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Name : Aiman Mumtaz
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# Question no 1

## (a)

## Working of human heart

### 1- Introduction:

Human heart is a fist-sized, muscular organ that pumps blood Through the body. Everday, the heart pumps 7,600 liters of blood. It has four chambers.

### 2- Working of human heart:

Human heart pumps blood throughout body.

- All the deoxygenated blood is collected from the body through veins. All the veins from body open into a large vein called vena cava
- Vena cava pours its deoxygenated blood into "right atrium" of heart.
- Then right atrium contracts and blood enter into right ventricle Through valve.

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- From right ventricles there arises a pulmonary track and it is deoxygenated
- In the lungs, "oxygenation" takes place and spread into whole body.

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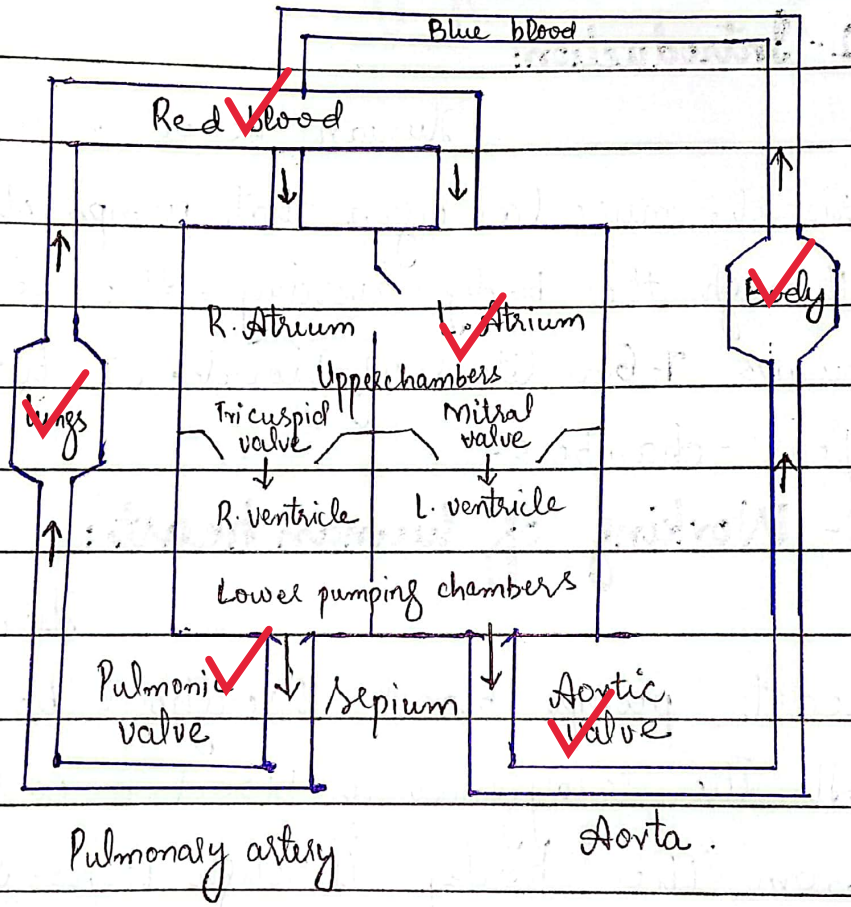


(b)

## "How do we see"

**Introduction:**

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Our eyes are vital for seeing the world around us, but vision can be impaired by a number of medical

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conditions, as well as the aeging process.

**Structure:**

The "iris" is the colored part of the eye. The pupil is the dark circle inside the center of the eye. The cornea is the clear covering over the pupil and iris.

**How do we see:**

We see through different process. First, rodes and cones convert the light from our retinas into electrical impulses, which were sent by the optic nerve to the brain, where an image is produced.

(c)

**Biofuels**

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**Why biofuels are important:**

**1. Renewable resources:**

Most of the fossil fuels will end up in near future. Since most of the sources like, corn, sugarcane, soybeans

waste from crops and plants are renewable and not likely to run out any time soon.

**2. Reduce Greenhouse Gases:**

Fossil fuels, when burnt, produce large amount of greenhouse gases. To reduce the impact of greenhouse gases, people around the world are using biofuels.

**3. Easy Adoption and economical:**

Biofuels are are adaptable to current engine designs and perform very well in most conditions. With increase demand of biofuels, they have a potential of becoming cheaper in future as well.

**How they can be produced?**

In a standard process of biofuels production, the material is processed before being feed into the plant. The plant consist of a mixer, a digester and a storage tank.

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(d)

## Difference

| Plant cell | Animal cell | Microorganism Cell |
|---|---|---|
| **Cell wall** | | |
| Cell wall is absent and cellolose in any form is absent | Cell wall made up of celloluse is present | Cell wall can vary, some have while other may lack |
| **Shape** | | |
| Often has a fixed rectangular or polygonal shape | Typically round and irregular in shape | Varied shapes depending on the type of micro organisms. |
| **Vacuole** | | |
| Usally has a large central vacuole, for storage of water, nutrients and waste | Have small and absent vacuoles. | Presence and size of vacuoles vary. |
| **Lysosomes** | | |
| Plant cell lacks typical lysosomes | Contain lysosomes for intracellular digestion. | May have lysosome like structure. |

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| | Centrioles | |
|---|---|---|
| Centrioles are absent in plant cells | Centrioles are present in animal cells | May have centrioles in microorganism cells. |

## Question no 2

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$SO_2$ and Nox increasing level is considered as threat:

**(a) Acid rain formation:**

Sulphur dioxide ($SO_2$) combines with atmospheric water vapours to for sulphuric acid that contribute to acid rain. This can harm aquatic ecosystems, damage soil and affect vegetation.

Nitric oxide (NO) and nitrogen dioxide collectively called as Nox also contribute to acid rain formation.

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**(ii) Respiratory issues:**

Inhalation of $SO_2$ and $NO_x$ can irritate the respiratory system, leads to respiratory problems, especially in individual with pre-existing conditions like asthma.

**(iii) Smog formation:**

$SO_2$ and $NO_x$ contributes to the formation of sulphates and ground level ozone, contribute to smog and poor air quality.

**(iv) Environmental Impact:**

$SO_2$ is harmful to aquatic life, vegetation and ecosystem.

$NO_x$ can lead to nutrient imbalance in soil and water, impacting biodiversity.

**(v) Climate change:**

$SO_2$ and $NO_x$ can contribute to global warming and greenhouse effects respectively that influence climate change.

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(b)

## Significance of GHE:

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### (i) Temperature regulation:

The greenhouse effect (GHE) is essential for maintaining Earth's temperature within a range conducive to life.

### (ii) Energy balance:

The GHE helps to balance the incoming solar radiation and outgoing infrared radiation, it prevent: extreme temperature fluctuation between day and night.

### (iii) Support for life:

It creates habitable climate by keeping the Earth's surface warm enough to support liquid water and various ecosystems.

## Enhanced GHE:

The enhanced Greenhouse effect (GHE) refers to the intensification of the natural greenhouse effect on Earth due to

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increased concentrations of greenhouse gases in the atmosphere, due to human activities. Enhanced GHE is due to:

**(i) Increased Greenhouse Gas emission:**

Human activities, such as burning fossil fuels, deforestation, industrial processes realse large amount of greenhouse gases into the atmosphere.

**(ii) Trapping more heat:**

Greenhouse gases trap outgoing infrared radiation, as the concentration of these gases increase, more heat is trapped in the atmosphere, that leads to global warming effects.

## (c)
## Remote Sensing

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**Definition:**

"Remote sensing is the process of gathering information an object or an area from a distance, typically using sensors or instruments mounted on aircrafts, satellites and other

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platforms."

## Importance in environmental science:

Remote sensing is of significant importance in environment science for several reasons:

### (i) Climate change studies:

It contributes for data monitoring in climate related variable including: temperature, sea level, ice cover.

### (ii) Ecosystem Assesment and conservation:

It allows scientists to study and monitor ecosystems. It helps in developing strategies for suitable resource management.

### (iii) Biodiversity and Habitat mapping:

Remote sensing facilitates the mapping and monitoring of biodiversity and habitats, that support conservation efforts. It helps to identify areas of high

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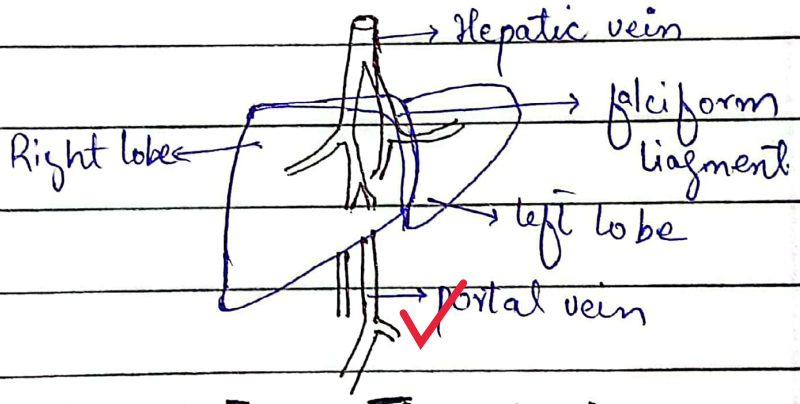
biodiversity, monitor species distribution and assess the impact of habitual loss.

(d)

## Liver

### Introduction:

The liver is an abdominal glandular organ in the digestive system. It is a vital organ that supports nearly every other organ to some capacity.




### Chief Chemist of the body:

Liver is refered as the "chief chemist of the body because:

### Metabolism:

The liver is a central hub for metabolism. It metabolize

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carbohydrates, proteins fats

**2. Detoxification:**

It help in detorification of minerals and various materials.

**3. Synthesis of Protein:**

It also help in synthesis of protein.

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