

कॉलम में प्रश्न क्रमांक तथा उपक्रमांक अंकित करें

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1 A  
SI System :-

→ 'International system of Units'

→ It is a decimal system of weights and measures. (m, kg, s, A, Kelvin, mole, candela)

→ Adopted in ⇒ International conference of weights and measures held at Geneva in 1960.

1 B  
Kirchoff's Law :- Kirchoff's law deals with the conservation of current and energy within electrical circuit.

→ Kirchoff's current law :- Total current enters at junction = current leaves the junction

→ Kirchoff's voltage law :- Sum of all voltage drops around the loop = 0.

1 C  
Buffer solution :- when any solution diluted or added with small amount of acid or alkali, it maintains a constant hydrogen ion concentration.



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It resists the change in pH.

□ □

Types  
 Acidic Buffer ← → Basic buffer

L D

Carbon Monoxide :- "CO"

□ □

→ It is an oxide of carbon that obtained by the direct oxidation of carbon.

□ □

→ Colourless, odourless, fastest and water

□ □

→ insoluble gas. Highly poisonous.  
 used as reducing agent in chemical processes.

L E

Antibodies :- It is a type of protein molecule produced by B-lymphocytes in

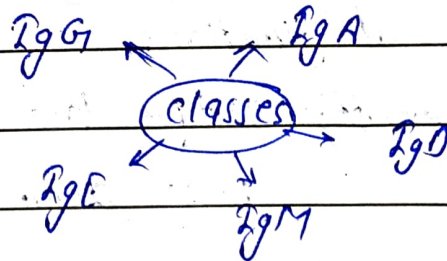
□ □

response to the antigens (a foreign molecule)

□ □

also called as - "Immunoglobulin"

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L A

Reflex Action :- It is an automatic response to a stimulus. The pathway takes

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by nerve impulses in a reflex action is called the reflex arc.

□ □

Ex:- ⇒ Closing of eyes in bright light.

⇒ Withdrawing of hands in contact with any hot thing.

□ □

L G

Homi Jehangir Bhabha :- An Indian Physicist.

□ □

father of India's Nuclear Energy Prog.

□ □

founding director of ⇒ Tata Institute of Fundamental Research.

□ □

Presided at ⇒ UN conference on the peaceful

use of Atomic Energy (Geneva)

□ □

Awards ⇒ Padma Bhushan (1954) and

Nominated for Nobel prize for Physics.

L H

Islets of Langerhans :-

□ □

A group of specialized cells within pancreas that are responsible for production and release of hormones that regulates glucose level.

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12

C.P.  $\Rightarrow$  9600.

$$\text{S.P. at 5\% loss} = 9600 \times \frac{95}{100} = \underline{\underline{\text{₹ 9120}}}$$

□□

(This S.P. is new C.P.)

$$\text{S.P. at 5\% profit} = 9120 \times \frac{105}{100} = \underline{\underline{\text{₹ 9576}}}$$

□□

hence, it is loss.

$$\text{loss} = 9576 - 9120 = 9600 - 9576$$

□□

$$\text{loss} = 24 \text{ Rs.}$$

17

Intranets :-

$\Rightarrow$  It is a private network of computers

□□

within an organization with its own server

$\Rightarrow$  with Intranet, files, documents, informations

□□

and other services are shared among

employees without in contact of external media.

□□

1K

Potassium Alum :-  $\text{AlK}(\text{SO}_4)_2$

□□

Aluminium potassium sulfate

It is a natural occurring mineral and

a type of inorganic salt.

□□

Used  $\Rightarrow$   $\rightarrow$  In medical process.

□□

$\rightarrow$  Water Treatment process.

$\rightarrow$  Also in Deodorants.



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1 2 Chandi Prasad Bhatt :-  
 He is an Indian social activist and environmentalist. Founder of  $\Rightarrow$  Chipko Movement (an initiative for stopping cutting of trees)  
 Awards  $\Rightarrow$   $\rightarrow$  Ramon Magsaysay Award (1982)  
 $\rightarrow$  Padma Shri (1986)  
 $\rightarrow$  Padma Bhushan (2005)  
 $\rightarrow$  Gandhi-peace Prize (2017-18)

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2 4 Escape Velocity :-  
 $\Rightarrow$  It is a minimum velocity required by any object to escape from the gravitational field of earth and never falling back.  
 $\Rightarrow$  Escape velocity of Earth = 11.200 m/s.  
 $\Rightarrow$  Calculation  $\Rightarrow$   $\left\{ v_{esc} = \sqrt{\frac{2GM}{R}} \right\}$

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1 4 Meiosis :- Meiosis is the process of formation of eggs and sperm cells. It is a single cell divides twice which contains genetic information

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10

Gibberellin Hormone :-

□□

⇒

It is a group of

Hormones in plants. that occurs in

□□

seeds, leaves and roots.

□□

⇒ It is responsible for plant growth, cell elongation, flower development etc.

□□

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2 A

Let  $A = \text{Amount}$

and share of B is Rs.  $x$ .

□ □

So,

(i) Before error - Ratio = 2:3:4

□ □

$$\text{B's share} = \frac{\text{B's part}}{\text{total}} \times A$$

□ □

$$x = \frac{3}{9} \times A \quad \text{--- (1)}$$

□ □

$$3x = A$$

(ii) After error - Ratio = 7:2:5

□ □

$$\text{B's share} = \frac{2}{14} \times A$$

□ □

(bcz 2 receives Rs 40 left)  $\Rightarrow x - 40 = \frac{A}{7}$

□ □

$$7x - 280 = A \quad \text{--- (2)}$$

□ □

from eq. (i) and (ii)

$$3x = 7x - 280$$

□ □

$$\therefore -4x = -280$$

$$x = 70$$

□ □

from eq. (1).

$$3x = A$$

□ □

$$A = 210$$

Total amount was Rs. 210.



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2 B

According to Question -

fare for first 5 km. = Rs. 2. / km.

after 5 km. fare = Rs. 13 per km.

total distance = 187 km.

paid fare = 2402/-

Hence when first 5 km. travelled after  
that left km.  $\Rightarrow$  182 km.for which fair  $\Rightarrow$  Rs 13/km.

so,

fare  $\Rightarrow$  (First 5km + left 182 km.) = 2402.

$$x + (13 \times 182) = 2402$$

$$x + 2366 = 2402$$

$$x = 2402 - 2366$$

$$x = 36.$$

Hence the bus fare for first five km.  
was Rs 36 per km.Leave Blank  
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२ C

Mean and Mode :-

Mean and Mode both are the arithmetic measures of any data set or series.

The mean is the average of all the numbers given in the set.

It is calculated by adding all the numbers of set and dividing it by total counts.

$$\text{Mean} \rightarrow \left\{ \bar{x} = \frac{\sum x}{N} \right\} \begin{array}{l} \leftarrow \text{sum of set} \\ \leftarrow \text{counts.} \end{array}$$

while Mode is the most frequently occurring value in the set.

Q:- set  $\Rightarrow$  (2, 5, 7, 9, 2, 4, 6, 8, 2)

$$\text{Mean} = \frac{2+5+7+9+2+4+6+8+2}{9}$$

$$= \frac{45}{9} = (5)$$

Mode = Most frequently occurring value

$$= (2)$$

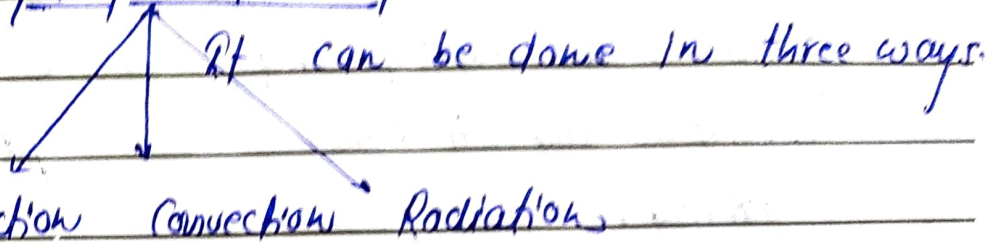
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20

Heat Transfer :-

The heat flows from the body of higher temperature to the body of lower temperature. This flow of heat is known as transfer of heat.

It can be done in three ways.



Conduction      Convection      Radiation

(1) Conduction :- The process in which heat is transmitted from higher temp. to lower temperature without actual movement of particles.  
Ex:- Heating of one end of metal rod, other end becomes hot.

(2) Convection :- The actual movement of particles from one part of the medium to another part is known as convection.  
Ex:- Boiling of water  $\Rightarrow$  Denser molecule at bottom and lighter at top.

(3) Radiation :- Heat transfer from one body to another without any actual movement and without heating the intervening medium.



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१ E

Acid

Base

It is any chemical compound when dissolved in water produces a solution and  $H^+$  ion activity.

It is an aqueous substance that donates  $(e^-)$  and accepts protons.

Definition

$(CH_3COOH)$  Acetic acid & sulfuric acid

$(NaOH)$  - sodium Hydroxide.

Example

less than 7.0

greater than 7.0

pH

Depends on the concentration of Hydrogenium ion

Depends on the concentration of hydroxide ions.

Strength

It turns litmus paper into Red.

It turns Red litmus paper into Blue.

Litmus test

Conductor of electricity  
sour taste.

Bitter taste.  
solid in nature.

Characteristics

It can be solid, liquid or gas depends on Temp.



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2 A

Hardness of water :-

The water could be of two types  $\rightarrow$  Soft water and Hard water.

It is due to the presence of soluble sulfates, chlorides and bicarbonates of calcium and magnesium. Hard water has high mineral content.

Identification :- ① It does not create foam with soap.

② It leaves deposits of salts on surface or white boils.

Types of Hardness

permanent Hardness

Temporary Hardness.

① It can not be removed / ways to overcome it  $\rightarrow$  ① It can be removed by boiling of water.

② Treatment of water with washing soda can removed it

② By Clark's method (Calcium Hydroxide)

③ Ion exchange resin Method



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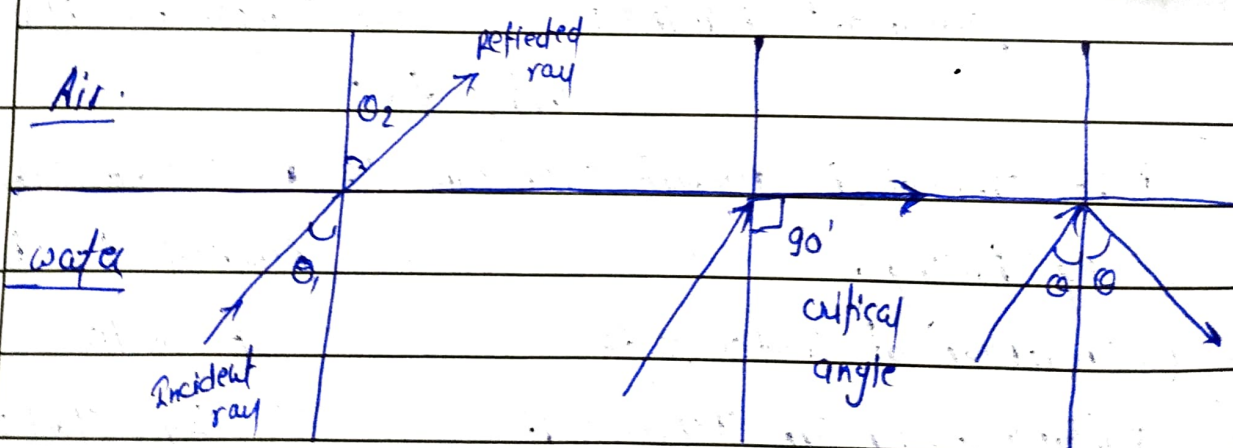
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Total Internal Reflection :-

When a light ray, travelling from a denser medium towards a rarer medium is incident at the interface at an angle of incidence greater than critical angle then light rays are reflected back into the denser medium. This is called total Internal Reflection.

Necessary conditions:-

- ① The light Ray moves from a more dense medium to less dense medium
- ② the angle of incidence should be greater than critical angle for the two media



Total Internal Reflection

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27

Lamarckism :-

It is a theory of organic evolution of living organisms on earth.

This was the first theory of evolution.

Given by :- Jean Baptiste de Lamarck  
in the year 1809.

This theory was based on the principle that all the physical changes occurring in an individual during its lifetime are inherited by its ancestors. It is based on four main propositions -

Change through  
use and disuse.

Inheritance of  
Acquired characters

organisms driven  
to greater complexity

Effect of  
surroundings

Examples :- ① Evolution and growth of Giraffe.

② Evolution of Cave dwellers.

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Disorders of Digestive system:-

□ □

Disorder

Cause

Symptom

□ □

Jaundice.

Due to  
malfunction of  
liver

skin and white  
part of eye  
becomes yellow.

□ □

□ □

Diarrhoea

Irritation in the  
lining of stomach  
due to virus, or  
bacterial infection

cramps, headache,  
nausea and  
vomiting  
watery stool etc

□ □

□ □

Vomiting

Infection, Allergy  
overeating food  
poisoning

sweating nausea  
etc.

□ □

□ □

Constipation

Disruption of regular  
defecation. Inadequate  
water intake.

cramps, pain,  
vomiting,  
swelling etc.

□ □

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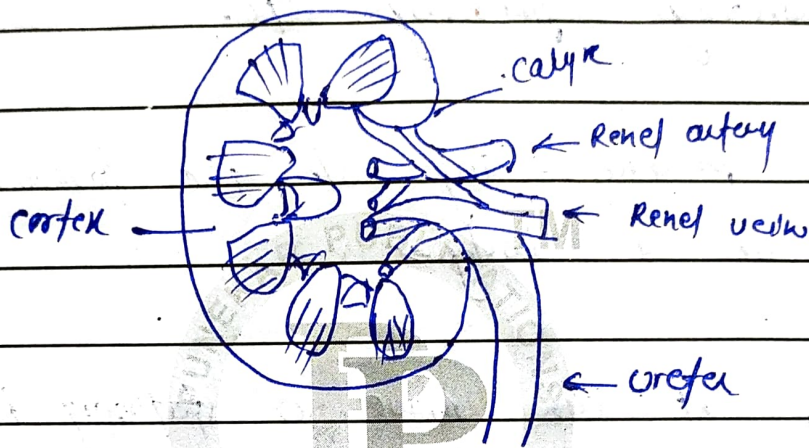


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2 k

Kidney :-

The human kidneys are major excretory organs. They are reddish brown, bean shaped structure of 10-12 cm length with average weight of 120-150 gm.



- Functions of Kidney
- Removing the excess water and nitrogenous wastes (urea and uric acid) from blood.
  - Maintaining the constant concentration of blood plasma.
  - Regulating the pH of the blood.
  - production of the Red blood cells.
  - To maintain healthy bones

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3A

Force :-

Any action which causes pull or push on a body is called force.

Forces are used in our daily actions like pushing, pulling, lifting, twisting, pressing etc.

Force produces any of the following effects on a body  $\Rightarrow$

- ① It can move a stationary body.
- ② change the state of rest to motion
- ③ stop a moving body.
- ④ change the speed of a body.
- ⑤ change the shape and size of a body.
- ⑥ change the direction of motion of a moving body.

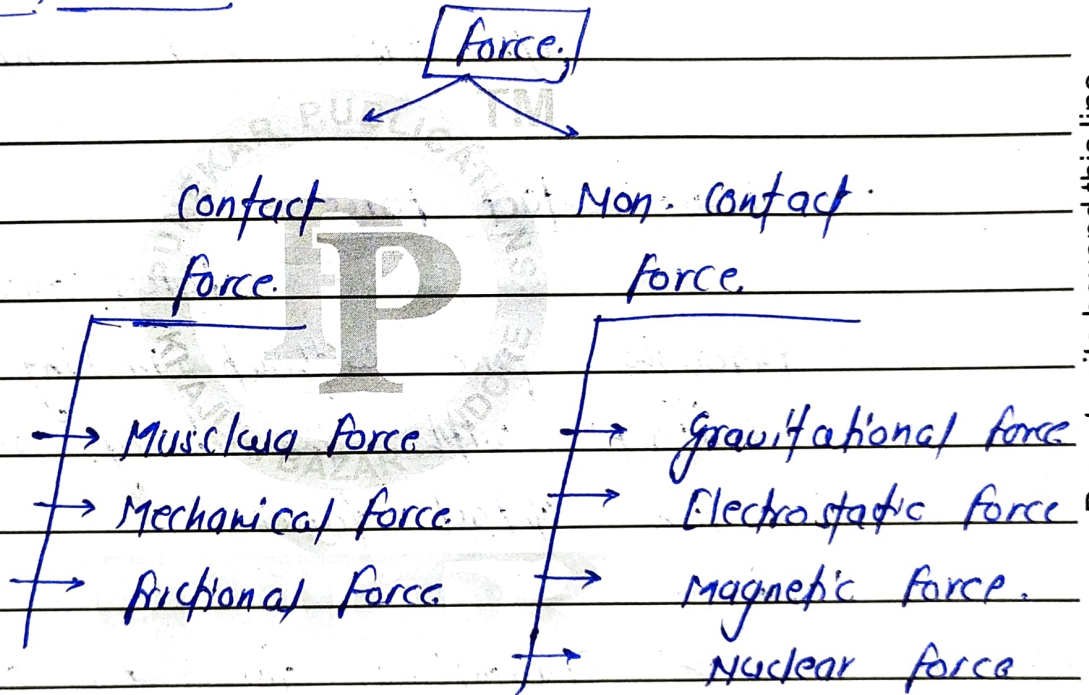
$\Rightarrow$  Force is a vector quantity. Its SI units is "Newton".

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some fundamental forces in our surrounding.

- ① Gravitational force of earth.
- ② Electromagnetic force
- ③ Nuclear force etc

Types of forces :-



① Contact forces :-

forces that are directly or indirectly (through a medium) acts on a body are called contact forces.



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Muscular force → The force which is exerted by animal or human muscles like gymming, horse, cricketers etc.

Mechanical force → In this force any work done by mechanical means.

Frictional force → This force acts between two surfaces like friction b/w tyres and roads.

② Non-contact force :- Forces that are acts through space without making direct contact with the body are called non-contact forces.

like:

⇒ gravitational force by earth exerted on all bodies on earth.

⇒ Electromagnetic force etc.

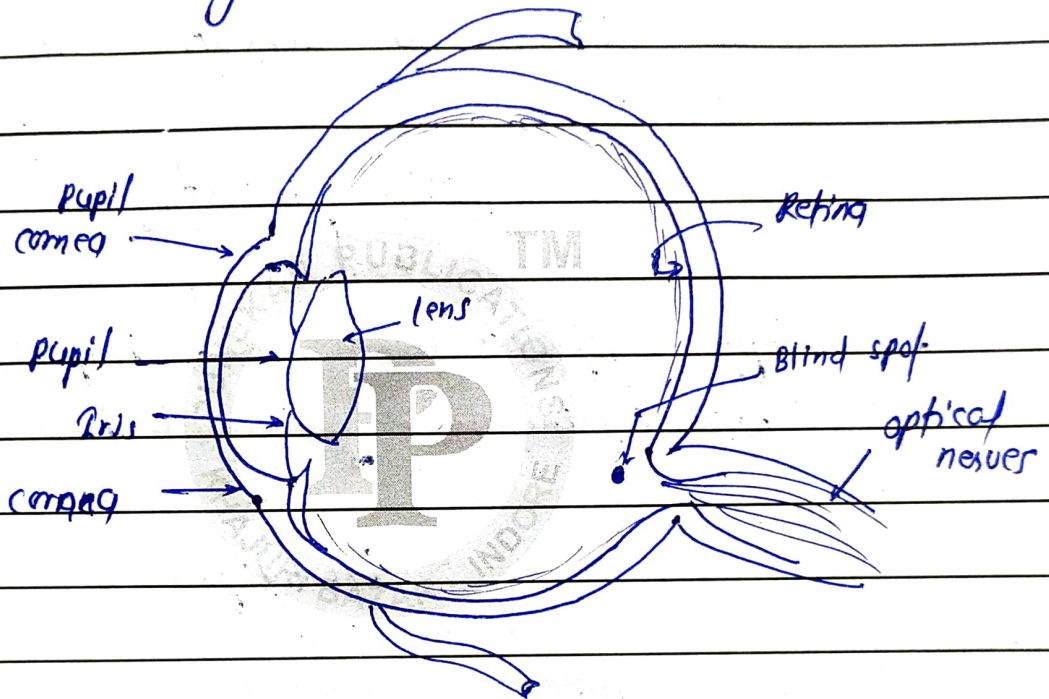


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3 B

Human Eye :-

Humans have a pair of eyes situated in the sockets of the skull called orbits. The eye balls are mainly spherical in structure.



Internal structure of Human eye.

Working of Eye :-

The light ray coming from the objects enter the eye through pupil and falls on eye lens. The eye lens then converges the light

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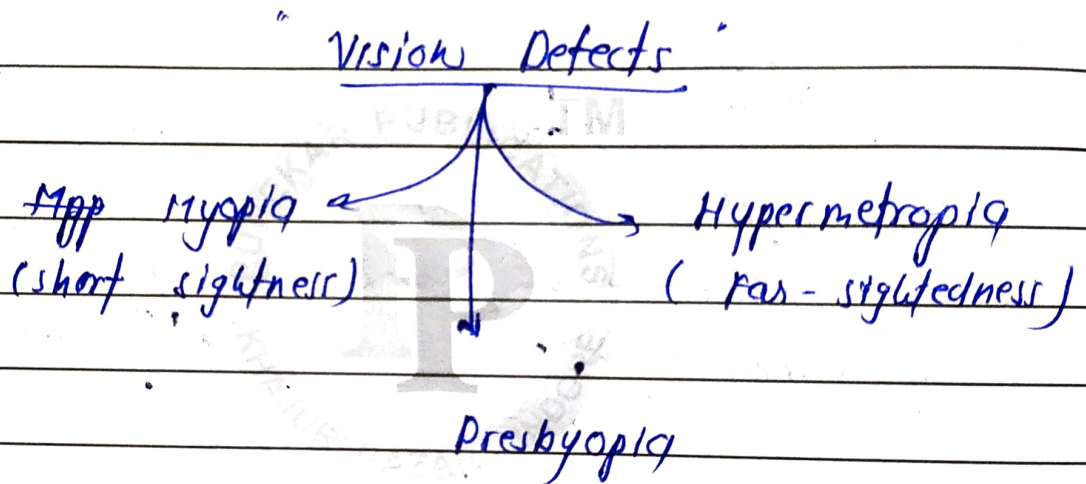


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rays and produce an image of the object on retina, which is real and inverted. After the image is formed on the retina it sends electrical signals to the brain and we have a sensation of image.



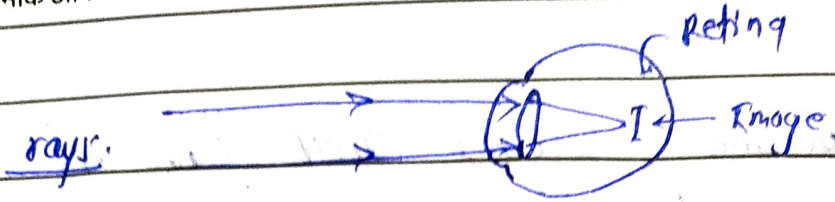
① Myopia :- The defect of an eye in which, it cannot see the distant objects clearly called myopia.

It caused due to  $\Rightarrow$

- $\rightarrow$  High convergence power of lens
- $\rightarrow$  Eye ball being too long.



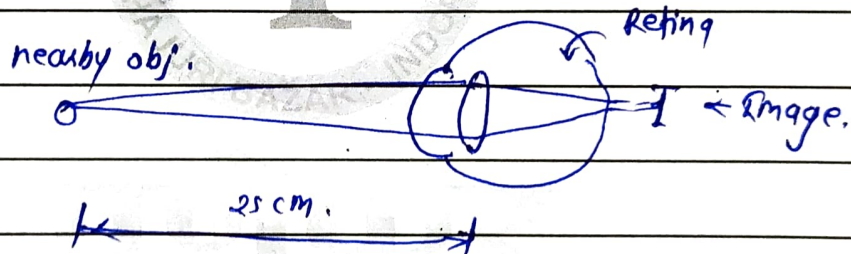
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Myopia can be corrected by wearing spectacles containing concave lens.

② Hypermetropia :-

Hypermetropia or far-sightedness of an eye where a person cannot see nearby objects clearly. The near point of hypermetropia eye is more than 25 cm away.



It can be corrected by wearing spectacles containing convex lens.

③ Presbyopia :-

This defect happens generally in old age when ciliary muscles

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become weak and can no longer adjust the eye lens. The muscles become inflexible in this condition and cannot see nearby objects clearly.

The near point of an old person having presbyopia is much more than 25 cm.

It can be corrected by wearing spectacles having convex lens.

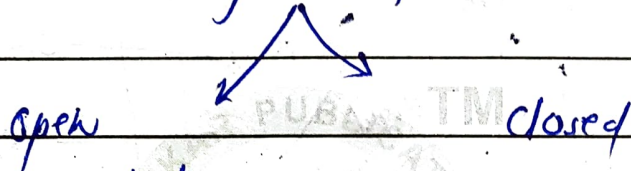


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30

Blood Circulation System in Humans:

The system which is primarily meant for the circulation of nutritive products disposal and excretion of waste material in the body is known as circulatory system.



open circulatory system  
In this system blood is pumped by heart into an artery which branches off into a number of arteries that ultimately open into a series of spaces collectively called haemocoel.

closed circulatory system  
It is the type in which blood stays in blood vessels. It does not come into direct contact with the body tissues.

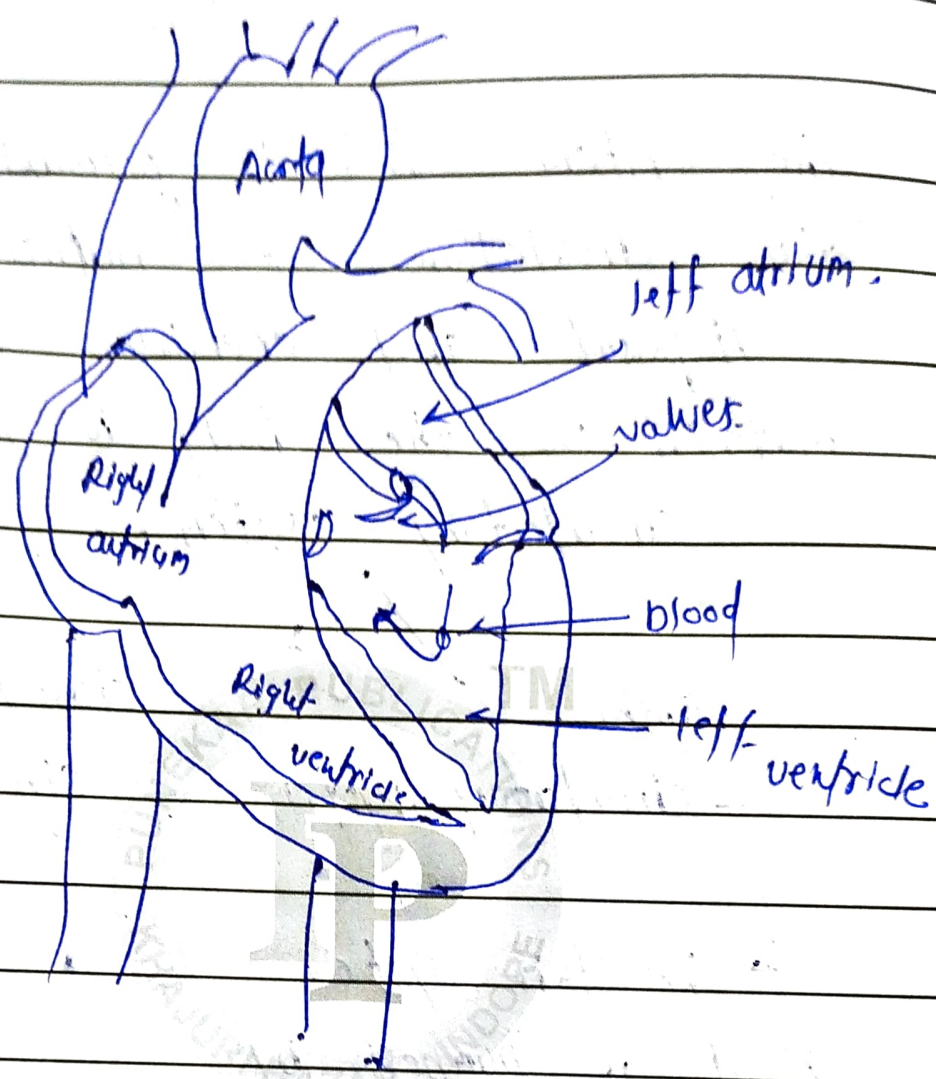
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"The Heart"