

## Question:01

(a)

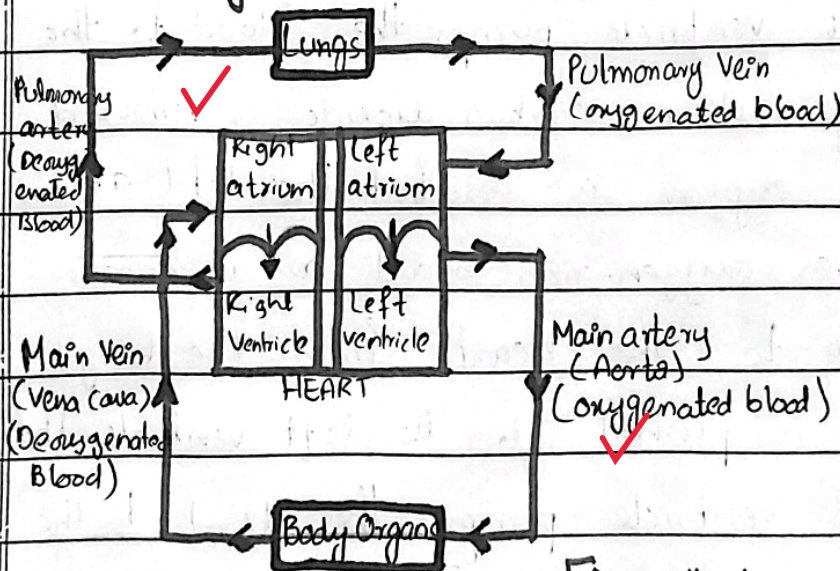
Explain the working of human heart.

3.5/5

### Answer

The heart is a vital organ in our bodies that pumps blood throughout the system.

Working of heart; diagrammatic depiction



Figure#01

Structure of heart plays crucial role in its working:

The heart is divided into four chambers and has valves that allow the blood to flow in one direction only. The upper two chambers with relatively



1/1/20

Thin walls are called atria. The two lower chambers with thick muscular walls are called ventricles.

### Working of the Heart:

The figure(1) shows the complete circulatory system in the body. The right atrium receives carbon dioxide-rich blood from the various parts and is then moved into right ventricle. The right ventricle pumps the blood to the lungs, where carbon dioxide is removed and oxygen is absorbed. The left atrium receives oxygen-rich blood as it comes back to the heart from the lungs and is pushed into the left ventricle. The left ventricle pumps this blood to the rest of the body. The right side of the heart is completely separated from the left side with the help of a partition called the septum. This prevents the mixing of oxygenated and deoxygenated blood.



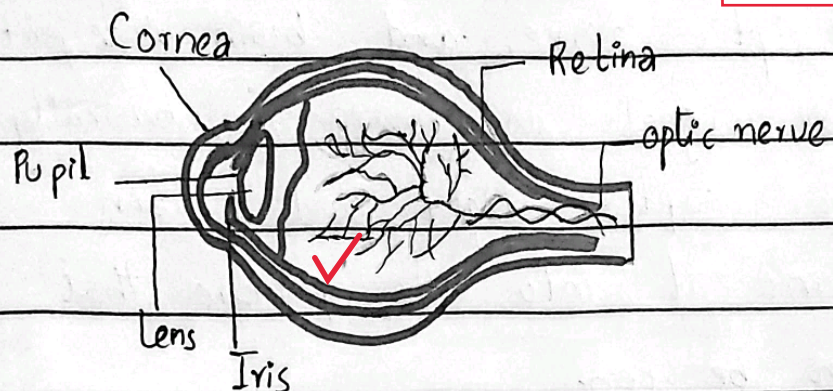
(b)

How do we see? Explain.

Answer

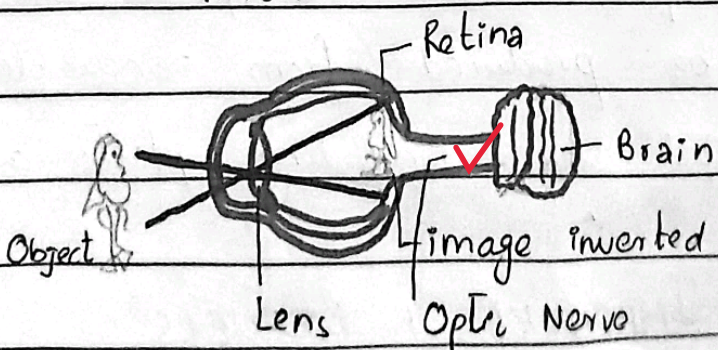
Eyes is the ✓ organ of the body through which vision is facilitated.

4/5



Parts of the Eye Responsible for vision

These are the important parts of the eyes which play important role in vision.



How Does the Human Eye See?



\_ / \_ / 20\_

Eyes have a part called the retina, which is like a screen at the back ✓ of eyes. When light enters eyes, it hits the retina and special cells called photoreceptors send signals to brain through the optic nerve, and brain ✓ interprets these signals as image. So, basically, eyes capture light and brain turns it into the picture that ✓ can be seen.

(c)

Why biofuels are important?  
How they can be produced?

Answer

4/5

Biofuels are the fuels that can be produced from renewable biological sources, including plants and algae.

✓  
IMPORTANCE OF BIOFUELS

i) Biofuels produced ✓ renewable energy:

Biofuels are made from organic



(2)

— | — | — bit

materials like crops, agricultural wastes, and even algae. Since these resources can be grown and replenished, biofuels provide a renewable source of energy.

ii) Helps in reduction of Green house gas emissions :

Biofuels produce fewer greenhouse gas emissions compared to fossil fuels when they are burned. This help to reduce greenhouse gas emissions and combat the climate change.

iii) Enhancement of energy security by producing Biofuels:

Biofuels help to reduce the dependence on fossil fuels, which are imported from other countries. By producing biofuels, energy security can be enhanced.

iv) Diversification of Energy Sources:

Investing in biofuels help diversify energy sources. By having a mix of renewable energy options, less dependency on any one energy source reduced.

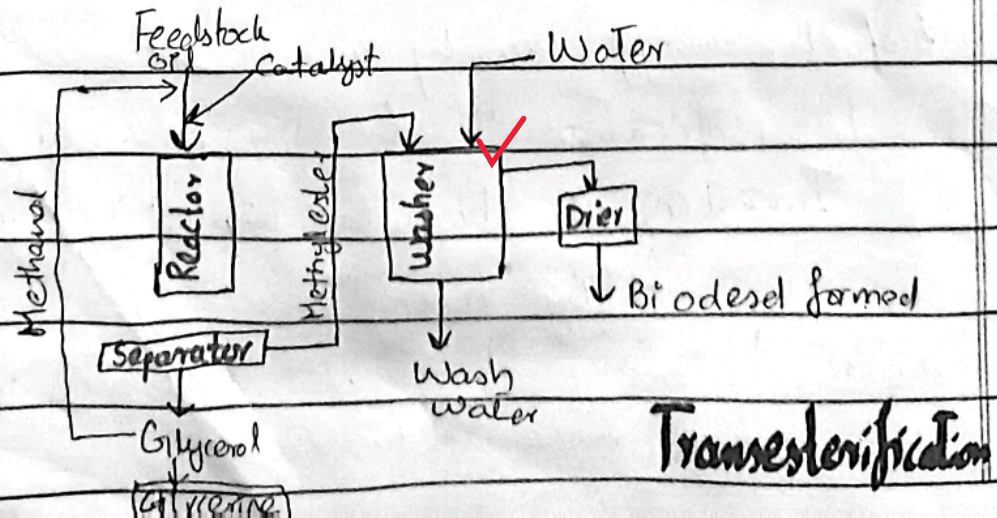


How biofuels can be produced?

# METHODS OF BIOFUEL PRODUCTION

Biochemical Process	Thermochemical Process
→ Transesterification	→ Gasification
→ Anaerobic digestion	→ Pyrolysis
→ Fermentation	→ Torrefaction

There are different types of biofuels that can be produced through different processes. **Biodiesel** is typically made by chemically reacting vegetable oils or animal fats with an alcohol, such as methanol. This process is called transesterification.





(d)  
Differentiate between plant,  
animal and microorganism cell?

Answer

### Differences

3/5

Different points	Animal Cell	Plant Cell	Microorganism cell
<b>Cell Wall</b>	Lack a cell wall	Have a rigid cell wall, made of cellulose	May or may not have a cell wall, and composition differ.
<b>Chloroplasts</b>	Do not have chloroplasts, as animals get their energy from consuming other organisms	Contain chloroplasts, which are responsible for photosynthesis.	These cells do not possess the chloroplasts, but possess different organelle for photosynthesis.
<b>Vacuoles</b>	Have smaller vacuoles or sometimes multiple vacuoles.	Have a large central vacuole, which store nutrients and wastes.	Vacuoles are not present in microorganisms.



## Animal Cell      Plant Cell — Microcell

	Animal Cell	Plant Cell	Microcell
<b>Movement</b>	Animal cell ✓ does specific parts like cilia, flagella or pseudopodia, that help cell to move.	No specific part or organ for the movement.	They also have ✓ small projection of flagella for the movement.
<b>Cell Division</b> ✓	Mitosis and Meiosis are the involved in cell division	Mitosis is the process involve in ✓ cell division	Budding and binary ✓ fission are there to divide cell

## Question # 02

(a)

Why increasing levels of  $SO_2$  and  $NO_x$  are considered as threat?

Explain

3/5

**Answer**

Increasing ✓ levels of  $SO_2$  (sulfur dioxide) and  $NO_x$  (nitrogen oxides) are considered a threat because they can have harmful effects



(3)

— / — / — : —

on the environment and human health.

$\text{SO}_2$  and  $\text{NO}_x$  are acting as key players in environmental pollution

$\text{SO}_2$ : causes Acid Rain by reacting with other compounds

$\text{SO}_2$  can react with other compounds in the atmosphere to form sulfuric acid, which can lead to acid rain. Acid rain can damage forests, bodies of water, and buildings, and it can also harm plant and animal life.

$\text{NO}_x$  contributes to the formation of ground level ozone, major component of smog

The highest levels of  $\text{NO}_x$  is causing smog which not only cause the environmental pollution but also irritate the respiratory systems. According to the report of Air Quality Index of Lahore, the air pollution in Lahore is increasing every year. This is due to the higher levels of  $\text{NO}_x$  and  $\text{SO}_2$  which



are emitted from industries and vehicles.

Higher levels of SO<sub>2</sub> & NO<sub>x</sub> are becoming threat as:

Air pollution  
increased

Environmental  
pollution

Respiratory  
diseases

Harming plants and  
animal life

Changing  
weather  
patterns

(b)

Explain the significance of GHE and explain enhanced GHE?

3/5

Answer

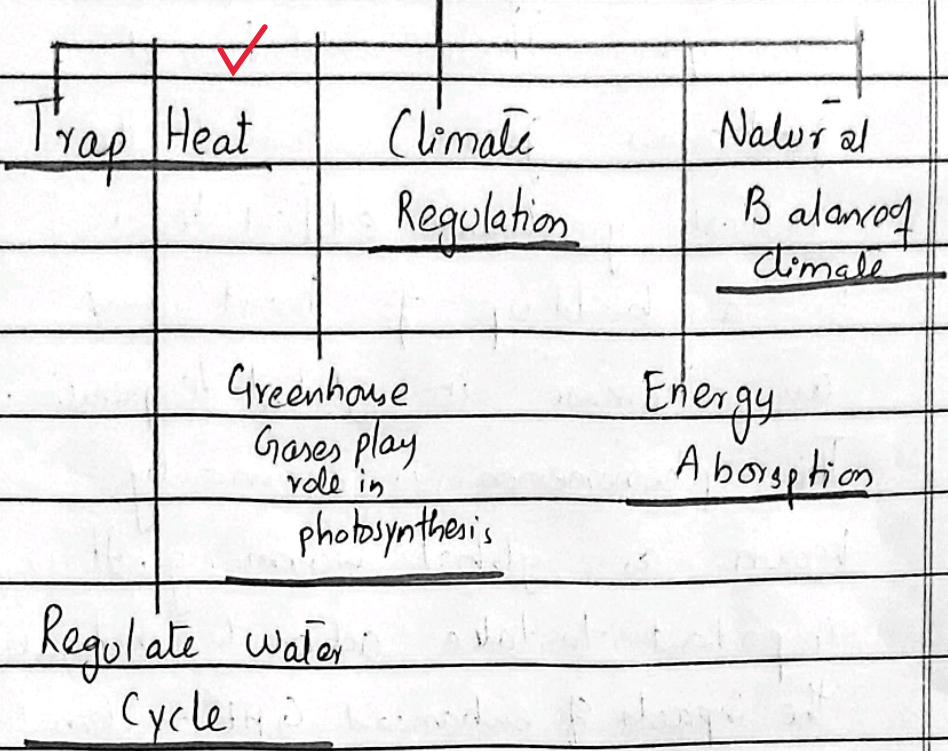
The greenhouse effect is the process through which heat is trapped near Earth's surface by substances known as 'greenhouse gases'.

Significance of Green House Effect

Greenhouse effect is a crucial process in maintaining the temperature of earth.



# IMPORTANCE OF GHE



# ENHANCED GHE

The enhanced greenhouse effect refers to the intensified trapping of heat in the Earth's atmosphere due to increased levels of greenhouse gases, primarily caused by human activities. The burning of fossil fuels like coal, oil and gas for energy, the large amount of



CO<sub>2</sub> and greenhouse gases into atmosphere. These additional greenhouse gases enhance the natural greenhouse effect, leading to a build up of heat and an increase in global temperatures. This phenomenon is commonly known as global warming. It is important to take action to mitigate the impacts of enhanced GHE on climate.

(C)

**What is remote sensing? Why it is important in environmental science?**

**Answer**

**Definition:**

Remote sensing is a technique used to gather information about objects or areas from a distance without direct physical contact. It involves the use of sensors or drones to collect data.



(4)

\_\_\_/\_\_\_/\_\_\_:\_\_\_

## Importance of Remote Sensing

3.5/5

Remote Sensing provides Comprehensive data:

It allows scientists to gather large-scale and comprehensive data about the Earth's surface, atmosphere, and oceans. This data helps in monitoring and understanding various environmental processes and changes.

### Valuable Information in Environment Monitoring

It also provides valuable information for monitoring environmental parameters like land cover, vegetation health, water quality and pollution.

### Help in disaster management

It provides timely and accurate information during natural disasters.



## Climate Change Study with Remote Sensing

Remote sensing plays crucial role in studying climate change by monitoring climate changes, like temperature, ice, sea level and gas emission.

## Biodiversity Conservation with Remote Sensing

It aids in mapping and monitoring biodiversity rich areas.

(d)

Liver is the chief chemist of the body. Explain

Answer

The liver is often referred to as the 'chief chemist' of the body because it performs a wide range of essential chemical functions of the body.



# Why liver is chief chemist?

The liver play different roles in the functioning of body, it helps to detoxify harmful substances, produces bile, stores vitamins and regulate blood sugar; called as chief chemist.

## Multi-Functions of Liver

