SECTION - B

Q. No. 05

A=

Ahsan pointed a woman and said " Her granddaughter is the only daughter of my brother.

Qs. How is the woman related to Ahsan

Mother ← Women's granddaughter .

→ Ahsan's brother

Ahsan's niece. ← only daughter — Daughter of Brother

The niece is described as the granddaughter

of the women

Therefore, the woman must be the

mother of Ahsan.

Q No: 06 Part b

Given:

Length : Breadth = 3:2

Speed = 12 Km/hr

Time = 8 minutes

Area of rectangular Park in square meter?

distance covered around park will be perimeter.

Step 1   Distance = Speed × Time

$$= 12 \times 8$$

$$= 12 \times \frac{8}{60} = \frac{96}{60} = 1.6 \, km$$

$$= 1600 \, meter$$

$$\begin{array}{r} 12 \\ 8 \\ \hline 96 \end{array}$$

Use of Ratio:

Length = 3x,   breadth = 2x

Step = 2   Formula of perimeter of rectangle

$$2 (Length + Breadth) = Perimeter$$

$$2 (3x + 2x) = 1600$$

$$6x + 4x = 1600$$

$$10 x = 1600$$

$$\boxed{x = 160}$$

Step 3   Length = 3x = 3(160) = 480m ---- A

Breath = 2x = 2(160) = 320m ---- B

Step 4   Area = Length × Breadth

$$= 480 \times 320 = 153,600$$

Q No:06

'C'

* Given:

(1) Unit digit = Tens digit +2

(2) Product of
$(Number) \times (sum\ of\ digits) = 144$

$\Rightarrow$ Lets the tens digit $= x$ _ _ _ _

$\Rightarrow$ The the Unit's digit $= x+2$ _ _ _ _ _

Given Condition.

The number

$$10x + (x+2) = 11x+2 \quad ---$$

$$(11x+2)(2x+2) = 144 \quad Condition$$

if $x = 2$

$$(11(2)+2)(2(2)+2) = 144$$

$$(22+2)(4+2) = 144$$

$$(24)(6) = 144$$

so $24 \times 6 = 144$

Answer

The required two number digit is 24.

Q No: 06
(D)

⇒ Given • L.C.M = 48
  • Ratio = 2:3

⇒ Find the sum of numbers.

Lets the number be 2x and 3x

$$\begin{array}{c|c}2 & 2,\ 3\\3 & 1,\ 3\\\hline & 1,1\end{array}$$

L·C·M of 2x and 3x = 6x

$$6x = 48$$

$$x = \frac{48}{8} = 8$$

⇒ $x = 8$

So the numbers are

→ $2x = 2 \times 8 = 16$

→ $3x = 3 \times 8 = 24$

Sum of the numbers:

$$16 + 24 = 40$$

Answer = 40

Q No: 07

A=

Given:

40% of first number = 2/3 of second
number

Assume

=> First number = x

=> Second number = y

Step-1 40% of $x = \frac{2}{3} y$

$$\frac{40}{100} x = \frac{2}{3} y$$

$$\frac{2}{5} x = \frac{2}{3} y$$

2 Cancel 2 on both sides

$$\frac{1}{5} x = \frac{1}{3} y$$

3 Cross multiply.

$$3x = 5y$$

$$\frac{x}{y} = \frac{5}{3}$$

$$x:y = 5:3 \quad \text{Ratio required}$$

Q No: 07 (B)

Given:

→ Selling Price of 17 balls = PKR 720

→ Loss = Cost price of 5balls

Calculate price of 1 ball.

Cost Price of 17 balls = 17x

loss of = 5x

Selling Price = Cost Price − lost Price

$$720 = 17x - 5x$$

$$720 = 12x$$

$$x = \frac{6\,720}{12}$$

$$x = 60$$

⇒ Answer: Cost Price of one ball is 60

Q No: 07 (C)

Given:

→ Man is 24 year older than his son

After 2year, man's age = twice son's age

lets assume son's present age $= x$

$\rightarrow$ Man's present age $= x + 24$

$\rightarrow$ After 2 year =

Son's age $= x + 2$

Man's age $= x + 26$

According to given Information:

$x + 26 = 2(x + \text{son's age})$

$x + 26 = 2(x + 2)$

$x + 26 = 2x + 4$

$26 - 4 = 2x - x$

$x = 22$

Present age of Son = 22 years

Q No: 07 (D)

$\Rightarrow$ Given: ① Rashid's speed = 6 hours to type 32 pages

$= \dfrac{32}{6} = \dfrac{16}{3}$ pages/hour.

$\Rightarrow$ Kamran's Speed = 40 pages in 5 hours

$= \dfrac{40}{5} = 8$ page/hour.

=> Task: Combine Time needed to type 110 pages

=> Combine Speed.

Rashid's speed + Kamran speed

$$\frac{16}{3} + 8$$

$$\frac{16}{3} + \frac{24}{3} = \frac{40}{3} \text{ pages/hour}$$

=> Time to type 110 pages.

$$Time = \frac{Total\ Pages}{Combined\ speed}$$

$$T = \frac{110}{40/3} = \frac{110 \times 3}{40} = \frac{330}{40} = \frac{33}{4}$$

~~32.5~~   8.25 hour

0.25 hour = 15 minutes so

Time required = 8 hours and 15 minutes to type pages.

PART = II

SECTION-A.

Q NO: 02

(a) Structure of Universe according to Big Bang theory.

Introduction:

The Big Bang theory explain the origin, evaluation, and the large Structure of the Universe. According to this theory Universe began about 13.8 million years ago from an extremely hot dense, and compact State and has been expanding ever since.

Origin of Theory:

George Lemaitre, an astronomer first proposed this theory According to him universe beg from single atom.
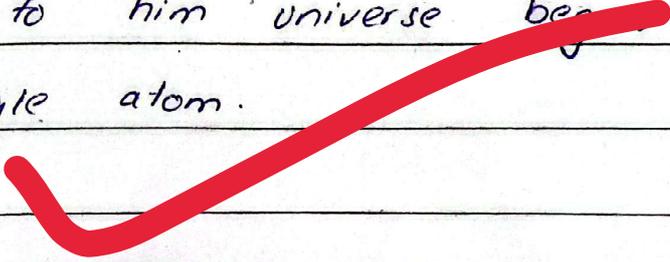
1- Initial Singularity:

The universe started as singularity. It contains very high density and temperature.

=> All universe was a pin-point size.

2- Rapid Expansion:

Abruptly, the universe expanded rapidly.

-> Increase in size of universe happened.

-> Temperature starting to go down

3- Formation of fundamental Particles:

* As the universe cooled. Atoms started their formation with electron on orbits and protons neutrons in nucleus.

Formation of atoms occur about 3 80,000 years after Big Bang.

4-

Formation of Stars and Galaxies:

Gravity pulled gases clouds together and shaped it in the form of stars.

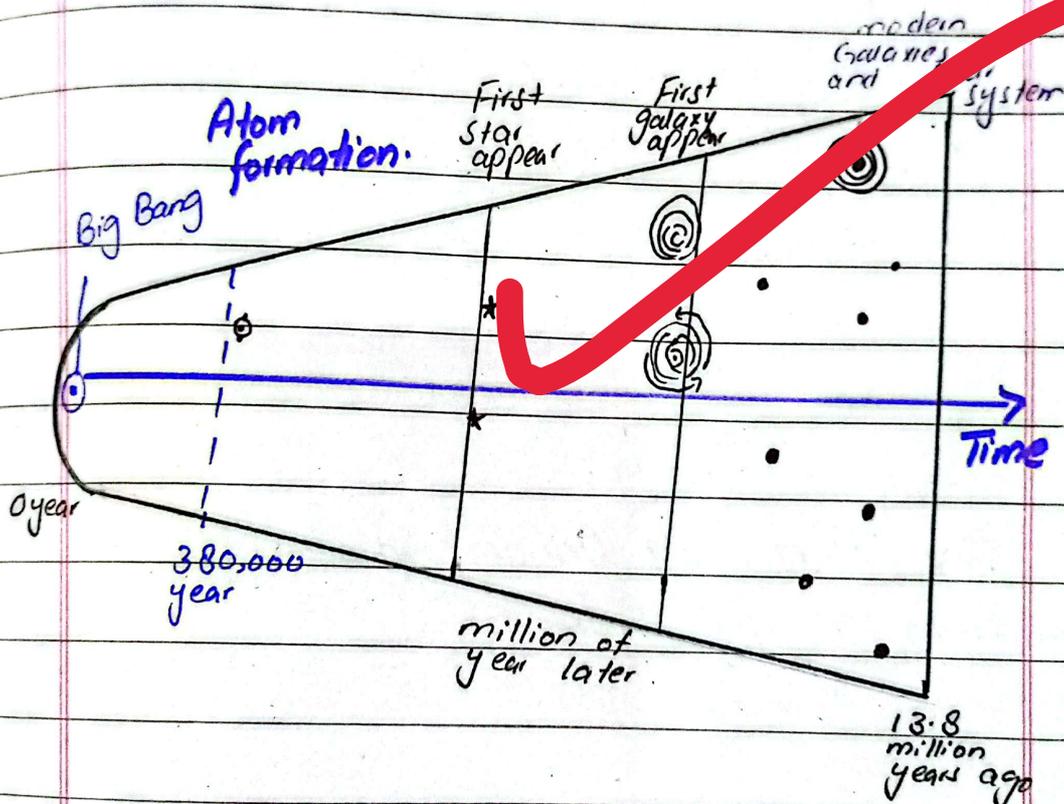First star formed after hundred of millions of years.

It leads to **Galaxies, superstars, and superclusters** development.

6- Large Scale of Universe.

So the overall shape of universe came into place with

- Planets
- Stars
- Solar systems
- superclusters

It is the Present Structure of Universe.

Future of Big Bang.

(1) It can continue to expand. Expansion can be slow or fast.

(2) Theoretically Big rip.

Conclusion.

According to Big bang theory, the universe is a dynamic, ever expanding system with a structured hierarchy formed in shape of galaxies through gravity.

Q NO: 02

b) Explain Urinary system and Working of Nephron.

→ **Introduction:**

The system which make urine and excretes it from body is called Urinary system of body.

Two Parts of Urinary System.

(A) Upper Urinary System

(B) Lower Urinary system.
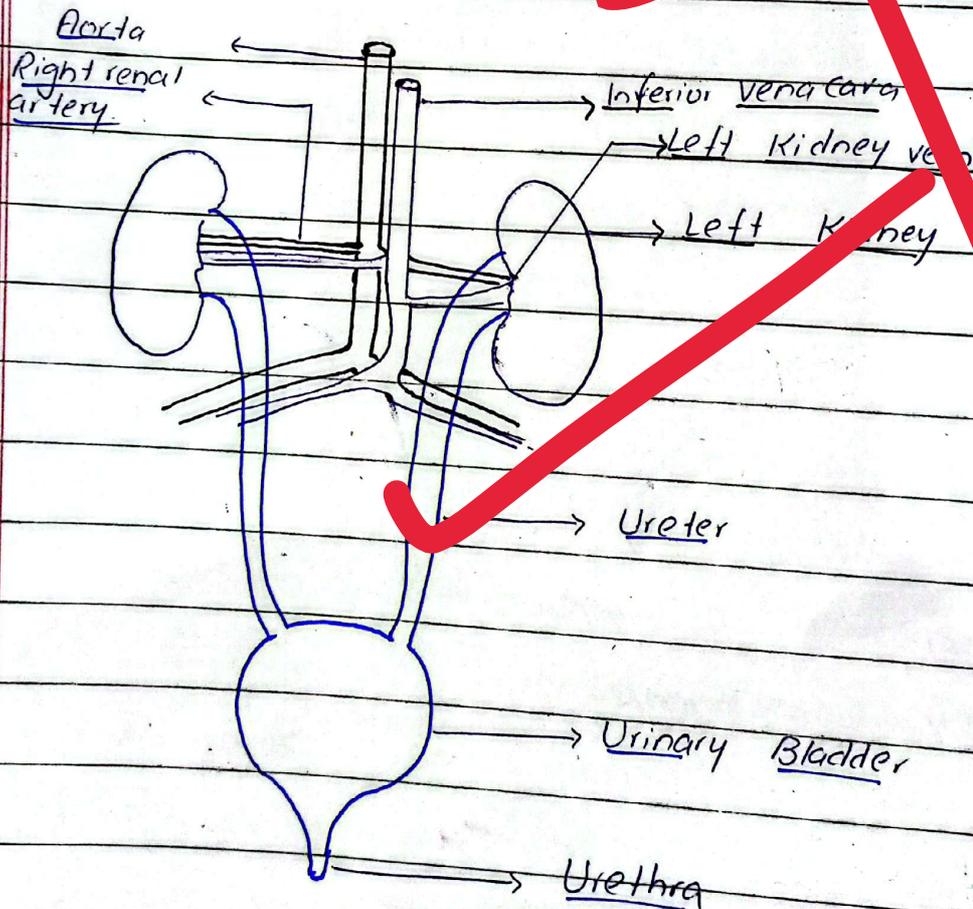
A) Upper Urinary System.

9t includes

- Kidney
- Ureters

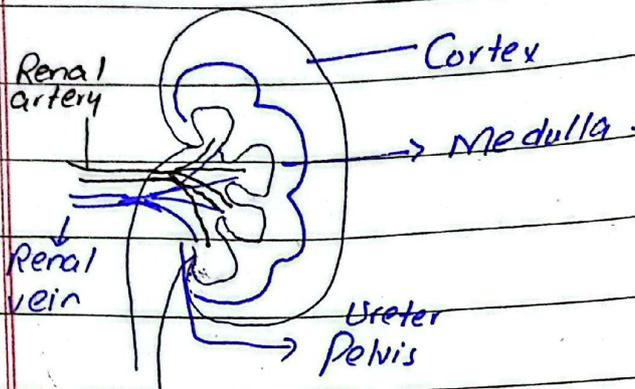**B)** Lower Urinary System.

9t includes

- Urinary bladder
- Urethra

Function: 9t Removes extra fluid and ~~ins~~ from blood into urin~~e~~

Aorta

Right renal artery

Inferior vena cava

Left kidney vein

Left Kidney

Ureter

Urinary Bladder

Urethra

Renal artery — Cortex
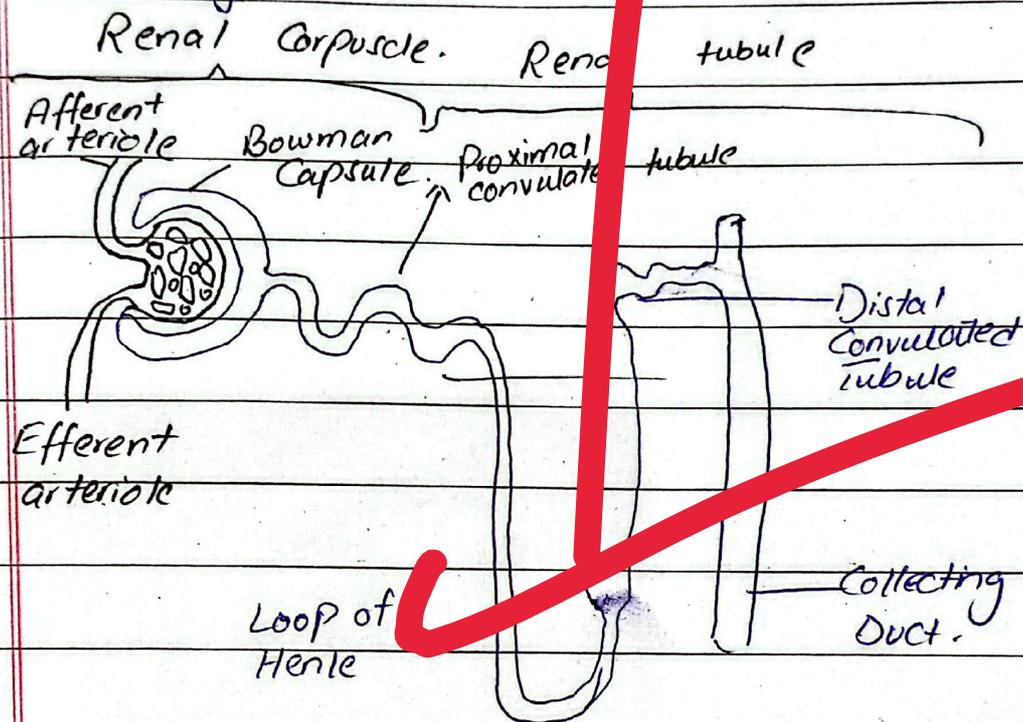→ Medulla.
Renal vein
Ureter
→ Pelvis

Nephron:

-) It is the microscopic structural and functional unit of Kidney. It is responsible for blood filtering, reabsorbing essential nutrients and water and secreting waste to form Urine. It maintains electrolyte balance and fluid balance. also Blood Pressure

-) Each Kidney has millions of nephrons

-) Once they are damaged, cannot get repaired or reproduced.

Key Components.

1) Renal Corpuscle. Initial filtering site

1a) Glomerulus = A network of capillaries

1b) Bowman's Capsule: cup shap structure, use for filtering

2) Renal tubule: Reabsorption and secretion occur here.

2a	Proximal convulated tubules
2b	Loop of henle
2c	Distal convulated tubule
2d	Collecting duct.

Renal Corpuscle. Renal tubule

Afferent arteriole
Bowman Capsule
Proximal convulated tubule
Efferent arteriole
Loop of Henle
Distal Convulated Tubule
Collecting Duct.

Q No: 02

'C'

Un- balanced diet ?
How it affects healthy living?

Introduction.

It is the pattern of eating, which includes deficiency or absence of healthy nutrients and includes excessive amount of harmful substances. It does not help with body growth, instead, promotes poor energy and diseases.

Common Features:

(1) High intake of junk, fast food or processed food.

(2) Excessive amount of sugar, salt or fat (trans unhealthy)

3) Low intake of fruits, vegetables, nuts, grain, fiber.

How it affects the body?

(1) Lack of vitamins and minerals reduces immunity. Weakens immune system

(2) high calorie intake leads to obesity, diabetes, hypertension, stroke, and cardiac issues. Chronic diseases

3) It also affects liver and brain. It can lead to fatigue, poor concentration, anxiety: Affects mental health.

4) <u>Digestive Problems</u>: low fiber intake leads to constipation, acidity.

5) <u>Hormonal Imbalances</u>: It is caused by excessive sugar, processed foods.

Conclusion:

An unhealthy diet affects both physical and mental health, reducing quality of life. A balance diet, with natural nutritious food is essential for healthy living and long term well-being.
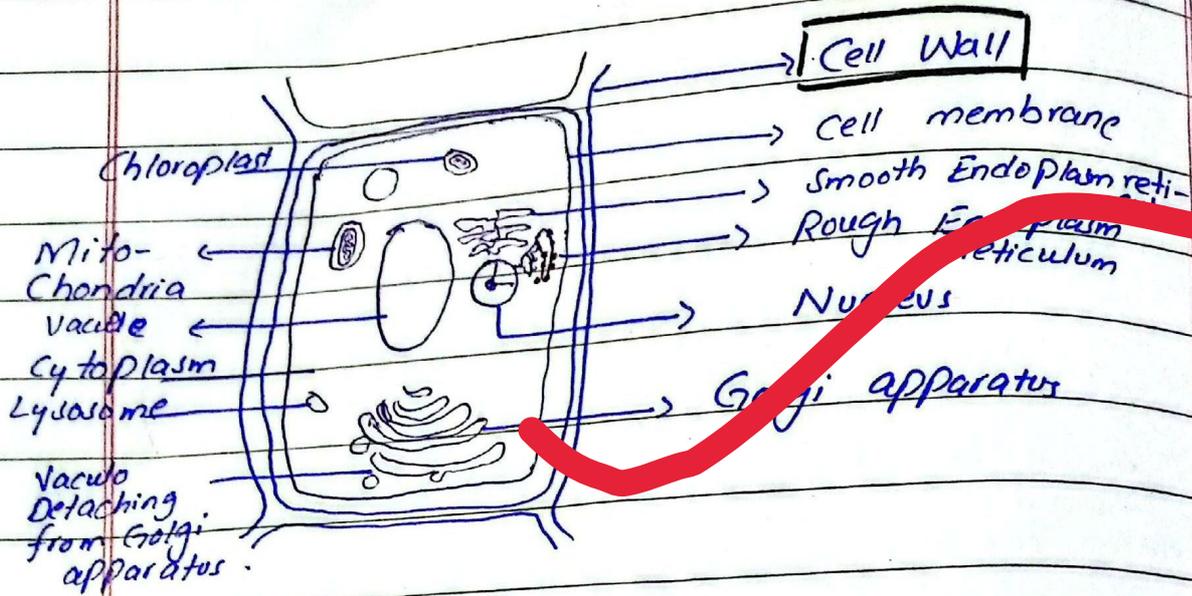
Q No: 02
(D)

(i) **Cell Wall**

(1) <u>Outer most</u> layer of cell in <u>plants</u>, and in some <u>microbes</u>, <u>fungi</u>, algae.

(2) It provides structural support

(3) It Maintains <u>Cell shape</u>.

(4) It Protects the cell from <u>mechanical stress</u> and <u>Pathogens</u>

Cell Wall

Chloroplast

Mito-
Chondria

Vacule

Cytoplasm

Lysosome

→ Cell membrane
→ Smooth Endoplasm reti-
→ Rough Endoplasm
      reticulum
→ Nucleus
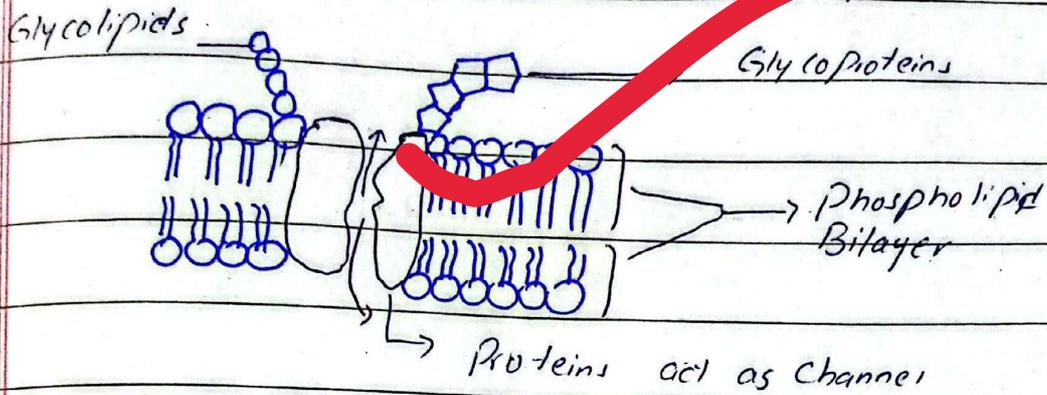
→ Golgi apparatus

Vaculo
Detaching
from Golgi
apparatus.

(ii) Cell Membrane

Functions:

(1) Protects the cell (2) Semi-permeable, controlling substance entry and exist

(3) It Facilitates movement by diffusion, osmosis, and pumps

(4) It helps in Cell signalling. Receptors are present on its surface.

(5) Cell adhesion and communication

(6) Cell division: involved in processess like cytokines.
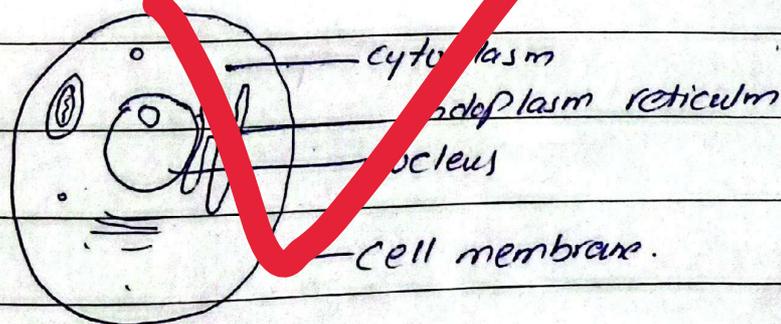
Structure: selectively permeable barrier

made up of ⊙ phospholipid bilayer,
⊙ Proteins ⊙ Carbo____les .

Glycolipids

Glycoproteins

→ Phospholipid Bilayer

→ Proteins act as Channel

(III)
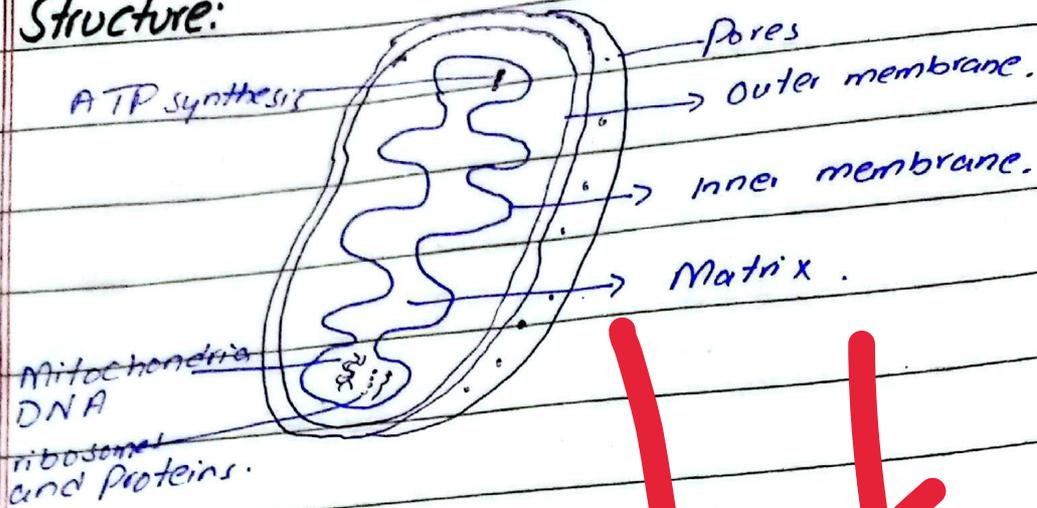## Cytoplasm.

(1) It is the Outer most layer in humans

(2) It control transport of materials

(3) It Protect

(1) It provide structure for metabolic reactions

(2) Jelly like substance, mostly of water.

(3) It facilitates intra cellular transport

(4) It help is cell division and growth

(5) It controls cell's internal environment.

cytoplasm

endoplasm reticulm

nucleus

cell membrane.

iv) Mitochondria

Structure:

ATP synthesis

Mitochondria DNA

ribosomal and Proteins.

Pores
Outer membrane.
Inner membrane.
Matrix.

Functions

1. Power house of cell
2. ATP - Cell energy production through cell respiration occur here
3. It have its own DNA, can self replicate it self.

Structure:

Double membrane organelle have pores to transfer ATP from inside to outside in the cell.

Q No: 04

a) Blood vessels and Heart's role in Circulation.

(A) Heart

(1) <u>Double pump system:</u> It has four chambers acting as two pumps. Right side pumps to transfer blood into lungs, and the left side sends it to rest of body

2) <u>Oxygenated Cycle:</u>

It sends deoxygenated blood to lungs and takes oxygenated blood from lungs and pumps it to rest of body

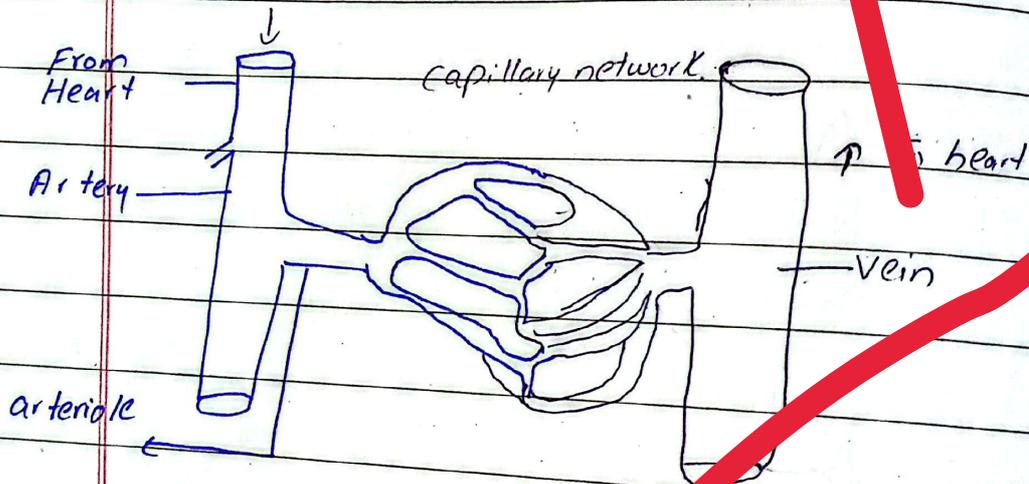### <u>B</u> <u>Blood Vessels.</u>
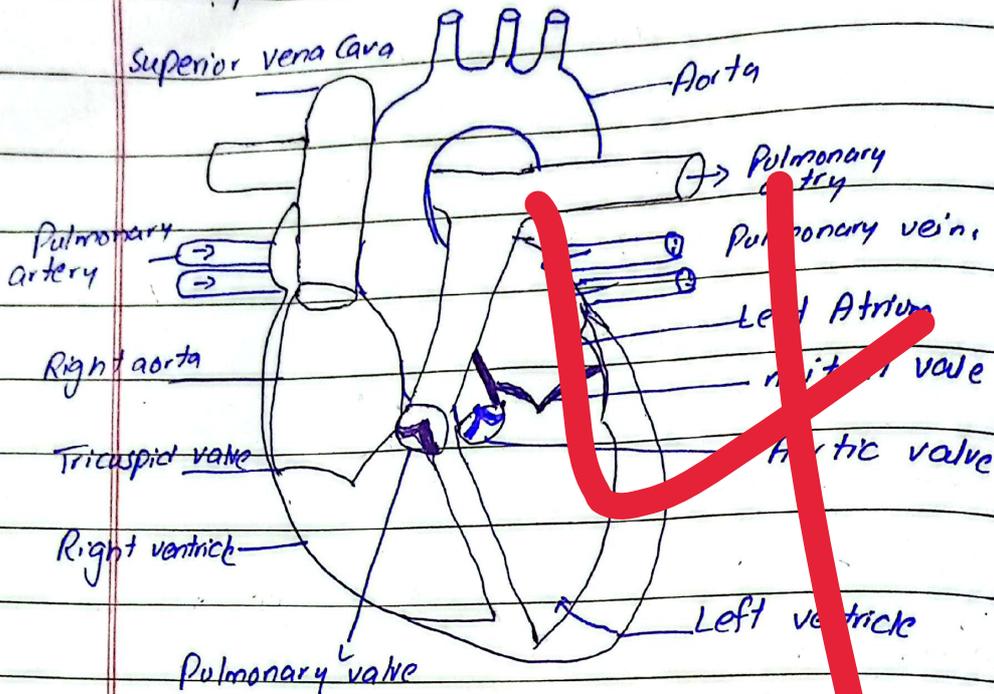
1) <u>Artries:</u> These vessels carry oxygenated blood from heart to rest of body and divided into arterioles.

2) <u>Capillaries:</u> Tiny, one cell thickness blood vessels Exchange of materials and oxygen take place heres. Carbon dioxide from tissue move into these vessels.

3) <u>Veins:</u> These vessels carry blood from body toward right side of heart. It contains deoxygenated blood.

So these appear blue. These have valves to prevent black flow.

superior vena cava
Aorta
Pulmonary artery
Pulmonary Artery
Pulmonary vein
Right aorta
Left Atrium
mitral valve
Tricuspid valve
Aortic valve
Right ventricle
Left ventricle
Pulmonary valve

From Heart
capillary network
to heart
Artery
Vein
arteriole

4b

Cyclone

large scale system of winds that rotate around a low pressure center.

Formation:

It mostly forms on warm oceanic water

→ **Warm Oceans Water:**

Water evaporates → humid war air

→ **Low Pressure Area.**

Warm air rises creating low-pressure near ocean surface

→ **Converging winds:**

Air from srrounding ves toward low pressure areas

This **Coriolis effect** ma es the wind rotate around low pressure nter

→ **Concentration** and **Cloud formation**

⊕ Warm vapors condense into clouds, release latent heats. This heats the air further strengthen cyclone further.

→ **Cyclone development:**

This system grows into spiralling storm with

Eye - central, low pressure area, and
Eyewall containing strong winds and
heavy rainfall.

Q No: 04

c)

Carbohydrates

① Main source of energy

② Provide fuel for brain, muscles and organs

   Source = Rice, wheat, fruit.

Proteins

① Build and repair body tissues

② It help to form body proteins,

③ enzymes, antibodies

④ Secondary source of energy
   present in meat, eggs, gum

Fats.

① It provides more energy than carbohydrates

② help to absorp oil. Also vitamin A, D, E, K

③ Part of cell-membrane, so essential

④ Act as buffer to protect / insulate body
   from heat.

   Present in Butter, oils, nuts.

Iron

Use in making of hemoglobin in red blood cells. which carry oxygen throughout body. Prevents anemia. Present in red meat spinach

Calcium.

① Essential nutrient of Bones, Cartilage and teeth

② It is necessary for muscle contraction and nerve impulse and blood clotting.

Source: milk, yougar, almonds

G No: 04
Remote Sensing for environmental Purpose.

"It is a process of information collection about the earth surface from a distance, using usually a satellites, aircraft, or drones without direct contact"

⇒ Applications in Environmental Monitoring.

① Forest and Vegetation monitoring.
It detects deforestation, degradation, or afforestation.

② <u>Water Resource Management.</u>

It monitors lakes, rivers and reservoirs

It detects water pollution, water levels and floods.

③ <u>Soil and Land Use M</u>o...ring

Identifies soil ero...on. It also helps in agriculture.

④ <u>Air and Climate</u> Monitoring

⑤ <u>Disaster management</u>

⑥ <u>Coastal</u> <u>and Marine</u> environment

⑦ Urban Planning.

<u>Conclusion:</u>

It is a powerful tool for environmental protection and management. It provides accurate, large scale and timely data.

Punjab using satellite base forest monitoring system launched in 2025. This system tracks tree cover and vegetation changes in near-real time. So It is a tool to help policy-maker to make informed decision.