

QUESTION #02

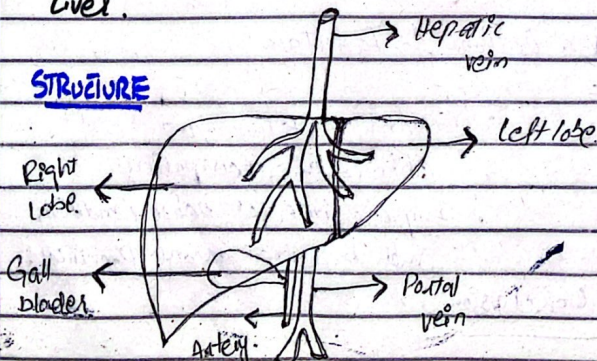
D. Liver is the chief chemist of the body. Explain.....

i - Liver

ii - Functions of liver as a chemist

- a. Detoxification
- B. Metabolism
- C. Hormone regulation
- D. Protein metabolism
- E. Digestion.

Human liver is one of the five vital organs of the body that are essential for the survival of human beings, such as brain, kidney, heart, lungs and liver.



Human liver is an abdominal glandular organ of the body in the digestive system. It is located in the upper section of the body under diaphragm. The liver is the vital organ, because it supports almost every other organ of the body in some way or other.

FUNCTION OF LIVER AS A CHEMIST:

The liver has a complex function in the normal functioning of the body. Some of its important functions are as follows:

- a. Detoxification
- b. Metabolism
- c. Hormone regulation
- d. Protein metabolism
- e. Digestion
- f. decomposition of red blood cells.

→ Digestion:

Liver produces a chemical substance which is called bile which is essential in the digestion of food. Bile breaks down fats and makes them easily digestible.

→ Detoxification:

Detoxification is one of the most important functions of the liver.

It removes toxic substances from blood, such as alcohol and drugs and purifies blood.

C. Metabolism.

The liver regulates metabolism system of human body. It produces and synthesizes multiple important elements of plasma and also stores some vital elements, such as vitamin (A, D, E, K & B₁₂) and iron. Besides, it also stores glucose and converts it into useful glucose. It metabolises carbs, lipids and proteins in useful substances.

D. HORMONE REGULATION:

Hormone regulation is another important function of liver as a chemist. It breaks down haemoglobin and several hormones to keep hormones in balance.

E. Decomposition OF RED BLOOD CELLS.

The liver destroys old red blood cells which are no longer useful for the body.

Additionally, liver also break down proteins and unusable substances into

ammonia which is eventually converted into urea and passes out of the body.

Above mentioned functions of the liver make it a useful and vital organ of the body for the proper body functioning.

A. WHY INCREASING LEVELS OF SO_2 AND NO_x ARE CONSIDERED AS A THREAT? EXPLAIN

- I. What is SO_2 ?
- II. What is NO_x ?
- III. Why levels of SO_2 & NO_x are increasing?
- IV. Why they are a threat? Impacts on human life?

1. SO_2 : (sulphur Dioxide)

Sulphur Dioxide is a harmful chemical substance which pollutes the air, deteriorating its quality and makes it harmful for the subsistence of human lives on the earth.

Sulphur dioxide is one of the primary pollutants of air which comes from combustion

of coal in domestic and industrial burning.

Why its level increasing?

Day by day, the level of sulphur dioxide in the air is increasing, because of overly dependence of human beings on coal as an energy source.

2. **NO_x. (Nitrogen oxides)**

Nitrogen ~~and its~~ oxides are another source of air pollution.

Nitrogen oxides' sources are combustion of fossil fuels, from car exhausts, power generation processes and indoor gas cookers and other appliances.

Why its level increasing?

Just like other pollutants, nitrous oxides also increasing, because of excessive use of fossil fuels to get energy.

□ **Why SO₂ & NO₂ are threat?**

Sulphur dioxide and nitrogen dioxide are a serious threat for human lives on the earth, because they cause some serious

damages to human body.

CO's Effect
NO

CO's Effects
SO₂

→ Excessive NO_x causes irritation in eyes & Throat. Besides, it is also involved in smog formation, which is harmful for health and causes respiratory problems and skin issues.

→ Sulphur dioxide causes constriction of airways. It also causes irritation of nose, eyes, nerves and throat.

Way Forward:

The only possible solution to curtail their production is to find another source of energy than fossil fuels, for example, biofuels.

C. REMOTE SENSING? WHY IT IS IMPORTANT IN ENVIRONMENTAL SCIENCES?

I. Remote sensing?

II. Principle of Remote sensing?

III. Why it is important in environmental sciences?

I. REMOTE SENSING:

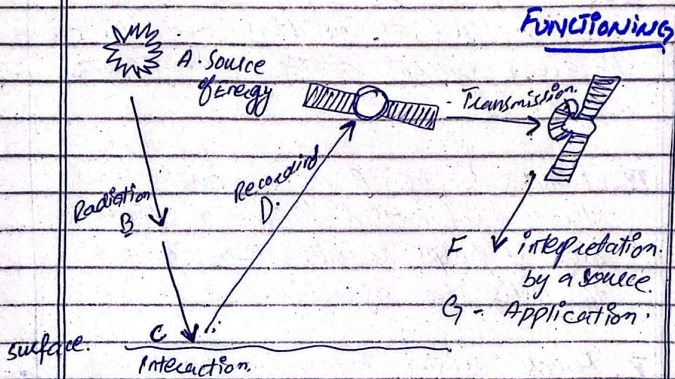
“Remote sensing is the science of acquiring information about the Earth's surface without even being in contact with it”.

It is usually done by sensing and recording reflected energy and by processing, analyzing and applying that information. Most of remote sensing systems utilize sun's energy to reflect and which is received by a sensor and processed to form an image, which is then analyzed to get information.

II. PRINCIPLE/PROCESS OF REMOTE SENSING

In the process of sensing, there are seven stages, such as:

- A. Energy source or illumination.
- B. Radiation and the atmosphere
- C. Interaction.
- D. Recording of energy reflected
- E. Transmission, reception, & processing
- F. Interpretation of information.
- G. Application



III. WHY IT IS IMPORTANT IN ENVIRONMENTAL SCIENCES???

Remote sensing has multiple advantages in the field of environmental science, such as:

1. It helps us in studying various ~~env~~ features and their relationships

with each other.

- II.** Remote sensing facilitates us in earth's coverage and provides us information for studying landscape dynamics and variations.
- III.** It helps us in getting information of areas, such as mountains and disaster hit areas without getting in contact with them.
- IV.** Remote sensing provides accurate and timely information before a disaster and it helps in mitigation process to mitigation agencies.
- V.** Remote sensing helps in monitoring of landscape and mapping and updating about any change in the environment. It helps in future planning to combat environmental changes and disasters.

QUESTION # 02

B. How Do We SEE? Explain

- I. INTRODUCTION
- II. HUMAN EYE
- III. PARTS OF EYE HELD IN SEEING.
- IV. PROCESS

I. INTRO

Our eyes are the vital organ, with the help of eyes we see things in the outer world. Eye is composed of different parts which help in seeing things, working in a process.

II. HUMAN EYE

The human eye is a slightly aspherical globe which is so small of about 1 inch in diameter.

III. PARTS OF HUMAN EYE

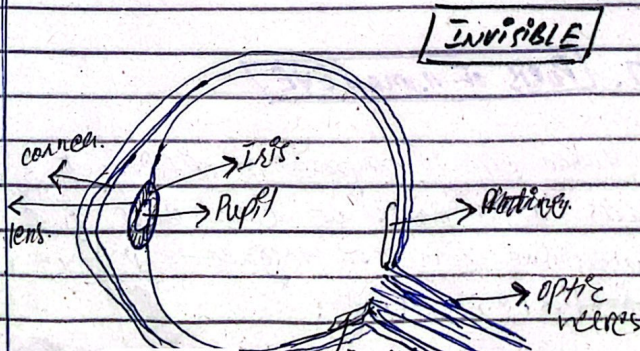
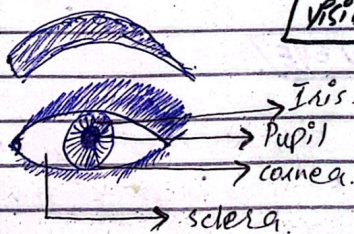
Human eye is composed of different parts, those parts are like parts of a machine connected together to perform a function i.e., seeing.

The parts of human eye which are visible in a mirror are as follows:

- i - The Iris (colored part of eye)
- ii - Pupil (small circular opening)
- iii - Cornea (small dome over iris)
- iv - Sclera (white part of eye)
- v - clear white layer (covering eye)

Additionally, there are some other parts of the eye that we cannot see, they contain:

- i - Lens
- ii - Retina
- iii - Macula
- iv - optical nerves.



iii. FUNCTIONING

i- The light coming from outside of the eye entered into the eye through "Pupil", that altered its shape depending on the intensity of the light. If its less in intensity, it is large and when light is bright and sunny, it is small and dark in color.

ii- After entering of the light, the second part of the eye that delicately focuses the light rays is "lens". The lens focuses the entered light on the retina.

iii- After that, the innermost layer of the eye is "Retina" (containing photoreceptor cells). These photoreceptor cells receive light and send an impulse to brain cells, depending on the intensity of light.

iv- The part of the eye which reads light is "macula", it is located near optic nerves and reads light and it is also responsible for color vision.

v- Retina also contains "rods and cones", that are light sensing cells, they convert light into nerve impulse or electrical impulse.

vi. Lastly, the electrical impulse is sent to brain through optic nerves, that takes electrical impulse to brain to read the message and the brain accordingly send nerve impulse back to the eye and recognizes it.

2. WHY BIOFUELS ARE IMPORTANT? HOW THEY CAN BE PRODUCED??

I. BIOFUELS

ii. Why Important?

iii. How they can be produced?

i. BIOFUELS.

Biofuels are fuels produced directly from organic materials: including plants materials and animals wastes.

For example;

Bio gas, BioEthanol, Biodiesel

ii. Why important:

Biofuels are safe energy source which do not contaminate our environment.

Biofuels have multiple advantages, such as -

I. Renewable Resources:

Biofuels will not end up in the future. They can be used again and again, they are renewable resources.

II. Easy adoption and economical

III. They reduce our dependence on foreign oil, natural gas and petroleum.

IV. Biofuels reduce greenhouse gases, ^{65%} eventually, keep environment clean.

V. They provide economic security, poor countries who cannot afford expensive fuels they can use economic friendly biofuels easily.

→ How they are produced?

They are produced through a process in which animal dung is mixed with water in a mixer.

Then they are sent to digester which is crucial for anaerobic conditions to process biogas in the tank.

After NAT produced gas in a digester is collected in a gas holder which is a storage house. From where, it can be utilized for regular uses.

A. Explain working of HUMAN HEART

I. HEART (PARTS)

II. WORKING

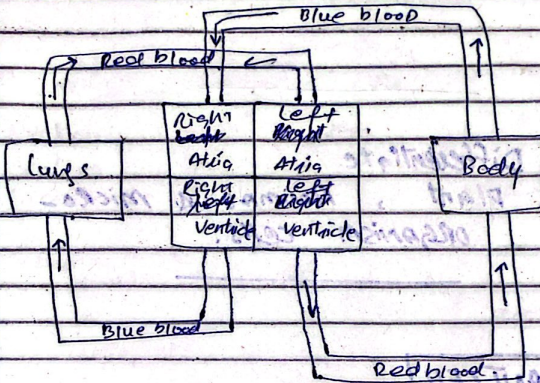
Human heart is a vital organ of the body, it is a pumping organ which pumps oxygenated and deoxygenated blood in the body through ventricles and atricles.

WORKING.

The systematic function of heart is circulation of the blood. It pumps deoxygenated blood to lungs through Pulmonary artery and then sends back oxygenated blood to the body, through aorta (the biggest

artery.

Diagram.



The deoxygenated blood from the body filtered into the right atrium, from where it is pumped down to right ventricle through tricuspid valve.

The ventricle contracts and sends blood to lungs through pulmonary valve and produces 'dub' sound.

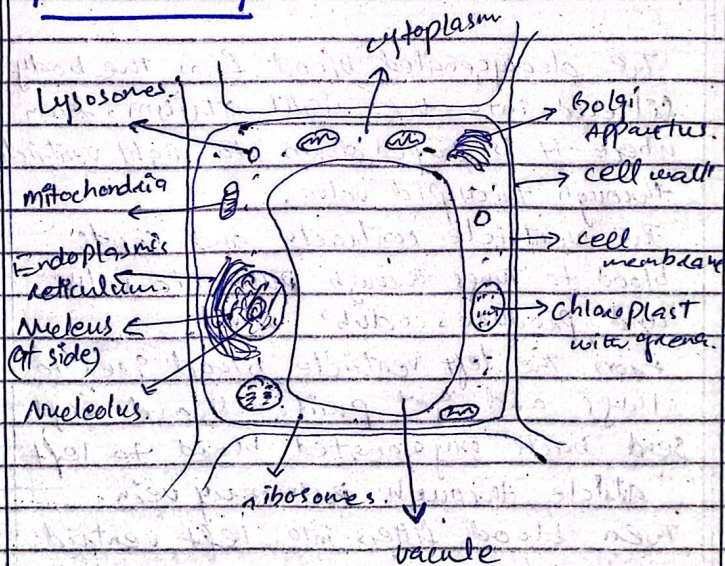
From the left ventricle, blood goes to lungs and get purified and lungs send back oxygenated blood to left atricle through pulmonary vein.

Then blood filters into left ventricle which after contracting sends blood to aorta through bicuspid valve and stop entering blood back.

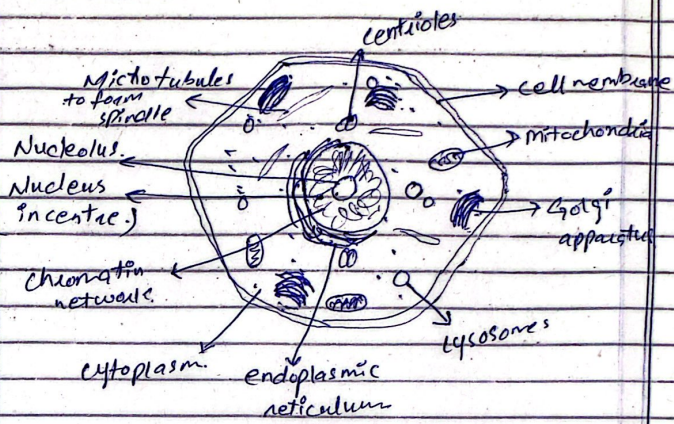
Through aorta the blood is supplied to the whole body for other body functions.

4. Differentiate Plant, Animal & Micro-organism cells.

PLANT CELL



ANIMAL CELL: No cell wall



MICROORGANISM

