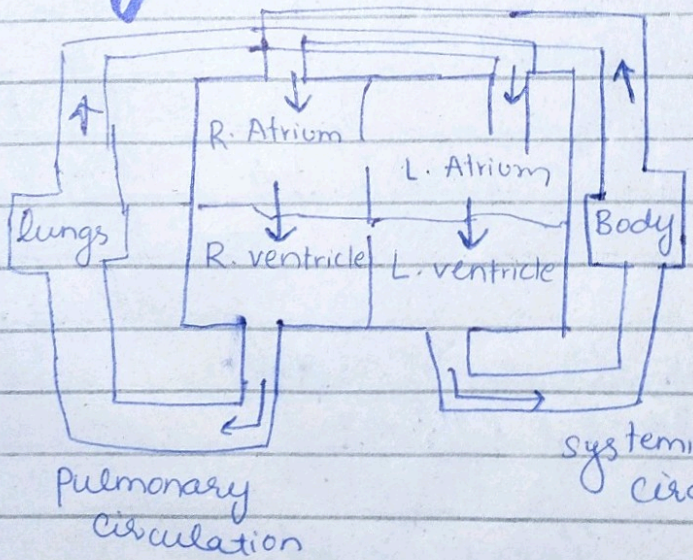


3- Blood Circulation

The oxygenated poor blood feeds into the two larger veins inferior vancava and Superior vana caval, Which collectively drains into the right atrium. Right Atrium pumps blood to the right ventricle via tricuspid valve. Which then pumps into left and right lung via pulmonary arteries. Here blood is completely oxygenated and then pumps to left atrium which then eliminates to left ventricle via bicuspid valve after that it supplied to aorta and whole part of body. TWO many circulations **Systemic** and **pulmonary circulation**.

Functions of heart

To complete Checkup of blood pressure Systole and Diastole.



Normal blood pressure range is 120/80 mm Hg. Also, to Count heartbeats 70-90/minut and it completes the cardia cycle.

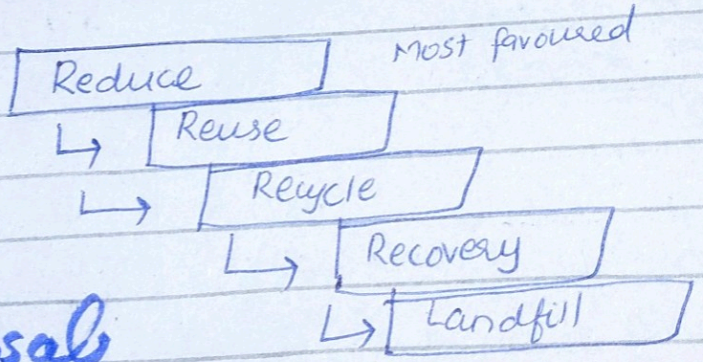
(C) Waste Disposal Techniques

European union waste directive (1870) executed waste management policy. It involves the hierarchy of complete waste Disposal. The activities assosiated with complete solid waste management are:

(a) Waste generation
(b) Waste collection, Storage
(c) Handling, Processing
(d) transfer & transport
(f) Disposal

Waste Hierarchy concept:

The waste management hierarchy ranks the various management strategies from most to least environmentally Prefered



Waste disposal Techniques

1- Recycling:

Recycling waste material (paper, metals, glass,) into new products. It saves energy and reduces environmental impact. It requires sorting, cleaning and remanufacturing

2- Composting:

Biological decomposition of Organic wastes (food scraps, plant material). It has several advantages, as it is Eco-friendly reduces landfill waste, although it is a slow process and requires separation of Organic material.

3- Landfilling:

It is the most common method for municipal solid waste. It is highly engineered structure and carefully designed underground structure. Structure of landfill includes **bottom lining, Leachate collector, Methane collector and Cover.** It is cheap and simple. But it has high risk of pollution and CH_4 production.

4- Incineration:

Waste is burned at high temperature. Volume of waste is reduced to **80-90%.** It reduces waste volume but produces highly toxic gases and ashes.

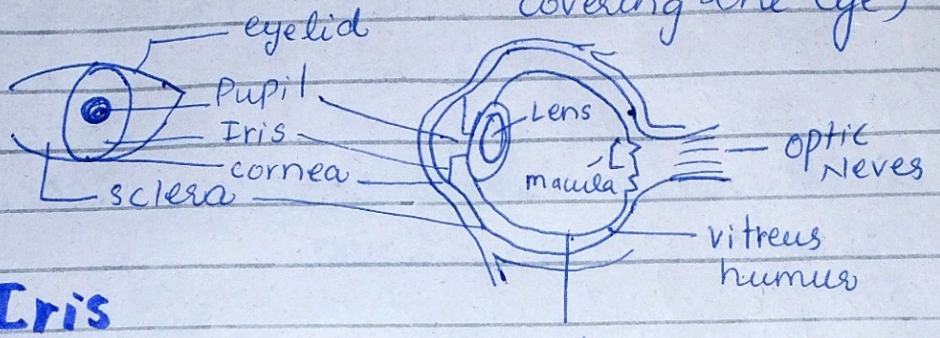
5- Pyrolysis and Gasification:

It is a themochemical method for treating waste. It involves decomposition without oxygen and partial oxidation. It is useful for energy recovery but it has high cost and technicaly complex.

(d) Human eye

Human eye is vital for seeing the world. The eye is slightly assymetrical globe, about one inch (2.5cm) in diameter. The front part of the eye:

a - The Iris (pigmented part)
b - The Cornea (a clear dome over the Iris)
c - The Pupil (Black circular opening in the Iris)
d - The Sclera (The white part)
e - The Conjunctiva (layer of tissue covering the eye)



(a) The Iris
Colored part of the eye.
It controls the size of the Pupil.

(b) Pupil: Dark in colour, control the amount of light to be entered.

(c) Cornea: Clear Covering over the Iris and Pupil. It provides 66% of the Optic power in fousing what we have to see.

(d) Sclera: White Part, becomes red or Pink during crying or allergy, it is protective outer layer. Made up of **elastin** and collagen.

(e) eyelid: First protective layer of the eye.

(f) Conjunctiva: It covers the Sclera and provides protection and lubrication and prevent from infection.

Back of the eye structure:

In the back of the eye, are the important components of the eye.

(a) Lens: Immediately behind the Iris is a convex lens and its thickness is controlled by ciliary Muscles.

(b) Retina: Retina contains photoreceptors. These photoreceptor cells react to the presence and intensity of light by sending an impulse

(c) Macula: Macula reads the vision and is central to the back of the eye called yellow spot.

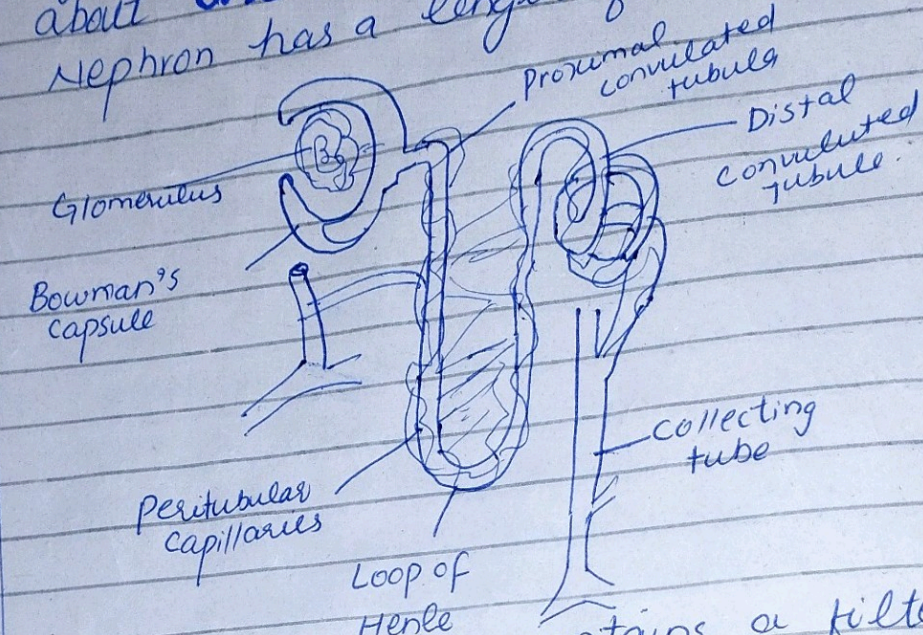
(d) vitreous body: It is a gel-like transparent substance located in the posterior of the eye. It supports the sphere of the eye ball. Prevents the entry of xenobiotics from the environment.

(e) Optic Nerve: Optic Nerve is the structure which takes the information from the retina to the brain and information is interpreted to the formation of image. It is a bundle of one million Nerve fibres.

Q.03

(a) Working of Nephron

Nephron is the structural unit of Kidney Each Kidney contains about **one Million** Nephrons. Each Nephron has a length of **3cm**



Each of the nephron contains a filter called the **glomerulus** consists of a network of capillaries called the Peritubular capillaries. The main function of Nephron is related to **filtering**, Reabsorbing and Secreting glutamate, carbohydrates and Solutes. The capillaries have mesh like structure used for **ultra filtration** of collagen and glycoprotein The process removes around **70%** of Solutes and water. Also filter useful substances glucose, amino acids. In Proximal convulted tubule more water exits making the urine concentrated, in distal convuluted tubule, PH is maintained in ascending limb of loop of Henle more permeable to salts

more ions and salts are reabsorbed. After this the fluid continuous to the collecting duct for another process of ultrafiltration.

(d) Production and benefits of Biofuels

Biofuels are produced directly or indirectly from biomaterials called biomass, including plant material or animal material. Overall, bioenergy covers approximately 10% of the total world energy demand. Traditional unprocessed biomass such as fuelwood, Charcoal and animal dung accounts for most of this.

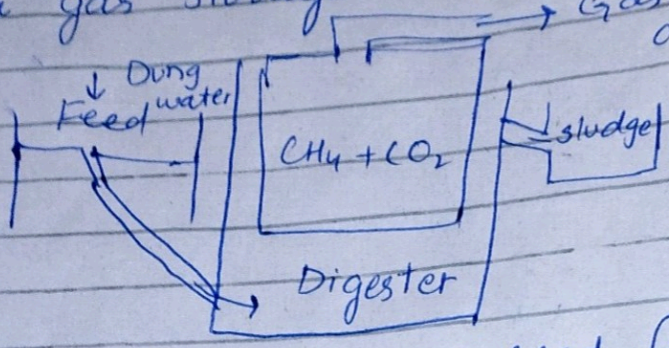
Biomass Feedstock :

Grains and Starch crops
Agricultural Residue
Animal dung
Food Waste
Forestry Materials
Urban and Suburban Wastes

Production of Biofuel

In the Standard process of biogass production, the biomass feedstock is being fed into the biogas plant.

Plant consist of Mixer, digester and a gas storage tank.



Digester: Also called fermentation tank, a crucial component, in anarobic conditions Substrate have to constantly heated and **mixed**.

Gas Holder: An airproof steel Container by floating like a ball on the fermentation tank.

Sludger: Sludger to colled sludge out into drainage pit.

Types of Biofuel:

BioEthanol - Fermentation of Sugar or starch to Alcohol
BioDiesel - Alcohol and fat to produce diesel
Biogas - Mixture of different gases.

Advantages:

Renewable Source of Energy
Reduce GHG emmission
Economical
Reduce dependence on oil, coal, Naturalgas
Cheaper in Future
Reduce global Warming