

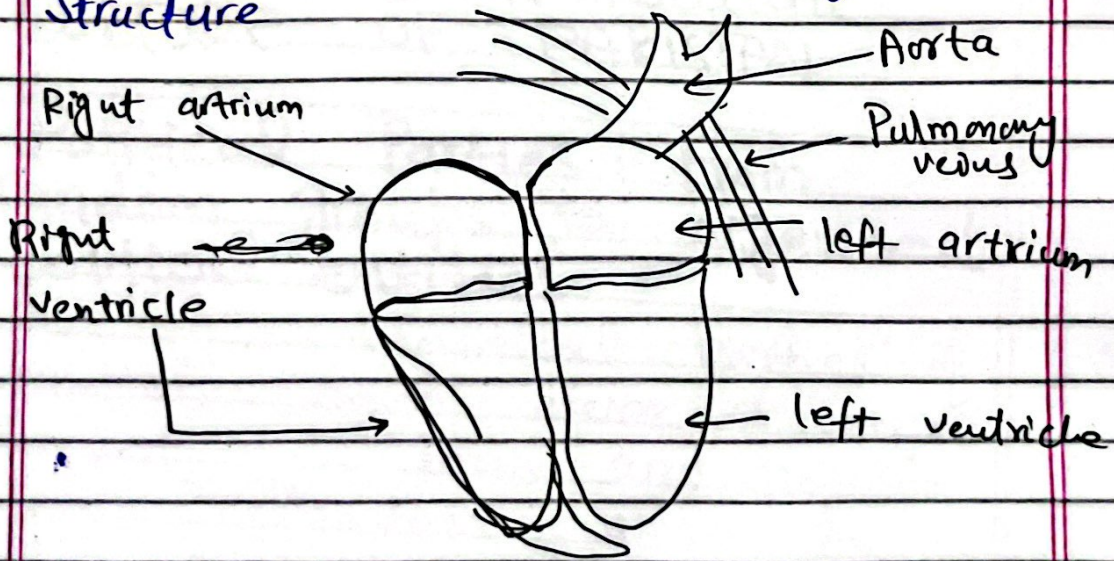
# General Science and Ability

Q # 1:

(a) Working of human heart

(b) Brief explanation of structure

Human heart is the principle organ of the body which pumps oxygenated blood to the rest of the body and de-oxygenated blood towards lungs. It has following structure



(ii) Working of heart

Step 1:

Oxygenated blood enters into the heart by pulmonary veins from lungs.

Step 2 :

Blood enters into right atrium crosses the atrio-ventricular valve and goes to right ventricle and ~~arteries~~ other arteries

Step 3 :

Arteries takes the blood away from heart and distributes it among different tissues. Capillaries are also used for this purpose -

Step 4 :

Rest of the blood when returned by absorption of oxygen and food, enters into ~~heart~~ leaves heart through aorta - ~~it~~ then leaves. The cycle then repeats itself -

c Why biofuels are important?  
How can be reproduced...?

## (i) Defining biofuels:

Biofuels are the renewable fuels that are made up of organic compounds - These example of biofuels include diesel, gasoline, etc.

## (ii) Importance of Biofuel:

Biofuels are important because of plethora of reasons discussed below:

### (a) For the renewable energy sources

Biofuels, unlike fossil fuels can be reused and remade - They are far from the risk of depletion and hence are more reliable for humanity in a long run -

### (b) Environmental Sustainability

Biofuels are better and more environmental-friendly when it comes to the comparison with ~~to~~ fossil

fuels. This makes them more sustainable than other fuels.

(c) Help in recycling organic compounds

Biofuels are made out of organic compounds, mostly from the biological waste. In this way, they improve the recycling process.

(d) More efficient than renewable energy sources

Other renewable energy sources like solar, wind, and hydroelectric are sustainable but less efficient due to dependency on geographical and weather factors. To minimize the efficiency of renewable energy sources from organic materials i.e., biofuels is used.

(iii) How they can be reproduced?

There are many ways to produce biofuels. Most important ones are:

(a) Fermentation

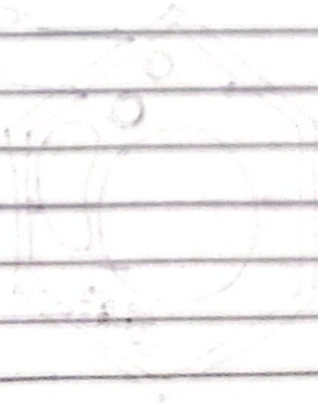
on this method, organic compounds are fermented in a particular heat using atoms ethanol.

(b) Combustion:

Combustion is simply the burning the organic compounds using a particular amount of heat

(c) Gasification:

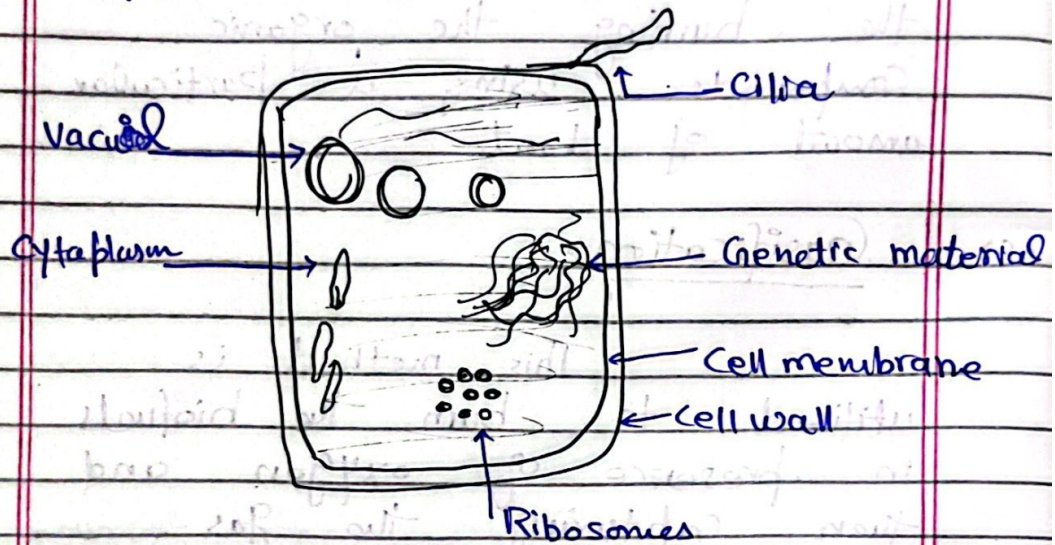
This method is utilised to burn the biofuels in presence of oxygen and then capturing the gas using closed tubes.



d- Plant, Animal, Microorganism cell.

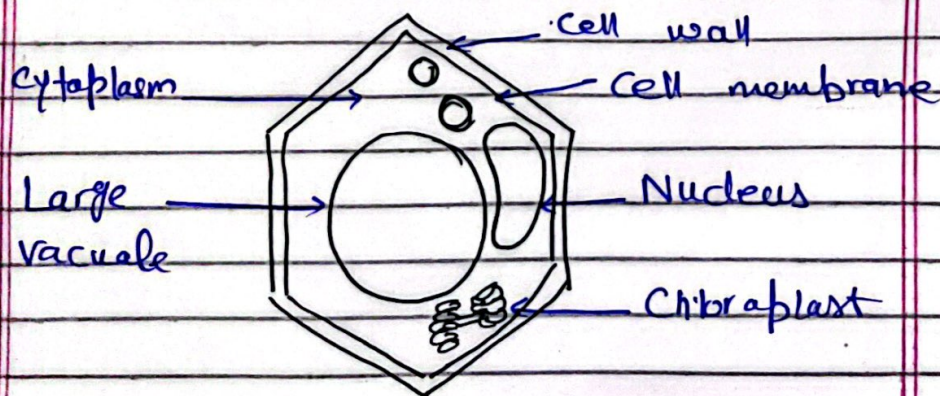
### A- Prokaryotic Microorganism Cell

Microorganism or Prokaryotic cell is the simplest cell. Its depiction is as follows:



### B- Plant Cell

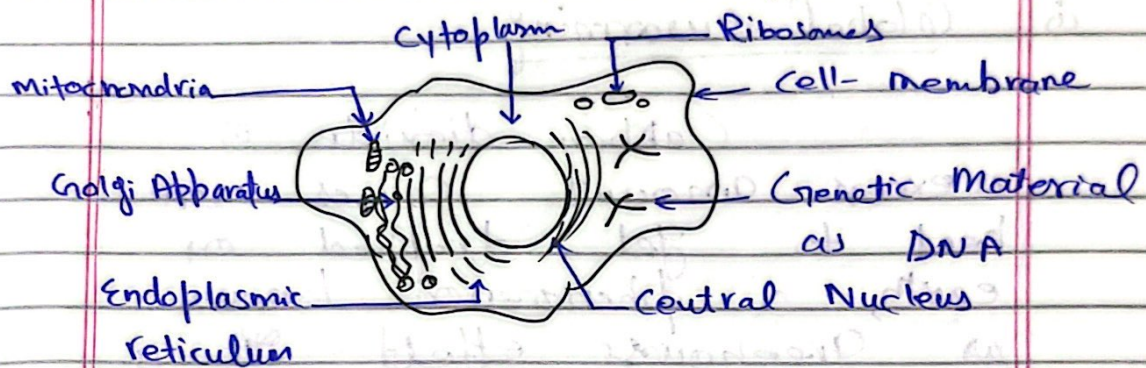
Plant cell is categorized as Eukaryotic, i.e., more advanced than prokaryotic. It is shown below:



## c. ~~Plant Cell~~

## c. Animal Cell

Animal cell is also categorized as eukaryotic. It is almost similar to plant but has ~~as~~ <sup>and</sup> lacks some organelles that make them different.



## d. Major Differences between all of them

Parameter	Microorganism Cell	Plant Cell	Animal Cell
Cell-wall	Peptidoglycogen	Starch	Not present
Nucleus	Not present	Pushed to Side	Central
Plastids	Not present	Present	Not present
Reproduction	Cell division	Mitosis/Meiosis	Mitosis/Meiosis
Specialization	Simpler	Complex	Highly complex

## Question # 2

a Increasing level of  $\text{CO}_2$  &  $\text{SO}_2$

(a) Increasing level of  $\text{CO}_2$  being a threat: Core reasons

(i) Global warming

Carbon dioxide in excess amount causes more heat to get trapped on earth, a phenomenon known as greenhouse effect. It is causing global temperature to increase day by day.

(ii) Environmental Pollution:

Higher level of  $\text{CO}_2$  are also associated with pollution, particularly the air pollution.

(iii) Climate Change

$\text{CO}_2$  increases global average temperature which is responsible for climate change - This is visible from many countries suffering from extreme and strange weather patterns.



b) Increasing level of  $\text{SO}_2$  being a threat for environment: Core reason

(i) Acid Rain:

$\text{SO}_2$  is the core compound behind acid rain, a phenomenon in which acidic compounds rain down on earth similar to regular rain.

(ii) Water Poisoning

Sulphur is a toxic compound - When it is mixed with water, water gets poisoned. In this way increasing  $\text{SO}_2$  causes damage.

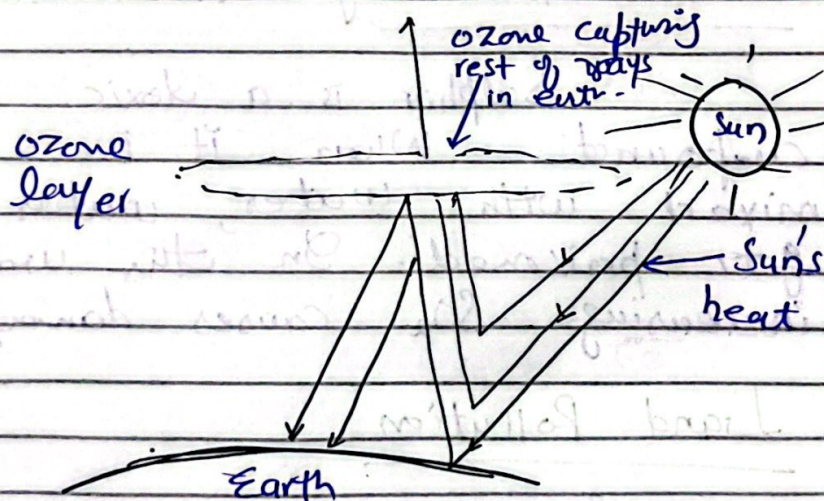
(iii) Land Pollution

$\text{SO}_2$  is also responsible for land pollution. Presence of sulphur toxicates food. Such food when engulfed, causes serious damage to health.

(b) GHE? ENHANCED GHE?

(a) Greenhouse Effect:

Greenhouse effect is a natural phenomenon to capture an energy from sun. It involves ozone layers that does not let cell radiation penetrate much into earth and if they do, also does not let them go back. The depiction is as follows -



(b) Enhanced Greenhouse Effect

It is a phenomenon that has recently started happening. ~~The same principle~~ It is the phenomenon in which sun's heat cannot escape from earth and

reaches to dangerous levels, globally raising temperatures. On contrary to the natural greenhouse effect, it is a man-made phenomenon. The principle cause of the process in ozone layer depletion particularly caused by excessive amount of chlorofluorocarbons - When ozone layer is depleted, it does not filter harmful sun-rays - So heat enters earth easily and raises the temperatures of earth surfaces.