

Question No 4

a- Explain the role of heart and blood vessels in circulation

Circulatory system is mainly responsible for circulation of blood in the body. Moreover, it also helps in distribution of essential nutrients and gases to the body. The whole blood circulation is carried out by heart with the help of blood vessels. In this regard, role of heart in circulation is as follows.

Role of heart ::

Heart is the main organ responsible for circulation of blood in the body. Like wise, it is considered to be the strongest organ in human body.

Heart mainly comprises of three layers including :

- a) Pericardium
- b) Myocardium
- c) Endocardium.

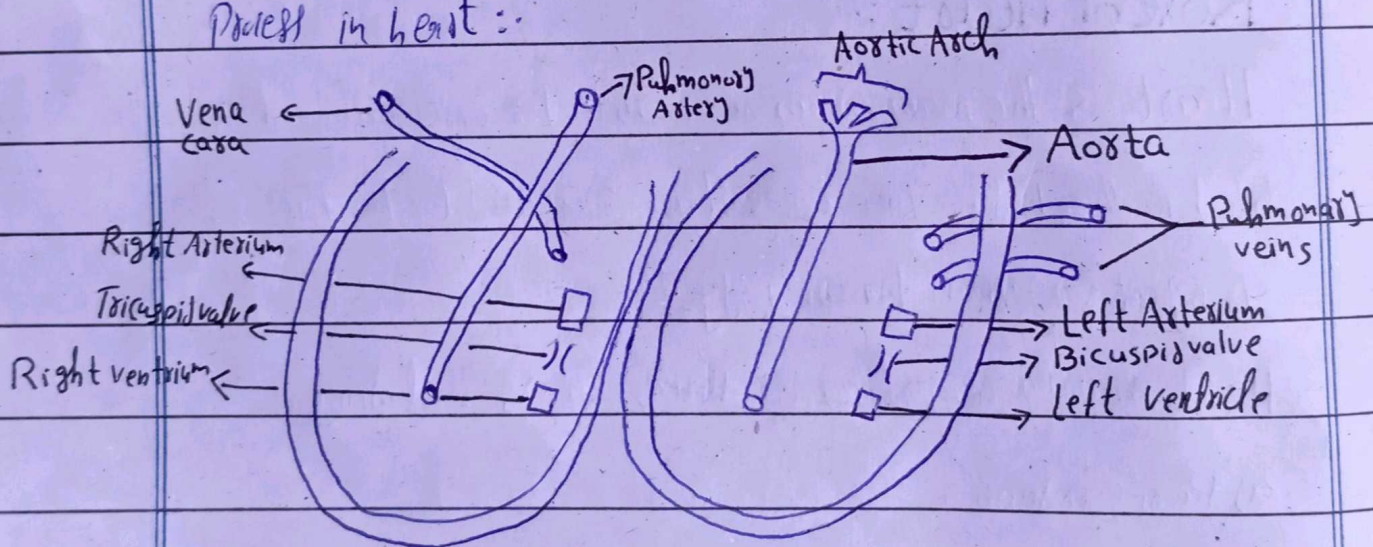
These above given layers are mainly responsible in providing support, protection and shape to the heart.

Additionally, there is presence of four chambers in the heart including left ventricle, left ventricle, right ventricle and right ventricle. These chambers play vital role by pumping the blood towards the body with the

Constant contraction and relaxation, which mainly takes place due to current generated with the help of nodes. Similarly, there is presence of two valves namely Bicuspid valve and Tricuspid valve. These valves help in stopping the back flow of heart.

Finally, there are pulmonary arteries and pulmonary vein and vena cava, that transfer blood into the heart.

Above in view, following diagram can explain the circulation process in heart:



Approximately 70 ml blood leaves the heart to the body during one beat.

Normally, a heart beats 72 times in a minute.

There is presence of 5 litre blood in human body that circulates in the body with the help of heart, however, the whole process requires blood vessels to carry the blood in the body.

Role of Blood vessels:

Blood vessels are ~~any~~ ~~major~~ responsible to carry the blood in to the body that get pumped by the heart-

There are three types of blood vessels including:

Arteries:

Arteries are the strongest blood vessels in the body that carry blood from heart towards body-

They mainly carry oxygenated blood except the Pulmonary artery-

Veins:

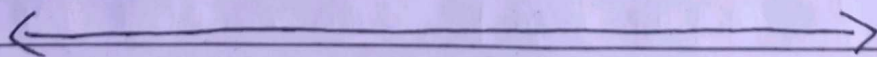
Veins are responsible to carry blood from body towards the heart- veins mostly carry deoxygenated blood except the pulmonary veins-

Blood pressure remains least in veins.

Capillaries:

Capillaries are thinnest blood vessels that carry both oxygenated and deoxygenated blood-

They are like junctions between the Arteries and veins-



b- What is cyclone- Define formation of cyclone-

Cyclones are mainly large scale low pressure weather systems that form over warm tropical waters in the mid latitudes and move across the earth's surface. Cyclones are of mainly three types-

Tropical cyclone:

Tropical cyclone mainly form over warm water-

Water temperature has to be 26.5°C to a depth of 50 meters.

Warm water mainly moist and rise in the form of air, while creating low pressure beneath it-

Due to earth rotation, the rising air begins to spin-

The system becomes organized causing most intense winds and rain-

Middle latitude cyclone:

These cyclones form along the boundary between warm and cold air masses - The difference in temperature & density between air masses causes the front to wave and develop a area of low pressure at its crest-

This low pressure begins to rotate creating the comma shaped storms-

C- Enlist the functions of Carbohydrates ::

Carbohydrates are the main source of energy for the body -

Carbohydrates are also responsible for functioning of brain and some other organs -

Proteins ::

Proteins are also source of energy for the body -

Moreover, proteins are responsible for boosting immune system, muscle ~~energy~~ strength, hair and skin betterment -

Fats

~~Fats~~ fats are also the source of energy for the body - However they help in absorption of fat soluble vitamins too -

Calcium

Calcium mainly strengthens the bones and teeth in the body - Moreover, calcium also play vital role in muscle strengthening -

Iron

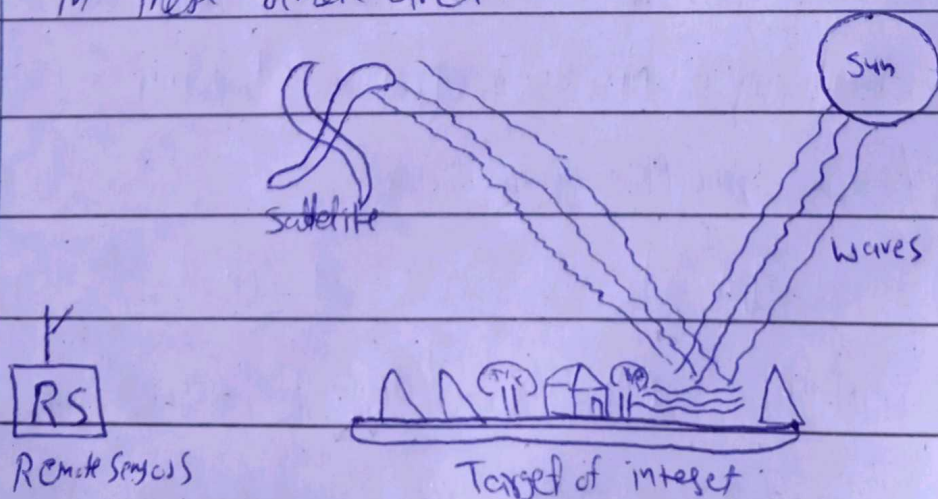
Iron is responsible for formation of blood in the body and to support some organs - It saves body from anemia -

d- How remote sensing can be employed for environmental process-

Remote sensing is a process used to gather data of remote area or inaccessible area with the help of remote sensors and a satellite-

Following method can be utilized for environmental process-

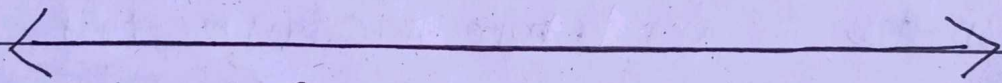
1. Remote sensing mainly requires the waves coming from sun and a target of interest-
2. When the sun ^{waves} ~~rays~~ interact with the target of interest, they are supposed to reflect back-
3. During the above process, a satellite employed above that area catches the reflected rays-
4. At last these rays are converted into image forms with scientific method and sent back to the earth-
5. This is how the scientists look over any changes in these remote area-



Employment for environmental Process.

By the help of previously mentioned processes, following environmental benefits can be achieved through remote sensing:

- 1- Disaster Management by analyzing the risk through data.
- 2- Can figure out the causes of pollution.
- 3- Time saving Process for sustainable environment efforts.
- 4- Agricultural monitoring can be done of remote sensing.
- 5- Accessing remote areas easily.



Question No 5

a- What is DRM? Give importance of Risk management in DRM.

Disaster Risk Management is the process used in order to identify the risk of any disaster before its occurrence and to act proactively in order to minimize the loss.

Disaster Risk Management requires dedicated authorities who can perform this action by the help of data and other technical equipments.

Moreover, it also requires well trained staff who are capable to rescue people and livestock during the disaster. It is pertinent to mention that the authority delegated the DRM job must have adequate funds and advance technology to act proactively rather than reactively.

Importance of DRM -

- 1- DRM helps in predicting the risk in order to save lives of human and livestock.
- 2- DRM helps in analyzing the reasons behind the disasters in order to take necessary measures.
- 3- DRM helps in agricultural management.
- 4- DRM also helps in sustainable environmental development to prevent future disasters.
- 5- DRM can minimize the loss to economy
↳ Preventive measure to mitigate the risk.
- 6- DRM can help in minimize human interference in the natural setting. that can help in mitigating disasters.
- 7- DRM helps to rescue the stranded population in the remote rural areas.

b- Define bio fuels - Explain production of biodiesel and bio gas -

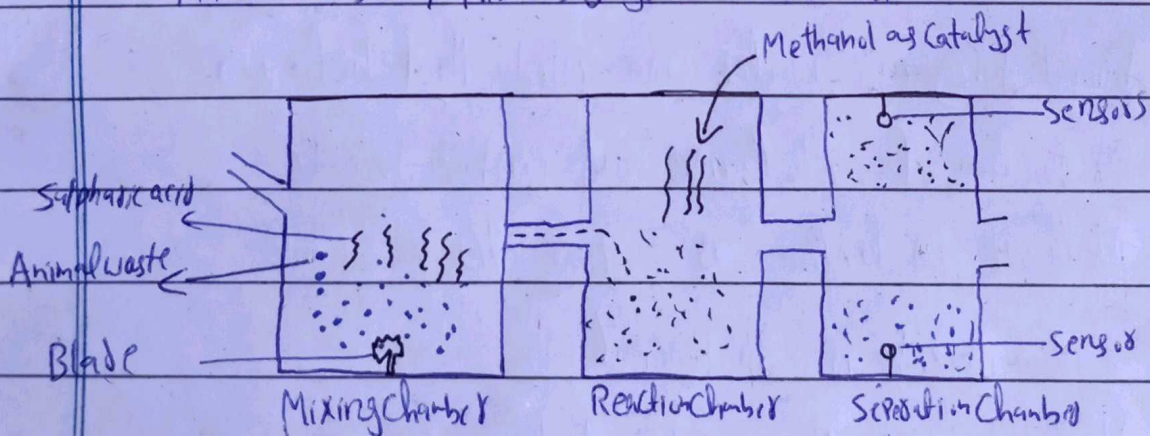
Bio fuels are those fuels that are derived from bio mass. including animal waste (dung), Plants waste, crops waste, Sugar rich sources (sugarcane & sugar beet) and finally oil rich resources like mustard seed or soya beans.

Bio fuels are considered to be safer for environment as it releases less green house gases.

Bio fuels are also thought to be cheaper than standard fuel.

Production of bio diesel:

Bio diesel is mainly produced with the help of animal or plant waste, following diagram merits attention:



First of all the animal waste is mixed with sulphuric acid with the help of blades.

Then in the reaction chamber methanol is added as a catalyst.

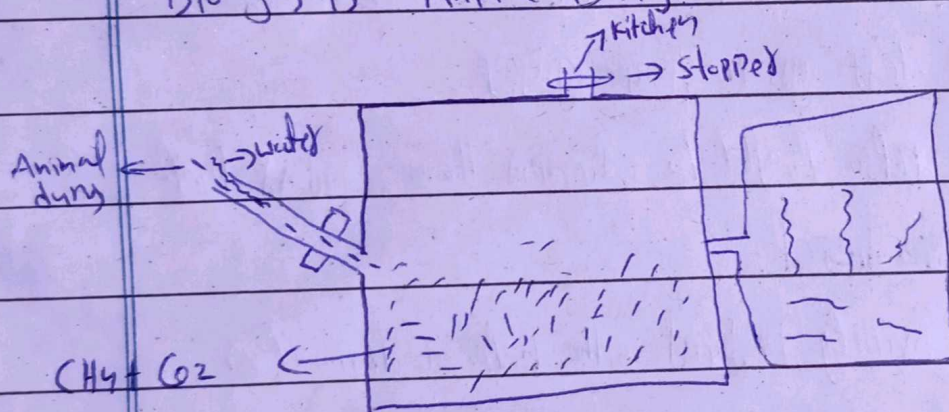
At the end, ~~the~~ with the help of sensors fuel is separated from other product.

At last, standard diesel is mixed to make it Bio fuel.

Bio Gas Production:

Bio gas is mainly used for kitchen purpose and also be used by energy sector. It is also environment friendly. Most preferable item used to produce

Bio gas is Animal Dung.

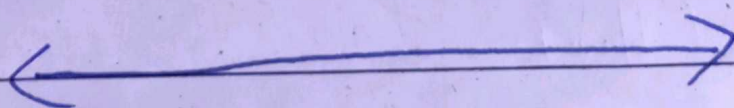


Animal dung and water are added that help in production of Methane and Carbon dioxide.

Methane production is about 70% while

Carbon dioxide is 30 Percent.

Methane gas is then used in kitchen for cooking and other necessary purposes.

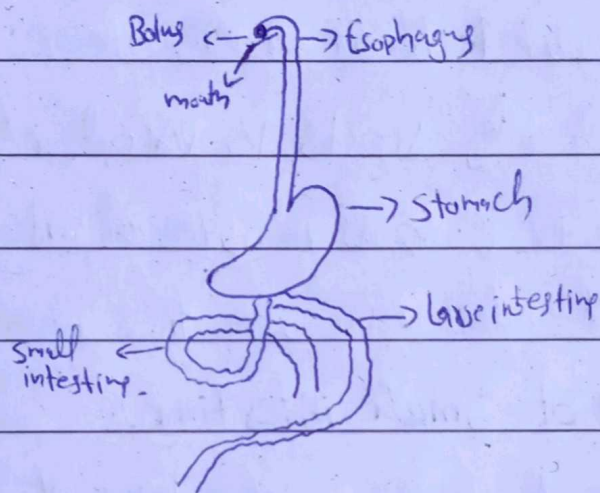


C- What is Digestive System - Explain role of Stomach and Small intestine -

Digestive system is mainly responsible for break down of large food particles into small or absolute food particles. Food particles include Carbohydrates, Proteins and Lipids.

Main organs responsible of food digestion :-

- a) Oral cavity
- b) Stomach
- c) Small intestine
- d) Large intestine



Role of Stomach

Stomach is J shaped organ in human body that contains three layers including outer layer, inner layer and middle layer responsible to provide shape protection and support to stomach.

Stomach has two opening namely Cardiac sphincter and Pyloric sphincter. Food enters into stomach through Cardiac sphincter and leave through Pyloric sphincter. Stomach releases following 3 important things to help in digestion :-

Mucus

for protection of innermost layer

Hydrochloric Acid

To kill all the ~~for~~ microorganism in the bolus.

Pepsinogen

Mainly inactive. Its active form pepsin (enzyme) is responsible to break proteins into polypeptides.

Stomach only digests 10 percent of food - food remains for 4 to 6 hours in stomach and leaves towards small intestine in semi fluid form -

Role of Small intestine:

Almost 90% digestion takes place in small intestine

It is 6 meters long and has 3 main parts -

a) Duodenum

b) Jejunum

c) Ileum

Duodenum :-

It mainly releases its only enzyme enterokinase -

a) Pancreas releases pancreatic juice

b) Amylase to break remaining starch into maltose

c) Lipase to break fats into fatty acids

d) Trypsinogen Trypsin converts protein into dipeptide

e) Sodium bicarbonate neutralizes acidic nature of chyme

Liver :: Bile converts remaining fats into fatty acids.

Jejunum ::

Aminopeptidase Converts ~~amino acids~~ polypeptides into dipeptides

Trypsin Convert dipeptides into AminoAcid

Lipase Converts fats into fatty acids.

Lactase Converts Lactose into glucose

Maltase Converts Maltose into glucose.

Ileum ::

villi :: absorb the nutrients and helps in transferring the nutrients into blood.

←—————→
Q- Define Plastics - Give their properties applications and environmental risks

Plastics are also known as polymers that are useful due to their unique nature.

Properties ::

Plastics are flexible and can be shaped according to the requirement.

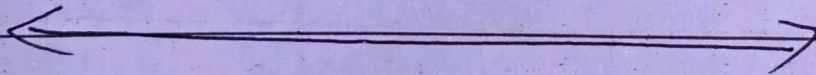
Plastics are durable and are capable to be used as bags or luggage covers. Moreover, they can carry huge amount of weight.

Plastics are also preferred more due to their

unique property of being light in weight -

Environmental Risks:-

- 1- Plastics are polymers can not decompose either by incineration or composting.
- 2- Plastics life is way longer making them permanent risk for biodiversity and ~~eco~~ aquatic life.
- 3- Plastics mainly contribute in land pollution and water pollution.
- 4- Plastics mainly clog the drainage system causing urban flooding.



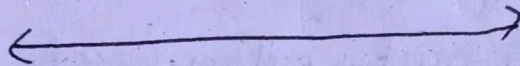
Question No 8

Part A

As per the given condition, following merits attention

- A is to the right of B = $\boxed{B} \boxed{A}$
- B is to the right of C = $\boxed{B} \boxed{A} \boxed{E} \boxed{C}$
- B is to the right of D = $\boxed{D} \boxed{B} \boxed{A} \boxed{E} \boxed{C}$

So A is in the middle.



Part B

Running towards north = 4 km

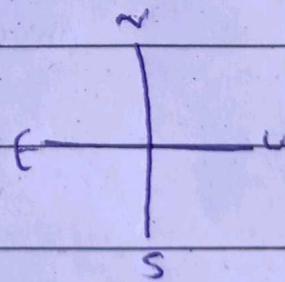
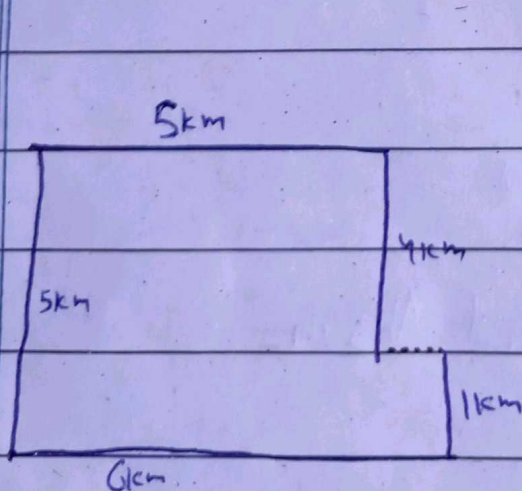
Turning left (East) = 5 km

Again turning left (South) = 5 km

Turning left (West) = 6 km

Final left turn (North) = 1 km

Above in view following diagram is to be made.



Q1- How many km are you from the place you started

1 km away from starting point

Q2- In which direction will you be running while finishing -

While finishing, I will be running towards North direction

Q3- After taking 2nd turn, in which direction will you be running -

After 2nd turn I will be running towards West direction -

Q4 - from finishing point if you have to reach the starting

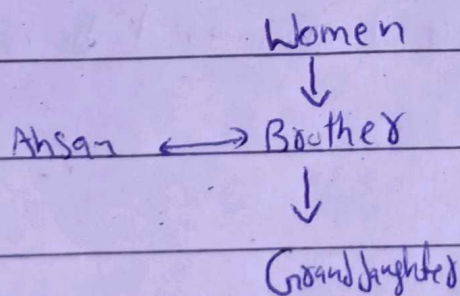
point, in which direction will you have to run -?

I have to run towards East direction to reach my starting point

Question No 6

A.

As per the given conditions, following relations are indicated



Thus the Women is mother of Ahsan.