

Part II Section A

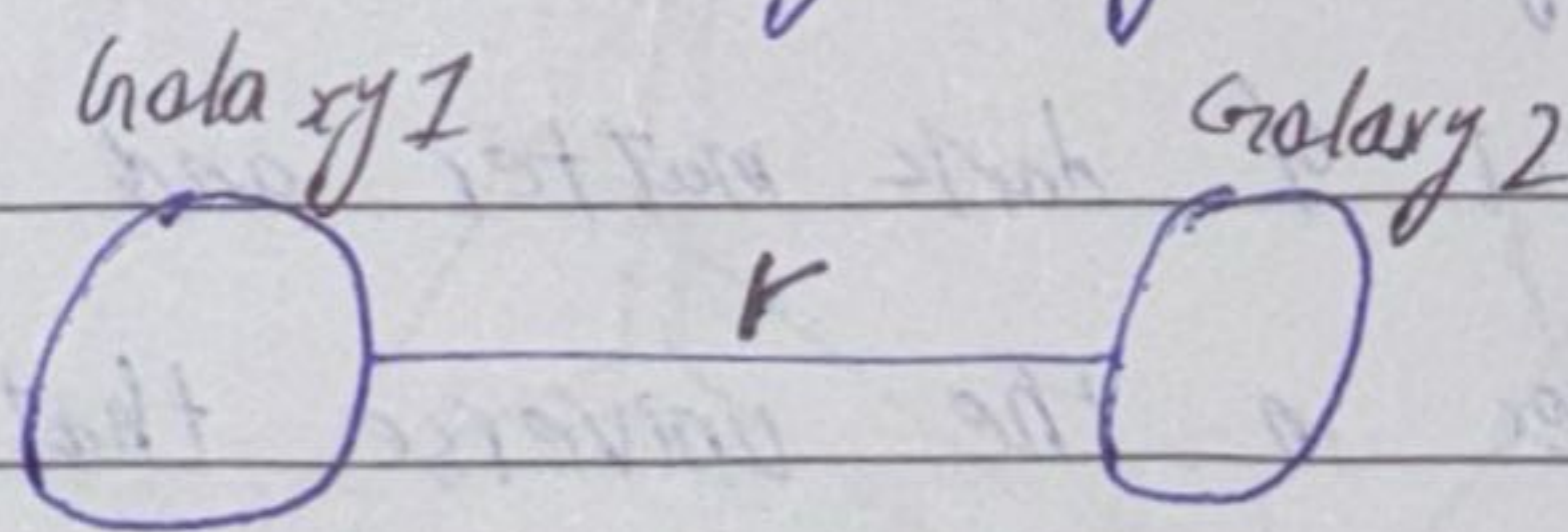
Q:2

(a)

Big Bang Theory

According to ~~bigband~~ bigbang theory, the universe was singular 13.7 billion year ago. Due to high energy and force, an explosion happened and many galaxies are formed. Due to the formation of many galaxies, the ~~universe~~ current universe came into existence.

According to big bang theory, the galaxies in the universe are expanding ~~no~~ and ~~moving~~ away since the explosion.



The galaxies in the universe are continuously expanding and the theory says that when the galaxies will reach the maximum expansion then the universe will go toward singularity.

There is basically a force of repulsion which is repelling the galaxies away. Due to that force, the galaxies are expanding and one day when maximum expansion will happen, the universe will

go in the form of singularity.

The structure of universe according to big bang is that the universe after big bang is expanded and formed many galaxies of different forms like

- Elliptical galaxies

- Spherical galaxies

Our galaxy, The Milky Way is spherical galaxy.

~~These galaxies contain stars, dark matter and dark~~

~~energy.~~ There is dark matter and dark energy

other than galaxies in the universe. Most of the

universe consist of dark matter and dark energy. There

are black holes in the universe that consist of dark

energy. Black holes are the bodies of extreme high

gravity and force of attraction even the light

cannot escape out of it.

There is a theory which says that when the

universe will expand to its maximum, it will

convert into the singularity again. This is basically

the structure of universe according to the

big bang theory.

(2)

تاریخ:

(b)

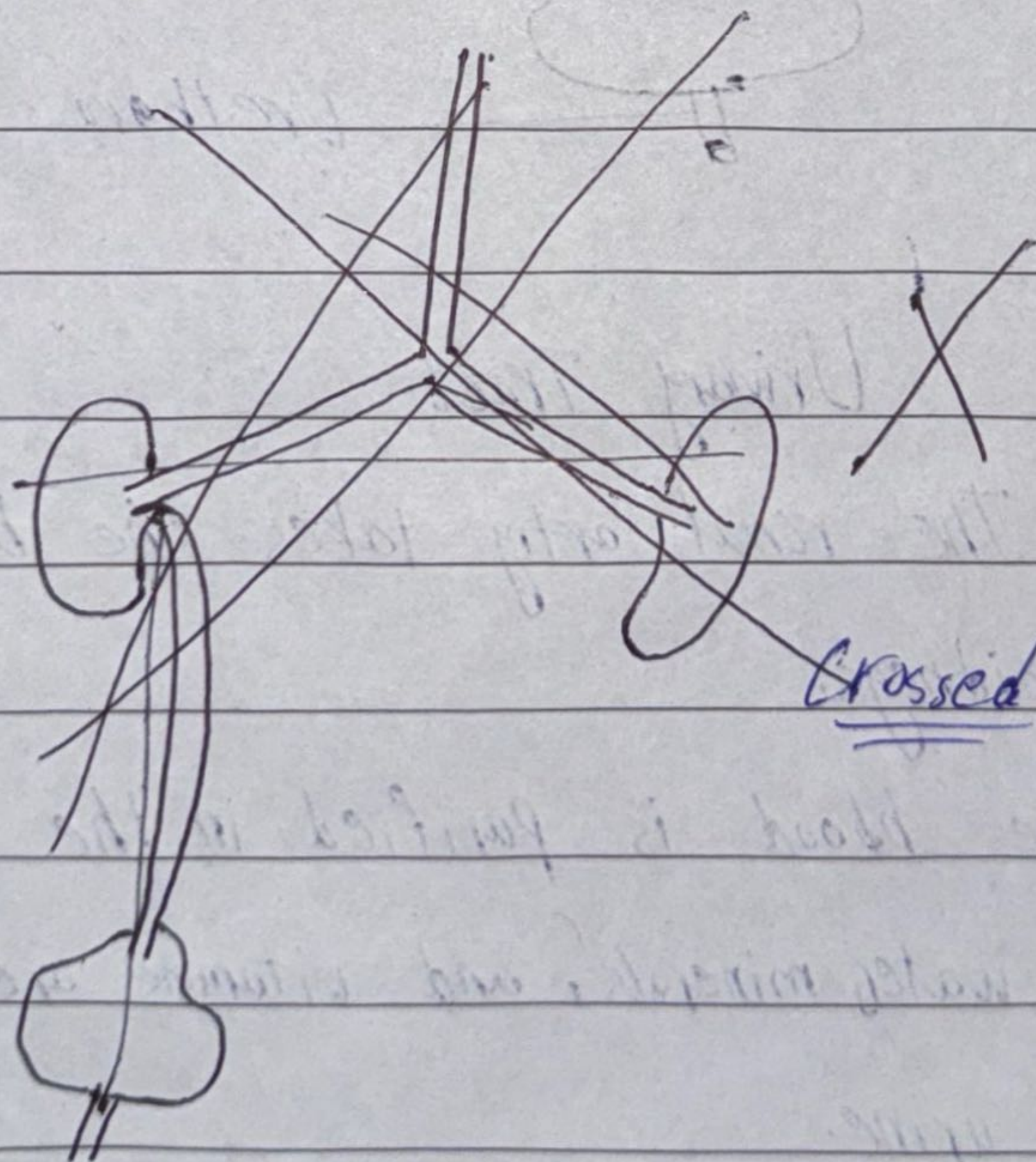
Urinary system

Urinary system in the body is mainly responsible for the production and excretion of extra materials in the body in the form of urine.

Urinary system is basically the excretory system from where the urine passes out of body.

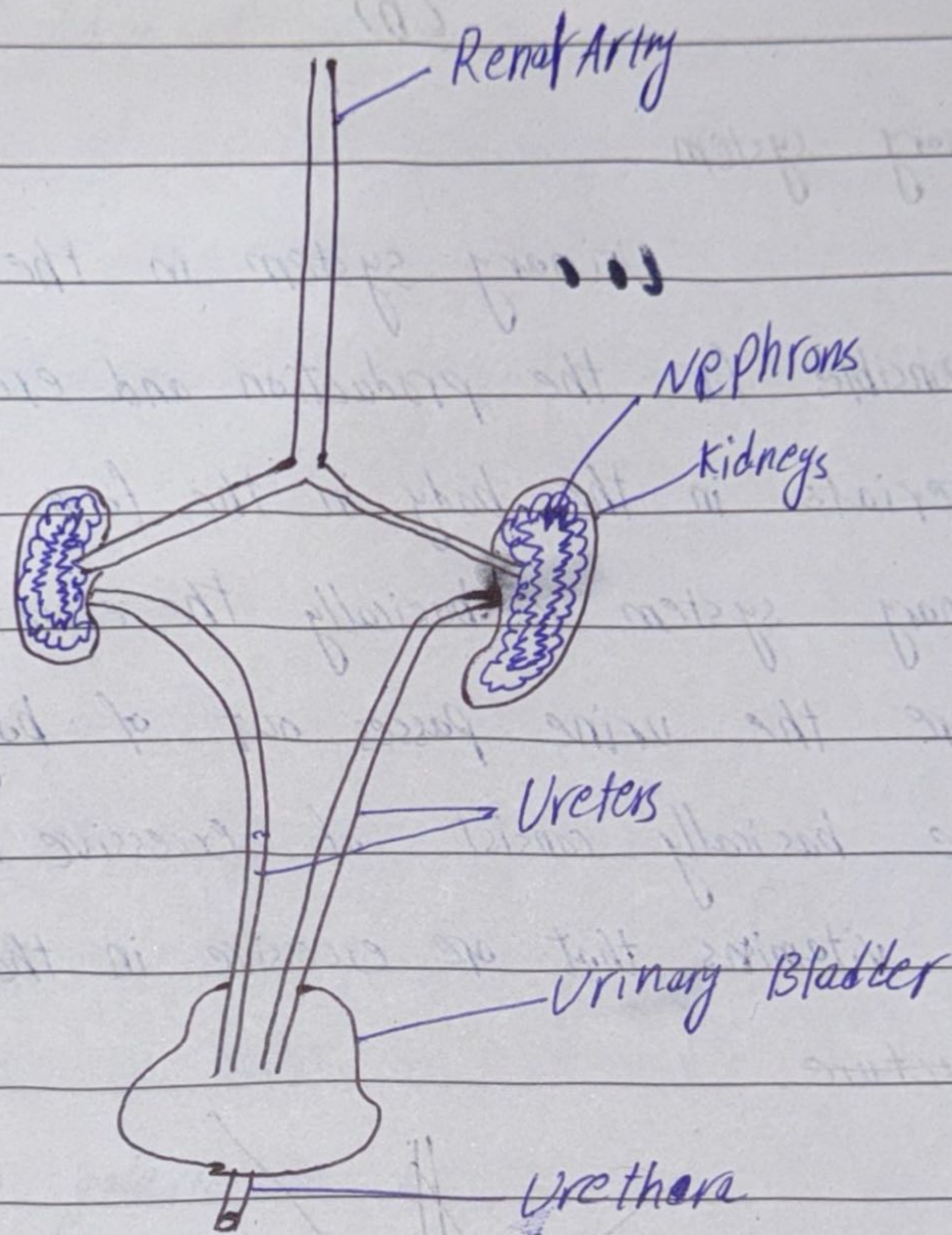
Urine basically consist of excessive water, minerals, and vitamins that are excessive in the body.

Structure



Structure

The structure of the urinary system is following.



Urinary Tract

Renal Artery: The renal artery takes the blood from body to the kidneys.

Kidneys: The blood is purified in the kidneys and excessive water, minerals, and vitamins are removed which is called urine.

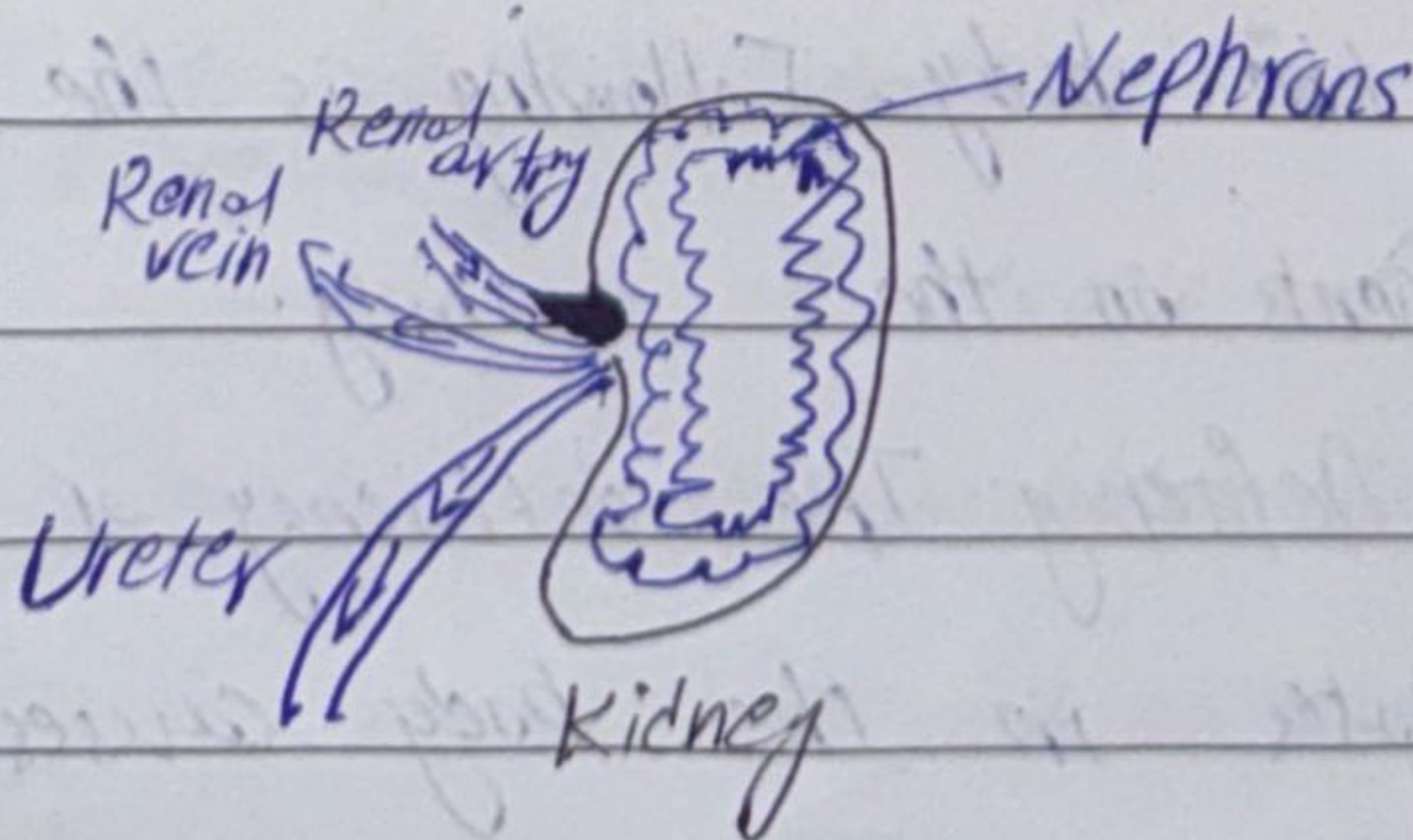
Ureters: Ureters are the tubes originating from each kidney. Ureters are responsible for the removal of urine from the kidneys.

Urinary Bladder: At the end of ureters, urinary bladder is present. Urine is removed from kidney with the help of ureters and transferred to the urinary bladder. Urinary bladder is the temporary storage for the urine.

Urethra: A small tube like structure originates from urinary bladder called urethra. Urethra is responsible of excretion of urine out of body.

~~Nephrons~~ Nephrons

Nephrons are tiny structures present inside the kidneys. Nephrons are the structures in the kidneys where the filtration of blood takes place and excessive water and minerals are removed out of blood. ~~They are a~~ There are about 1-2 million nephrons in a single kidney.



Nephrons are mainly the structures responsible for the blood filtration and urine production.

(C)

Un-Balanced Diet

Un-balanced diet is basically ~~what~~ a diet which contains ~~with~~ excessive or deficient essential nutrients.

The perfect balanced diet consists of ⁴⁰ ~~50~~ % carbohydrates, 25% ~~pro~~ proteins, 25% lipids, and 10% minerals.

The ideal calorie count a body needs in a day is 2000-2500 kcal.

The diet which contains more than or less than the essential nutrients is termed as unbalanced diet.

The carbohydrates, proteins, fats, and the minerals are the essential nutrients that the body needs.

Affects on Healthy living

The ~~ef~~ excess or deficiency of these nutrients is unbalanced diet and causes problems in the body. Following is the individual impact of these nutrients on the ~~body~~ body.

Carbohydrates: Deficiency: The deficiency of less amount of carbohydrates in the body causes:

- i) Low energy in body.
- ii) Low mental performance
- iii) Inability to focus.

Excess: The excess of carbohydrates causes:

i) Weight gain (Obesity)

ii) Diabetes

Proteins: Deficiency: The deficiency of proteins in the body causes:

i) Low energy of body.

ii) Muscle and tissue weakness.

Excess: The excess of proteins in body causes:

i) Renal dysfunction

ii) Kidney stones

Lipids: Deficiency: The deficiency of lipids causes:

i) Low energy

ii) Weaker insulation of vital organs.

Excess: The excess of lipids causes:

- Cholesterol

Minerals: There are different types of mineral like phosphorus, iron, zinc, sodium, fluorine etc. in the body and deficiency or excess of these minerals causes different health problems in the body.

So, as a whole, the excess or deficiency of these minerals in the diet is termed as unbalanced diet and causes many problems in human health.

(d)

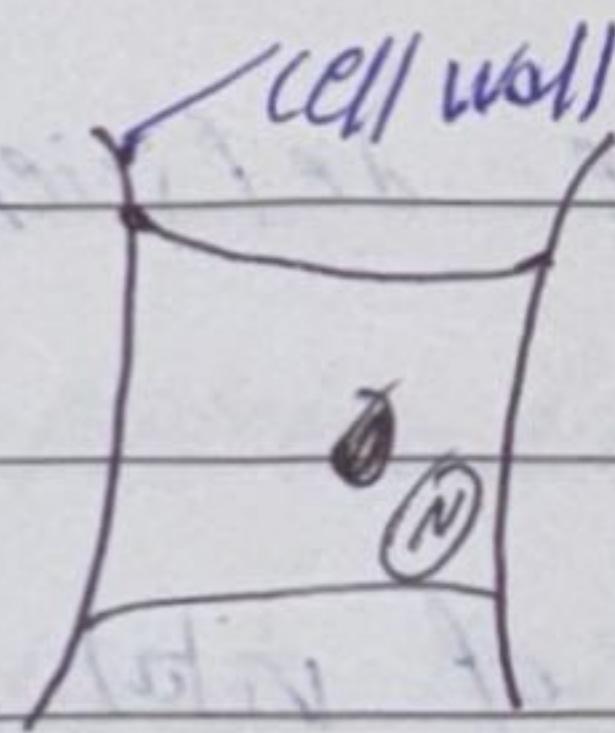
A cell consists of many structures in it. Cell wall, cell membrane, cytoplasm, and mitochondria are vital parts of a cell.

Following is the explanation of these parts

Cell is the basic structural and functional unit of life that consists these parts. Following is the explanation of these parts.

i) Cell wall

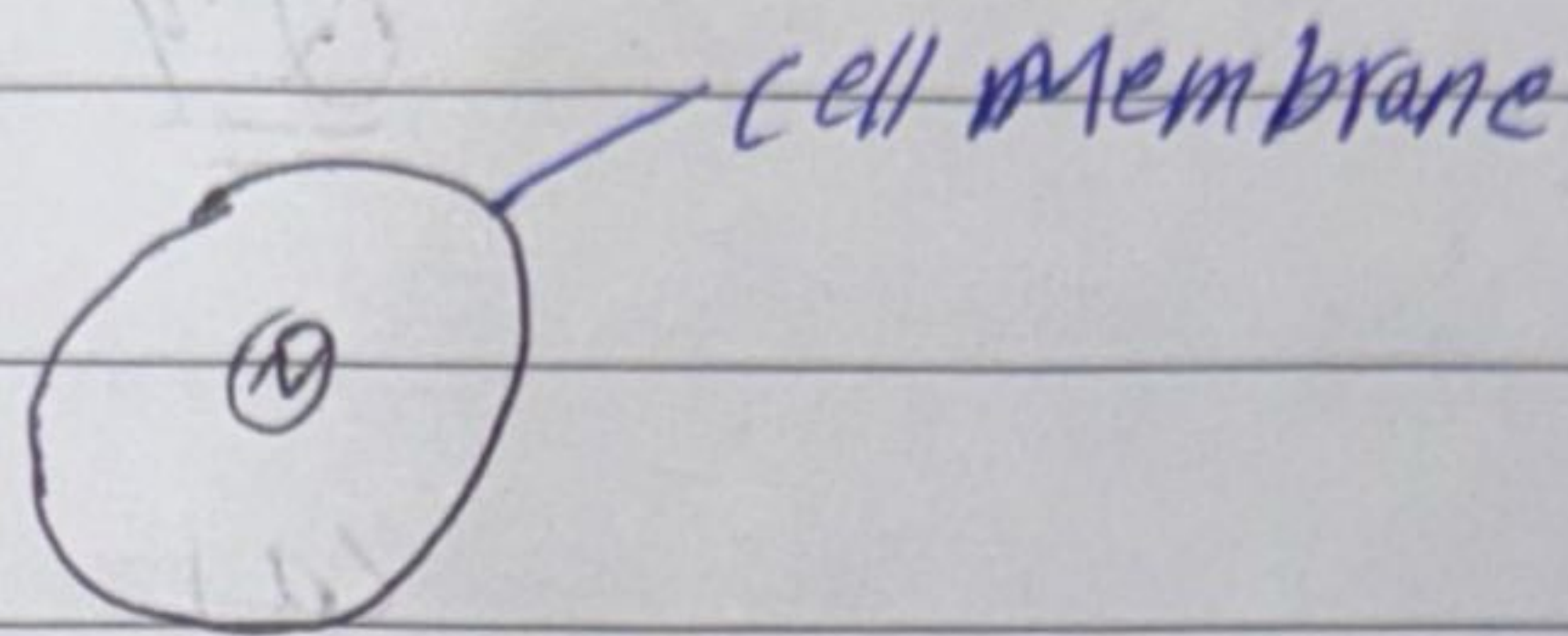
Cell wall is present in the plant cells but absent in the animal cell.



Cell wall is the upper most layer in the plant cells. It has a rigid structure. Cell wall basically protects the plant cells from harsh environment. It provides support to the plant cells and way to enter the nutrients in plant cell.

Cell membrane or Plasma Membrane

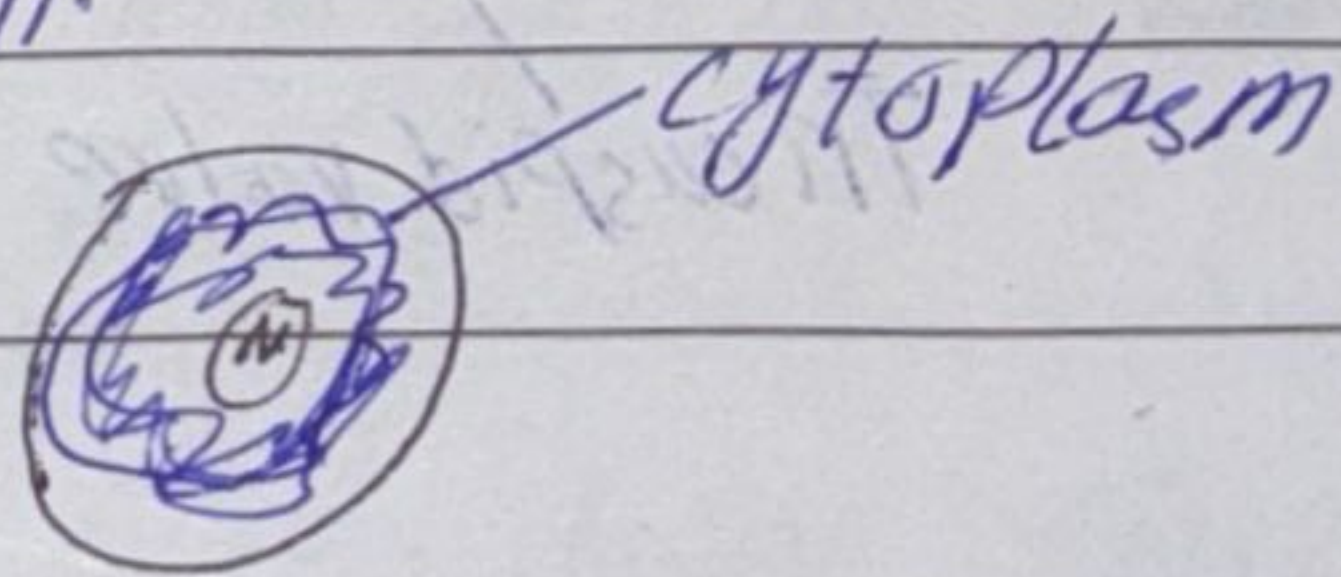
Cell membrane is the outer most layer in the animal cells and second layer beneath the cell wall in animal cell.



Cell membrane consist of plasma which is a gel like structure. This plasma protects the cell. ~~Cell~~ Cell membrane also provides structure, support and protects the cell.

Cytoplasm

Cytoplasm is the fluid filled structure in the cell which contains 90% water, 2% gases and 8% minerals. Cytoplasm basically is responsible for the transfer of nutrients. It also acts as the storing body in cell.



Mitochondria

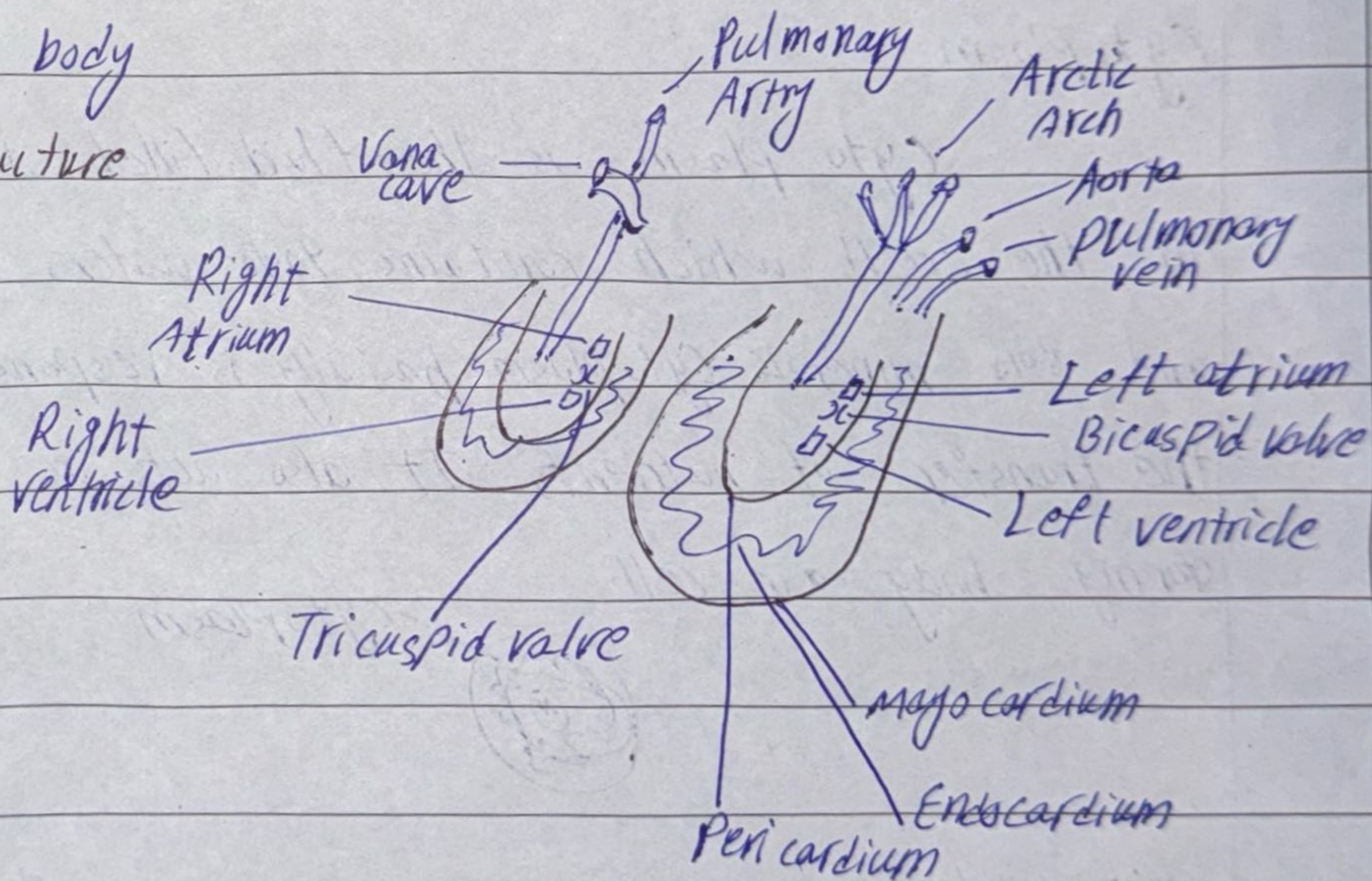
Mitochondria is the power house of the cell. Mitochondria is self replicating body and number of mitochondria varies from cell to cell. Mitochondria is the major storage bodies body in the cell. ~~Proteins~~ Ribosomes transfer the material, to mitochondria after protein synthesis.

Q:4

(a)

Heart

Heart is the major organ circulatory organ of the body that pumps blood. It has a muscle like structure and from the heart the blood goes into the body structure.



The Role: Heart is the muscle like structure in the body responsible for pumping blood. There is a pair of atriums and ventricles in the heart which are mainly responsible for pumping the blood. These pairs continuously contract and expand to pump the blood which is called heart beat. A human heart beats 72 times in a ~~min~~ minute and 1 beat is in 0.7 seconds.

i) The pulmonary artery carries the deoxygenated blood to lungs and then the pulmonary vein transfers the oxygenated blood from the lungs to heart.

ii) The pair of atriums and ventricles then pump the blood in body through contraction and expansion.

iii) There are also tricuspid and bicuspid valves to stop the over flow.

iv) The blood enters heart through vena cava.

v) There are three layers of heart, the myocardium, endocardium, and pericardium. These are muscle like structure which give shape and support to heart and also help in pumping the blood.

Blood Vessels

There are total three types of blood vessels in the circulation system.

Artries: Artries carry the oxygenated blood from heart to body except the pulmonary artery. Artries are rigid and strong in structure and blood pressure is high in artries.

Veins: Veins carry the deoxygenated blood from body to heart except the pulmonary vein. The blood pressure in veins is comparatively lower than the artries.

Capillaries: Capillaries are soft and small vessels connecting the arteries and veins. Capillaries carry the oxygenated as well as deoxygenated blood. The blood pressure is least in capillaries.

(C)

Functions

These nutrients perform different functions in the body. Following is the explanation.

Carbohydrates: i) Carbohydrates are main source of energy in the body.

ii) Carbohydrates are important for the functioning of brain.

iii) Carbohydrates also provide the essential sugar to body.

iv) Carbohydrates improve the focus.

Proteins: i) Proteins are also energy source and provide the energy to body.

ii) Proteins are essential for muscle and tissue strengthening.

iii) Proteins are essential for the overall strength of body.

Fats: i) Fats are also source of energy.

ii) Fats provide essential lipids to the body.

iii) Fats are essential for fat soluble vitamins that are A, D, E, K.

iv) Fats provide insulation to major ~~at~~ organs.

Calcium: i) Calcium is ~~in~~ a mineral which is important for bone health.

ii) Calcium overall strengthens the body and bones.

Iron: i) Iron is essential for blood or haemoglobinⁱⁿ.

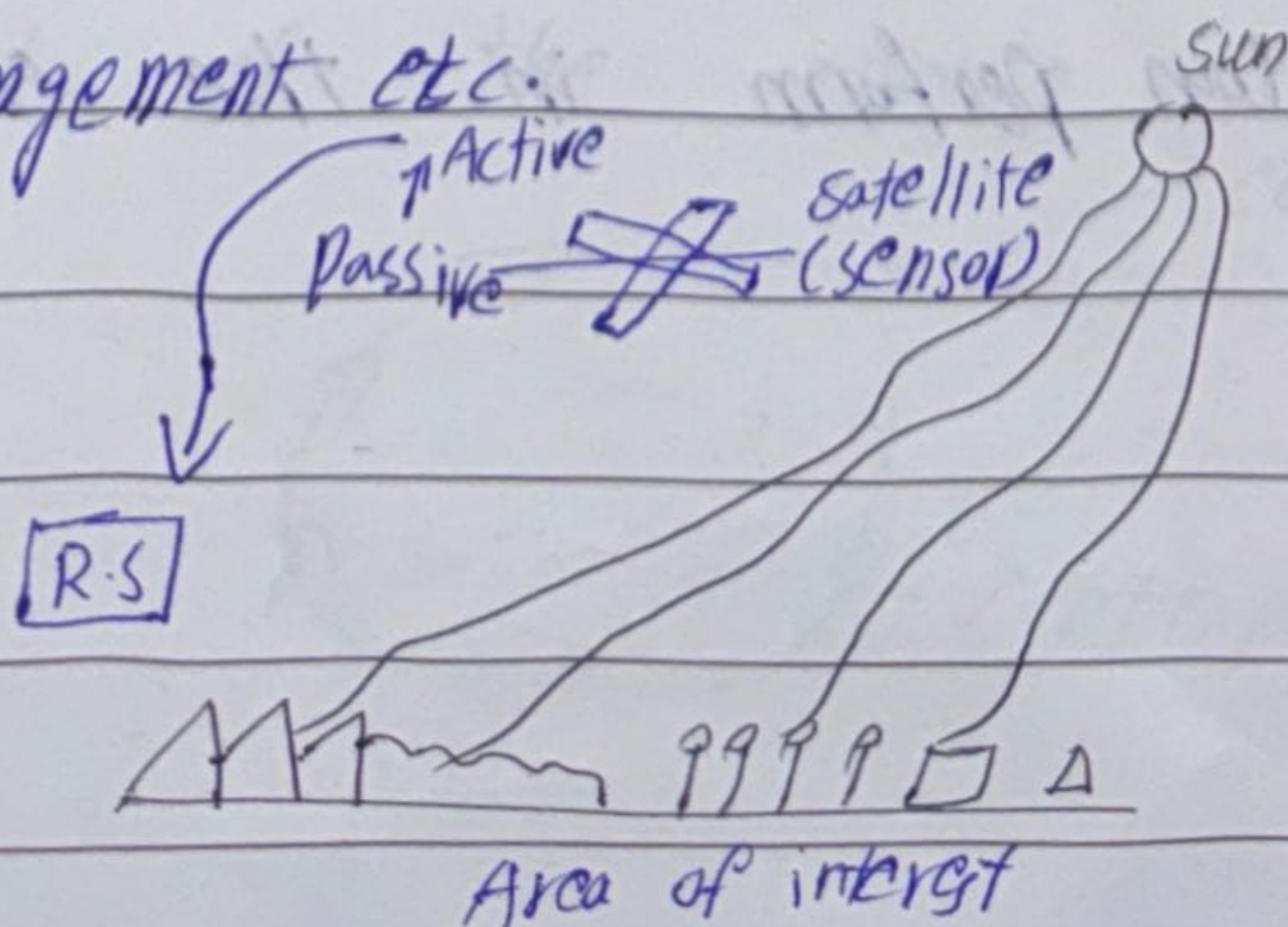
ii) Iron provides nutrition to the blood.

iii) Iron is important for the nails.

(d)

Remote sensing

Remote sensing is the process of analysing different geographical locations. Remote sensing is widely used in the many situations like analysing any geographical location, tough terrain, environmental process, disaster management etc.



Use For Environmental Purpose

Remote sensing can be used ~~in~~ ~~for~~ for many environmental purposes like disaster management, analysing forests, and analysing of sources causing pollution.

- It is the process widely used to gather information about the environment processes.
- Like the remote sensing can used to identify the sources from where the environmental pollution is originating.
- It can also be used for disaster management by analysing the sources that can cause disaster on wide ranges.
- It is also used the to analyse the dense forests where humans cannot reach.
- It is also used to analyse the geographical area.

These are some of the functions that remote sensing can perform in the environmental process.

(b)

Cyclone

Cyclone is formed as a system of rotating winds around a low pressure centre.

Cyclone is formed by

Formation of cyclone

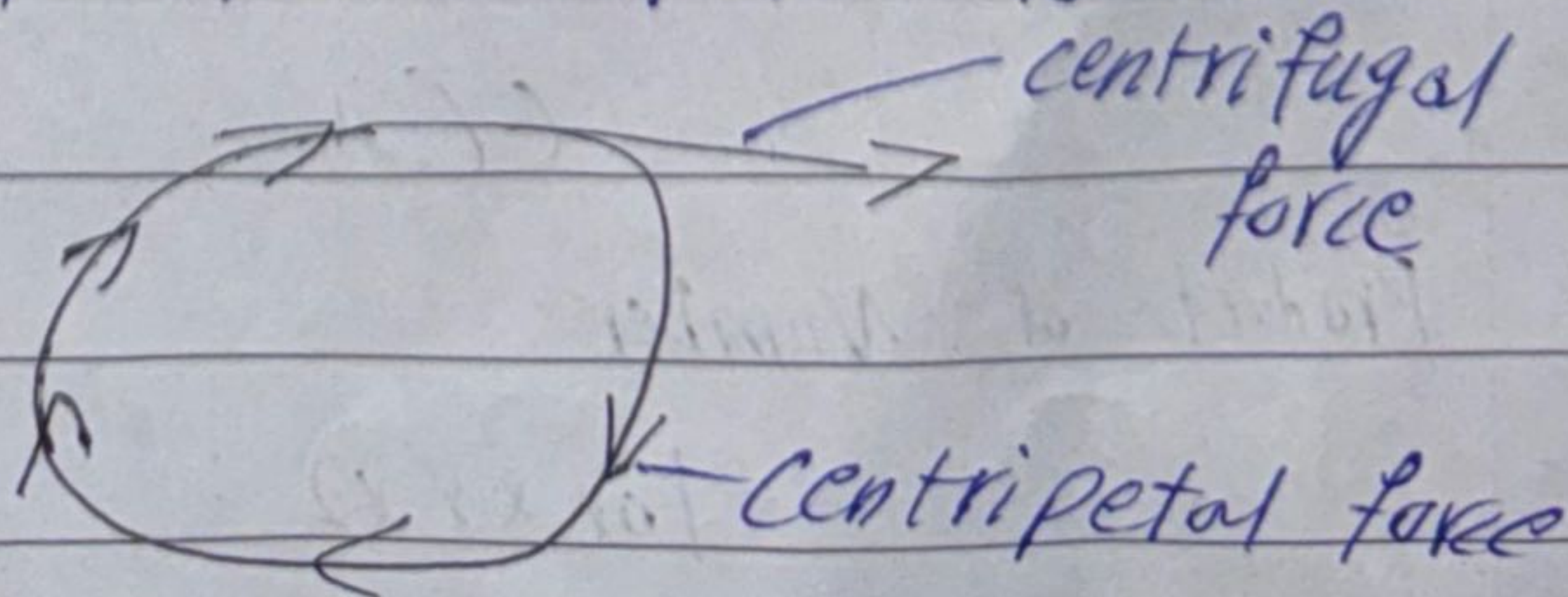
Cyclone is formed by the

Coriolis ^{is} effect.

The Coriolis effect says that the pressure at the center is lower, the wind starts rotating around that low pressure center. In result of which the cyclone is formed. The Coriolis effect is analogous to centrifugal force.

Centrifugal Force.

The centrifugal force is basically formed as a result of the centripetal force. The centripetal force rotates around the circle and as an effect of which the centrifugal force moving out of the circle is formed.



(18)

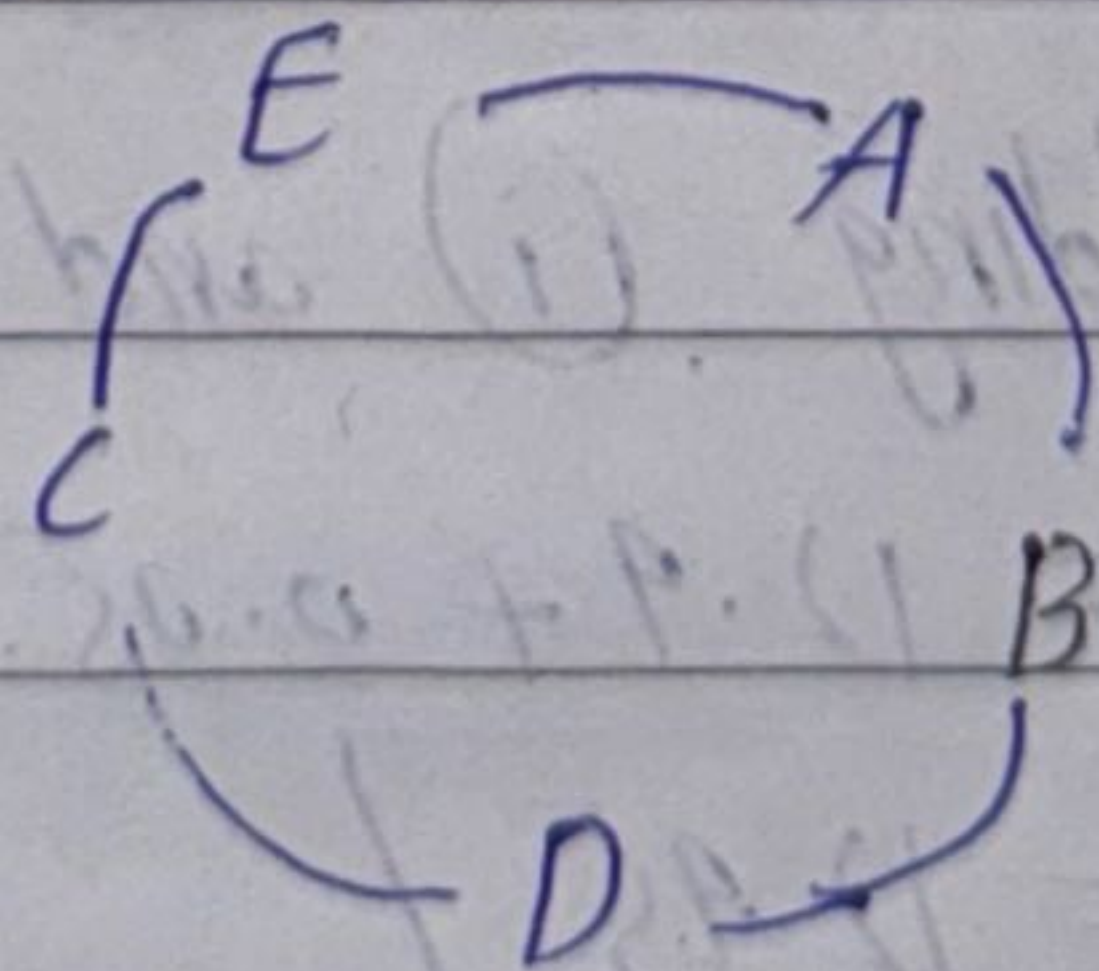
The Coriolis effect is analogous to this centrifugal force

→ As a result of this analogy of the Coriolis effect and the centrifugal force, an invisible rotation of winds occur around a lower pressure center forming the cyclone

Q: 8

(16) (17)

(A)



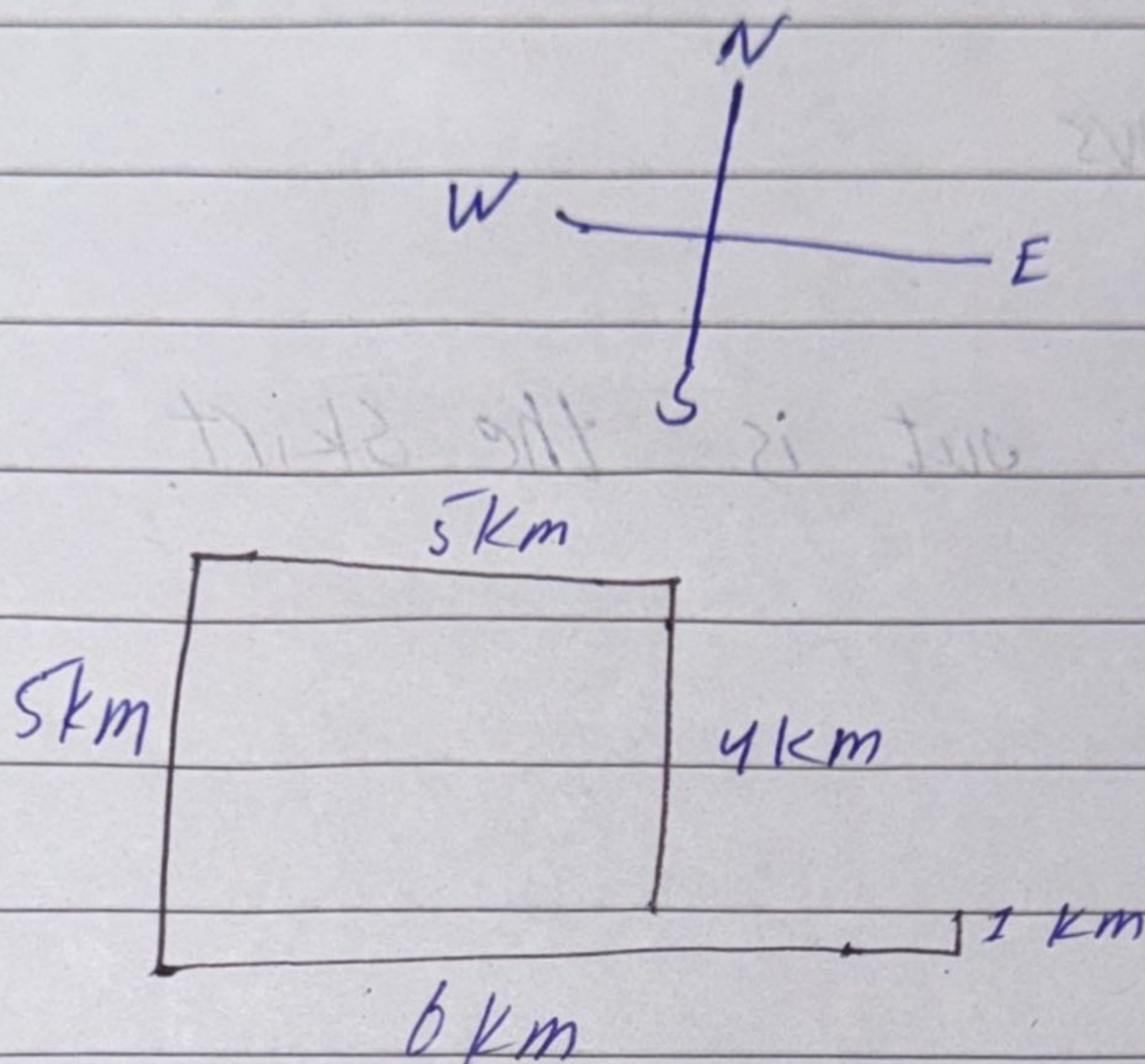
D is in the middle

(17)

(18)

تاریخ:

(B)



- i) I am 2 km east from where I started
- ii) In the direction of North.
- iii) In the direction of south after second turn.
- iv) In the direction of west.

(D)

✓ Number of Triangles

There are total 18 triangles

(C)

a) THRSI

shirt

b) AOTC

Coat

c) EOUBSL

Blouse

O) KTRJS

Skirt

E) RETAEWS

Sweater

The odd one out is the skirt

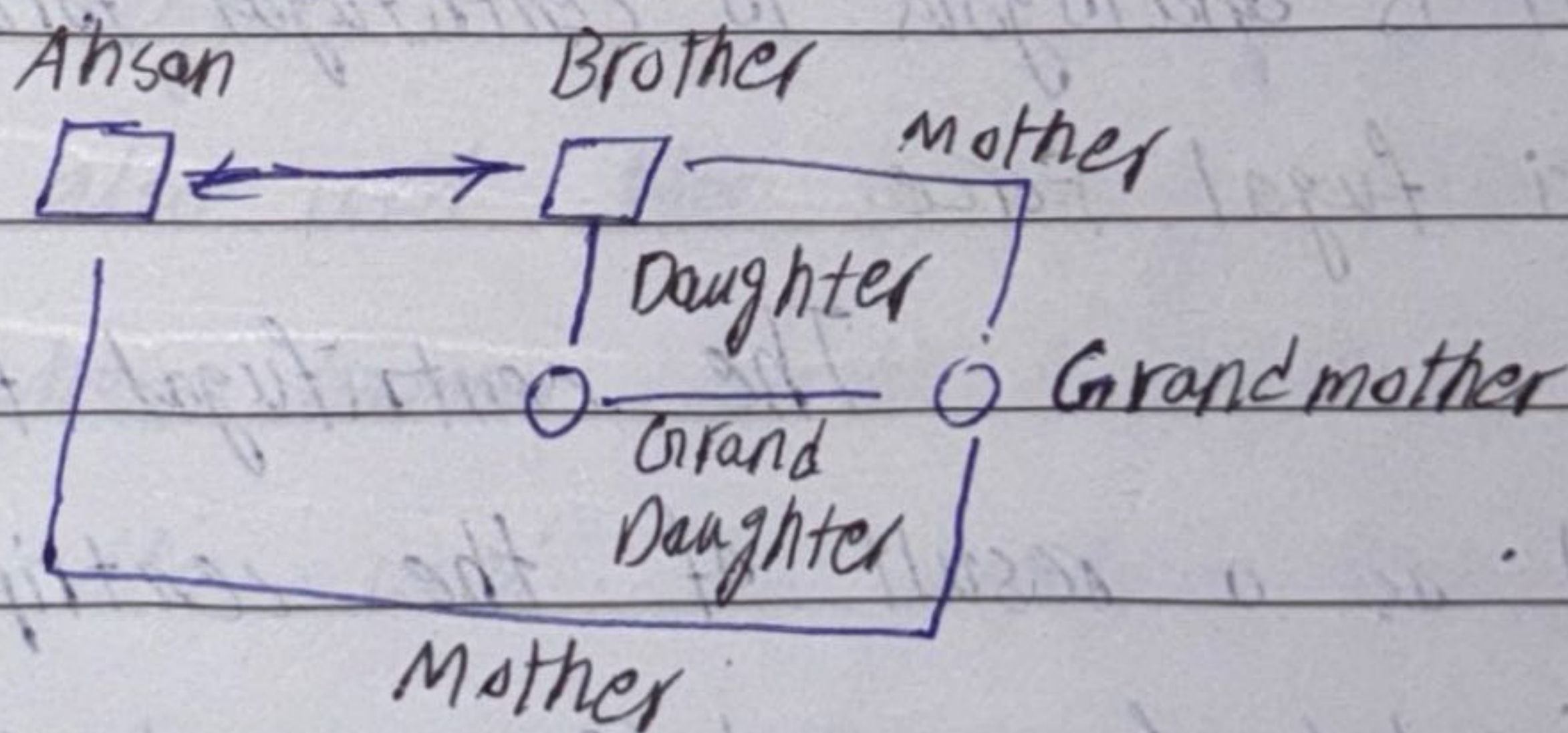
Section B

20

Q.6

(A)

Relation



- The woman is the Mother of Anson.

(C)

Product of Number

$$10x \times x \times 2$$

$$10x^2 \times 2 = 144$$

$$10x^2 = \frac{144}{2}$$

(21)

(17)

(20)

تاریخ:

$$10x^2 = 72$$

~~10~~

Taken under root on b/s

$$\sqrt{10x^2} = \sqrt{72}$$

$$10x = 8.5$$

$$x = \frac{8.5}{10}$$

$$x = 0.05 \rightarrow (i)$$

$$\begin{array}{r} 10 \sqrt{8.5} \\ 80 \\ \hline 50 \\ 50 \end{array}$$

Sum

$$10x + x + 2$$

$$11x + 2 = 144$$

$$11x = 144 - 2$$

$$11x = 142$$

$$x = \frac{142}{11}$$

$$x = 12.9 \rightarrow (ii)$$

Number:-

Adding (i) and (ii)

$$x = 12.9 + 0.05$$

$$\boxed{x = 12.95}$$

sum of number is 12.95

(22)

تاریخ:

(D)

The L.C.M of two numbers is 48. The numbers are in ratio 2:3.

2:3

$$16, 24 = 48$$

L.C.M of 16 and 24 is 48 and ratio b/w these numbers is 2:3.

8	16, 24
2	2, 3
3	1, 3
	1, 1

So, the sum of these no. is

$$16 + 24 = 40$$

The sum of No. is 40