



V SERVE V CARE

SSLC 2022 - 23
SPECIAL PACKAGE FOR FINAL EXAM
SCIENCE

Part -A
PHYSICS
Electricity

I.One mark questions

1. What is electric current?

Ans: The rate of flow of electric charge.

2. Write the SI unit of current.

Ans: Ampere (A)

3. Name the instrument used to measure the electric current.

Ans: Ammeter

4. How ammeter should be connected in a circuit?

Ans: Series

5. Write the SI unit of potential difference.

Ans: Volt (V)

6. How Voltmeter should be connected in a circuit?

Ans: Parallel

7. Define ohm's law.

Ans: Potential difference between two points is directly proportional to the electric current at constant temperature.

$$V = IR$$

8. What is Rheostat?

Ans: Device used in a circuit to provide variable resistance.

9. What is resistance?

Ans: Property of conductor to resist the flow of charges.

10.What is electric fuse?

Ans: It is used to protect the electric appliances from high voltage.

11.How electric fuse protects the electric appliances?

Ans: In case of high voltage fuse wire melts and protects the electrical appliances.

12. What is Voltmeter?

Ans:Device used to measure potential difference in a circuit.

13.What is electric circuit?

Ans: Device which is a closed path for flow of electric current.

14.SI unit of resistivity.

Ans: Ohm-meter

15.Describe the structure of electric bulb.

Ans: i) The filament of bulb is made-up of tungsten.

ii)The bulb is filled with inactive nitrogen and argon gas.

16.Describe the working of electric bulb.

Ans: Power taken by the filament of bulb appears as heat, but a small part comes out as light.

17.Define electric power.

Ans: The rate of doing work is power.

18. SI unit of power.

Ans : watt(W)

19. On what factors does the resistance of a conductor depend ?

Ans: i)Length of the conductor.

ii)Area of cross section

iii)Nature of the material

iv) Temperature

20. State Joule's law of heating

Ans: The heat produced in a resistor is

i)Directly proportional to the square of the current

ii)Directly proportional to the resistance

iii)Directly proportional to the time for which the current flows

21. Why is the tungsten used almost exclusively for filament of electric lamps?

Ans :The resistivity and melting point of tungsten is very high .Thus it does not burn readily when heated.

22. It is advantageous to connect electric devices in parallel instead of connecting them in series

Ans: In a series circuit if one component fails the circuit is broken and none of the components work .When it is in the parallel circuit current divides through the electrical gadgets.

22. Name the device which works on the principle of Joule's law of heating.

Ans: Electric oven, electric heater, electric kettle.

23. What is the function of galvanometer?

Ans: Device used to detect the electric current in a electric circuit.

SI units

1. Electric current: ampere(A)

2. Electric potential difference: volt(V)

3. Electric resistance: ohm(Ω)

4. Electric Charge: coulomb (C)

5. Electric power: watt(W)

Formulas

1. Electric Charge: $Q=It$
2. Electric Current : $I= Q/t$
3. Potential difference between 2points: $V=W/Q$
4. Potential difference across ends the conductors : $V= IR(\text{ohm's law})$
5. Resistance: $R=V/I$
6. Equivalent Resistance in series: $R_s=R_1+R_2+R_3$
7. Equivalent Resistance in parallel: $1/R_p=1/R_1+ 1/R_2+1/R_3$
8. Joule's law of heating: $H = I^2Rt$

Magnetic effects of electric current

I. One mark questions

1. Define solenoid.

Ans: Long coil of circular loops of insulated copper wire.

2. Define electric motor.

Ans : Motor is a rotating device converts electrical energy to mechanical energy.

3. Write the principle of motors.

Ans: It works on the principle of magnetic effect of electric current.

4. Uses of motor.

Ans:i) Used in electric fans
ii) Used for pumping water
iii) Used in various toys

5. Define electric generator.

Ans: A device that converts mechanical energy into electrical energy.

6. Write the principle of electric generator.

Ans: It works on the principle of electromagnetic induction.

7. Write the function of split rings.

Ans:The device that reverse the direction of current.

II. Two mark questions

1. Difference between AC current and DC current.

AC Current	DC Current
i)Used for long distance	i) Used for short distance
ii) Current direction changes periodically	ii) Current flows in one direction

2. How does overload and short circuit occur in an electric circuit ?

Ans: i)Overloading can occur when the live wire and the neutral wire come in direct contact.

ii)When there is a damage in the appliances.

iii) When too many appliances are connected to a single socket.

3. What does commercial motors use?

Ans:i) Electromagnet

ii)Large number of turns of the wire.

iii) Soft iron core on which coil is wound.

4. List the properties of magnetic lines of force.

Ans: i)Magnetic field lines emerge from the North Pole and they merge at the South Pole.

iii)Magnetic field lines are closed curves.

iv)Inside the magnet their direction is from South Pole to North Pole.

5. Why don't two magnetic field lines intersect each other?

Ans: At the point of intersection needle has to show two direction which is not possible.

6. State Fleming's left- hand rule

Ans: Flemings left hand rule states that if we arrange the thumb, the center finger and the forefinger of the left hand at right angles to each other, then the thumb points towards the direction of the motion, the center finger gives the direction of current and the forefinger points in the direction of magnetic field.

7. State Flemings right hand rule

Ans: Stretch the thumb finger and middle finger of right hand so that they are perpendicular to each other, then the forefinger indicates the direction of magnetic field and the thumb shows the direction of the motion then the middle finger will show the direction of current.

8. Name two safety measures commonly used in electric circuits and appliances.

Ans: 1) Earthing 2) Electric fuse

9. What precautions should be taken to avoid the overloading of domestic electric circuits

Ans: i) Fuse should be connected in the circuit.

ii) Faulty appliances should not be connected.

iii) Too many appliances should not be used at the same time.

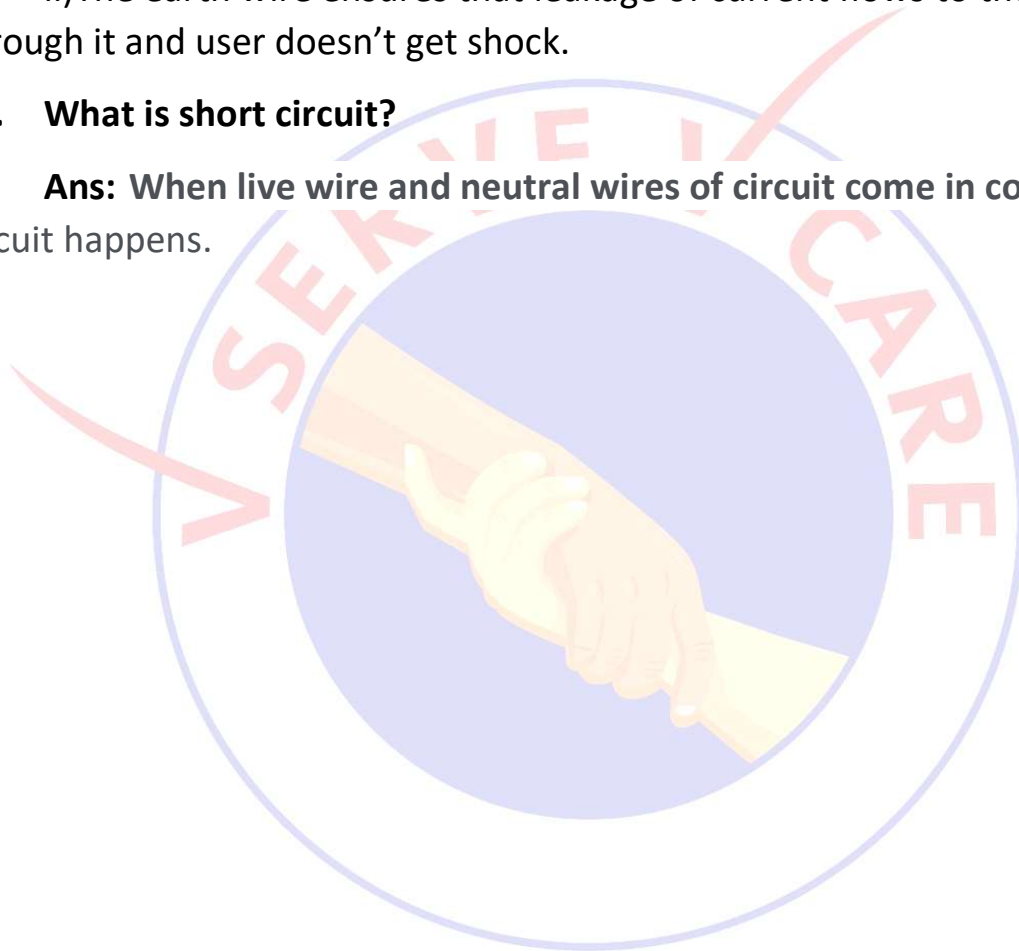
10. What is the function of an earth wire? Why is it necessary to earth metallic appliances?

Ans:i) The earth wire provides a low resistance conducting path for electric current

ii)The earth wire ensures that leakage of current flows to the earth through it and user doesn't get shock.

11. What is short circuit?

Ans: When live wire and neutral wires of circuit come in contact short circuit happens.



Light – Reflection and Refraction

I. One mark questions

1. What is refraction of light?

Ans: The bending of light at the interface of two different mediums is called refraction of light.

2 Define principal focus.

Ans: Light rays converge at a specific point on its principal axis after reflecting from the mirror this point is known as the principal focus.

3. Define power of lens.

Ans: Power of lens is the reciprocal of its focal length. The SI unit of power of a lens is dioptre.

$$P=1/f$$

4. Write the lens formula

Ans: $1/v-1/u=1/f$

5. Write the use of lenses.

Ans: i)Concave lens: In making spectacles, binoculars, torchlights
ii)Convex lens: In microscopes, telescopes

6. Write the mirror formula

$$1/v + 1/u = 1/f$$

7. What is focal length?

Ans:The distance between pole and the focus.

8. Define1 diopter.

Ans: Power of lens is 1 diopter whose focal length is 1m.

9. If power of lens- 2.0 D, what type of lens is this?

Ans: Concave lens

9. If power of lens + 2.0 D ,what type of lens is this?

Ans: Convex lens

II. Two marks questions

1. State two laws of reflection of light

Ans:

i)The angle of incidence is equal to angle of reflection

ii)The incident ray, normal ray and reflected ray all lie in the same plane

2. State 2 laws of Refraction of light

Ans: i)The incident ray, refracted ray and the normal between two transparent media all lie in the same plane.

ii)The ratio of sine of angle of incidence to the sine of angle of refraction is constant. This is called as Snell's law.

$\sin i / \sin r = \text{constant}$

3. Convex mirror is used as a rear view mirror in vehicle. Why?

Ans: i)They always give erect and diminished image

ii)They have wider field of view

4. Mention the uses of convex mirror and concave mirror.

Ans: Concave mirror:

i) It is used in torches and vehicle headlights because to get powerful parallel beam of light.

ii) It is used as shaving mirror

Convex mirror: It is commonly used as rear view mirror in vehicle

5. Mention the nature of image formed when the magnification of image of an object formed by a spherical mirror has negative and positive value.

Ans:

If $m = -Ve$, then image is real

If $m = +Ve$, then image is virtual

6. Find the focal length of a convex mirror whose radius of curvature is 32 cm.

Ans:

$$R = 2f$$

$$R = 32 \text{ cm}$$

$$f = R/2$$

$$= 32/2$$

$$f = 16 \text{ cm}$$

7. What are the differences between real and virtual image

Ans :

Real Image	Virtual Image
i) It can be seen on screen .It is always inverted	i) It cannot be seen on a screen. It is always erect
ii) It is formed in front of the mirror	ii) It is formed behind the mirror

Human Eye and the Colourful World

1. What is Tyndall effect?

Ans: The phenomenon of scattering of light by colloidal particles gives rise to Tyndall effect.

2. What is the function of pupil of human eye?

Ans: The pupil regulates and controls the amount of light entering the eye.

3. What is meant by power of accommodation of the eye?

Ans: The power of accommodation of the eye is the maximum variation of its power for focusing on near and far (distant) objects.

4. What is hypermetropia or farsightedness? Name the type of lens used to correct it.

Ans: Hypermetropia is a condition where a person can see distant objects clearly but cannot see nearby objects clearly. Convex lens is used to correct it.

5. What is the far point and near point of the human eye with normal vision?

Ans: For a human eye with normal vision the far point is at infinity and near point is 25 cm from the eye.

6. Name the color that bends the least and the color that bends the most when white light is dispersed by a prism.

Ans: The red color bends the least and the Violet color bends the most.

7. What is the dispersion of light?

Ans: Splitting of light into its compound color is called dispersion.

8. Define myopia, hypermetropia and presbyopia

Ans: Myopia (Near sightedness): A person is unable to see far object but can see nearby object.

Hypermetropia (farsightedness): A person is unable to see nearby object

Presbyopia: A person cannot see both nearby, far object.

It is corrected using by focal lens (both concave and convex lens).

9. Mention any three phenomenon based on scattering of light.

Ans: i). Tyndall effect

ii) Blue color of sky

iii) Color of sun at sunrise and sunset

10. Mention any four phenomenon that can be observed due to atmospheric refraction of light on earth.

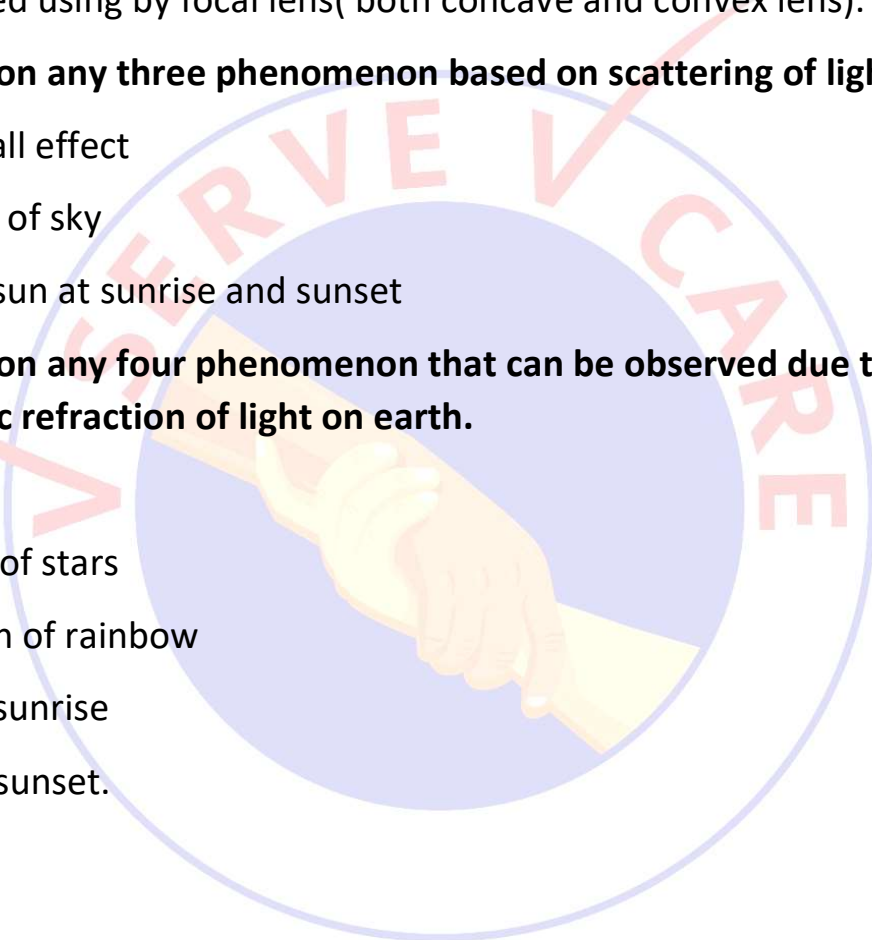
Ans:

i) Twinkling of stars

ii) Formation of rainbow

iii) Advance sunrise

iv) Delayed sunset.



Sources of energy

1. Element used in solar cell

Ans: Silicon

2. What is a good fuel or characteristics of good fuel (2marks or 3marks)

Ans: i) High calorific value.

ii) Burn without smoke

iii) Easily available

iv) Cheap and eco friendly

v) Easy to store

vi) Renewable

3. The inner surface of solar cooker is coated with black paint why?

Ans: To absorb more heat.

4. Biogas plant is a boon to farmers. Why?

Ans: The slurry left behind is used as good manure which is rich in nitrogen.

5. Name the major constituent of biogas

Ans: Methane(CH_4)

6. Name the device that work using heat energy.

Ans: i) Solar water heater

ii) Solar cooker

7. What is solar cell?

Ans:It is a device that converts solar radiation into electricity.

Two marks questions

1. Properties of biogas which make it a good fuel

Ans: i)Does not leave residue

ii)Eco friendly

iii)Heating capacity is high

2. Advantages of solar cell

Ans: i)They do not have moving parts

ii)Low maintenance

3. Explain why we are looking at the alternative sources of energy.

Or

There is a need to harness non- conventional source of energy.

Ans:

i)The fossil fuels are exhausted soon.

ii)Fossil fuels causes pollution.

iii)More demand for energy because of increase in population.

CHEMISTRY

CHEMICAL REACTIONS AND EQUATIONS

One mark questions:

1. What is chemical equations?

Representation of chemical reaction using symbols and formulae of the substances is called chemical equation.

2. Define oxidation - reduction reaction?

OR

Define redox reaction?

The reaction in which oxidation and reduction both takes place simultaneously.

3. $\text{ZnO} + \text{C} \longrightarrow \text{Zn} + \text{CO}$

In this reaction name the reactant

- i) That is oxidized**
- ii) That is reduced**

In this reaction i) C is being oxidized

ii) ZnO is being reduced.

4. Manufacturers of chips , flush the packets of chips with nitrogen gas. Why?

To prevent rancidity.

5. What are the different ways to prevent rancidity?

- i) Keeping food in air tight containers.**
- ii) Flush bags of chips with nitrogen gas.**

6. Which gas is used to prevent rancidity?

Nitrogen gas.

7. Name the gas liberated at the cathode in the electrolysis of water?

Hydrogen.

Two marks questions:

- 1. Write the difference between chemical combination reaction and chemical decomposition reaction ?**

Chemical combination reaction	Chemical decomposition reaction
<ul style="list-style-type: none">• A reaction in which two or more reactants combine to form a single product.• $3\text{H}_2 + \text{N}_2 \longrightarrow 2\text{NH}_3$	<ul style="list-style-type: none">• A reaction in which a single reactant breaks to form two or more products.• $\text{ZnCO}_3 \longrightarrow \text{ZnO} + \text{CO}_2$

- 2. Write the difference between displacement and double displacement reaction/precipitation reaction**

Displacement reaction	Double displacement/precipitation reaction
<ul style="list-style-type: none">• More reactive element displaces less reactive element in a reaction• $\text{Fe} + \text{CuSO}_4 \longrightarrow \text{FeSO}_4 + \text{Cu}$	<ul style="list-style-type: none">• Exchange of ions between two ionic substances in a reaction.• $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 + 2\text{NaCl}$

- 3. What happens when iron nail is dipped in copper sulphate solution ?**

Displacement reaction takes place.



- 4. Write the difference between exothermic and endothermic reaction?**

Exothermic reaction	Endothermic reaction
<ul style="list-style-type: none">• It is a reaction in which heat is liberated during a chemical reaction• Ex : Respiration	<ul style="list-style-type: none">• It is a reaction in which heat is absorbed during a chemical reaction• Ex: Melting of ice

- 5. Why respiration is considered as exothermic reaction?**

Because heat energy is liberated.

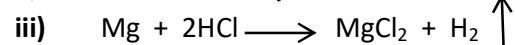
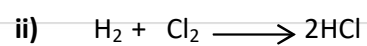
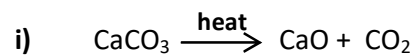
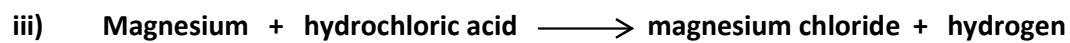
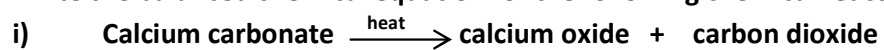
- 6. What is corrosion?**

It is a process where metals are attacked by air , moisture , chemicals etc.

Ex: Rusting of iron.

THREE MARKS QUESTIONS:

1. Write the balanced chemical equation for the following chemical reactions.



ACIDS , BASES AND SALTS

ONE MARK QUESTIONS:

1. Name the acid present in the following substances?

Natural source	Acid
Vinegar	Acetic acid
orange	Citric acid
Tamarind	Tartaric acid
Tomato	Oxalic acid
Sour milk	Lactic acid
Lemon	Citric acid
Ant sting	Methanoic acid
Nettle sting	Methanoic acid

2. What is a strong acid?

Acid that gives rise to more H^+ ions

3. What is the common name of the compound that has molecular formula



Plaster of paris

4. Which medicines is used for treating indigestion?

Antacid (milk of magnesia)

5. A solution turns red litmus blue, its pH is likely to be

8 to 14

6. What is acid rain?

When the pH value of rain water less than 5.6.

7. Name the gas liberated at the anode and cathode in the chlor-alkali process?

At anode – chlorine gas

At cathode – hydrogen gas

8. Name the acid produced by stomach?

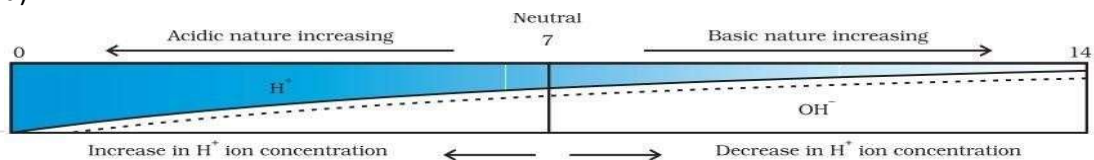
Hydrochloric acid (HCl)

9. a) Write the pH variation

OR

b) The pH values of A,B,C solutions are 5,6 and 7 respectively. Which of these solutions is more acidic in nature? Why?

a)



Variation of pH with the change in concentration of $H^+(aq)$ and $OH^-(aq)$ ions

increases in H^+ ion

decreases in H^+ ion

decreases in OH^- ion

Increases in OH^- ion

b) A is more acidic in nature because it has more hydrogen ions than the B and C .

10. what is pH scale?

It is the scale for measuring H^+ ion concentration in a solution.

11. what is pH range of human body?

7.02 to 7.8

12. The pH value of

Lemon juice – about 2.2

Gastric juice – about 1.2

Pure water ,blood – 7

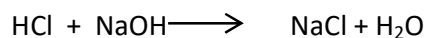
Milk of magnesia – 10

Sodium hydroxide solution – about 14

TWO MARKS QUESTIONS:

1. What is neutralisation reaction? Give example

A reaction in which acid and base react to give salt and water



2. While diluting an acid, the acid should be added to water. Give reason

If the water is added to acid, the heat generated may cause mixture to splash out and cause burns.

The glass container may break due to excessive heat.

3. Write the chemical formula of bleaching powder and its uses?

Chemical formula : CaOCl_2 / calcium oxychloride

Uses –

- For cleaning water
- For bleaching cotton and clothes in textile industry

4. Write the chemical formula of washing soda and its uses

Chemical formula : NaHCO_3 / sodium hydrogen carbonate

Uses -

- Used in cooking
- Used in soda fire extinguisher

5. Write the chemical formula of washing soda and its uses

Chemical formula : $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ / sodium carbonate

Uses –

- Used In water softening
- Used in glass, soap and paper industries

6. Write the chemical formula of plaster of paris and write its uses

Chemical formula : $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ / calcium sulphate hemihydrate

Uses –

- Used in case of bone fractures
- Making chalks.

7. Plaster of paris should be in a moisture proof container

It reacts with moisture and changes to gypsum (solid mass)

8. What is the reason for tooth decay ? How is the toothpaste remedy for this?

OR

Why tooth decay occurs? How can we avoid this using toothpaste?

Tooth decay starts when the pH of the mouth is lower than 5.5.

Toothpastes are basic in nature and neutralise the excess acids

9. Why do HCL, HNO₃ , etc. Show acidic characters in aqueous solution while solutions of compounds like alcohol and glucose do not show acidic character?

HCL , HNO₃ dissolves to produce H⁺ ions while alcohol and glucose do not dissolve to form H⁺ ions

THREE MARKS QUESTIONS:

1. Name the products of chlor-alkali process. Write one use of it.

The products of chlor-alkali process are :

- Chlorine
- Hydrogen
- Brine containing NaOH

uses of NaOH

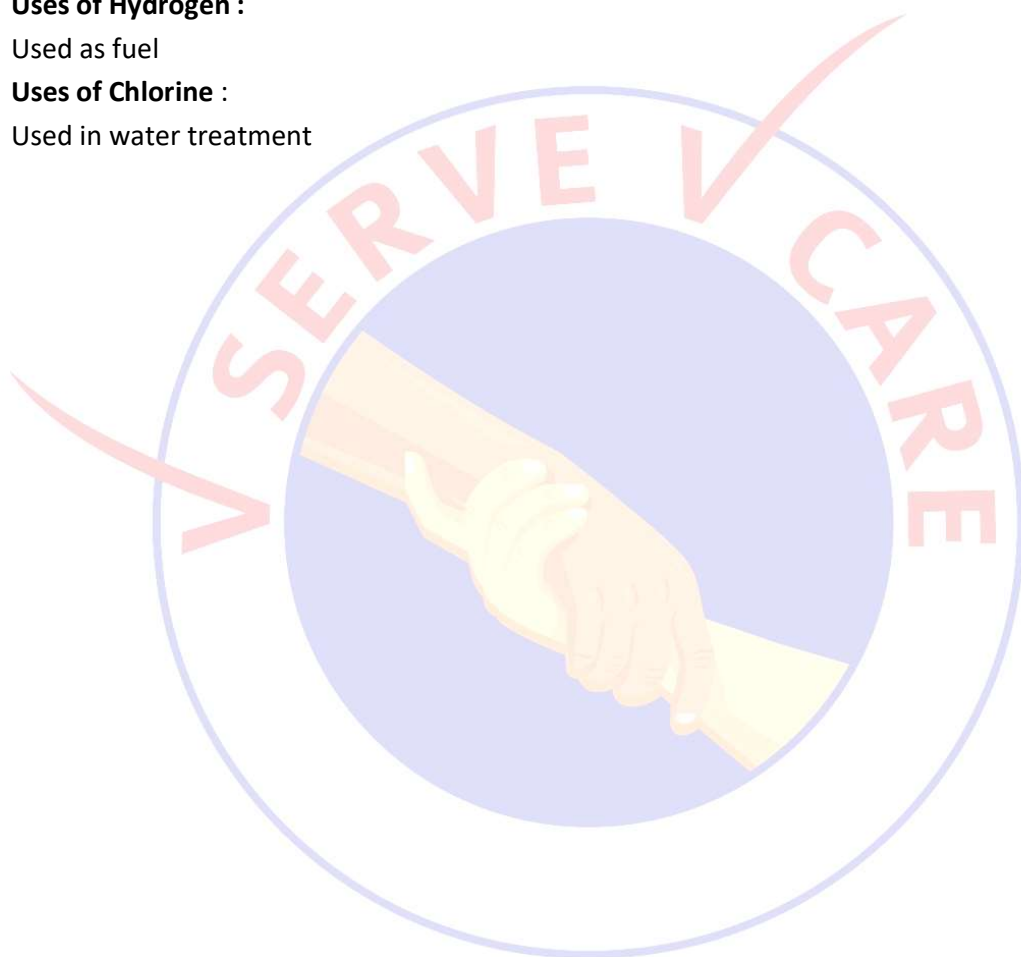
- Used in manufacturing of soaps and detergents
- Used in paper making

Uses of Hydrogen :

- Used as fuel

Uses of Chlorine :

- Used in water treatment



METALS AND NON METALS

ONE MARKS QUESTIONS:

1. Write physical properties of metals

OR

Define malleability, ductility, sonorous

- Malleability – ability of metals that can be beaten into thin sheets
- Ductility – ability of metals that can be beaten into thin wire
- Sonorous – the metal that produces ringing sound on striking hard surface
- Good conductor of heat and electricity
- High melting point and boiling point.

2. Which is the most ductile metal

Gold

3. Name the non-metal that is lustrous?

Iodine

4. Give the example of metal which is

- Liquid at room temperature
 - Can easily be cut with a knife
 - Good conductor of heat
 - Poor conductor of heat
- Mercury
 - Sodium , lithium ,potassium
 - Gold , copper
 - Lead, mercury

5. What is reactivity series?

Reactivity series is a list of metals arranged in decreasing order of their reactivity.

6. Define the following

- Ore** : solid material from which metals can be extracted
- Gangue**: the impurities present in the ore.

7. Ionic compounds conduct in molten state. Give reason.

In molten state they conduct ions.

8. Name the material which react with steam.

Aluminium , iron and zinc.

9. Name four metals which are found in free state?

Gold , platinum , copper and silver

TWO MARKS QUESTIONS:

1. Aluminium oxide is called an amphoteric oxide . why ?

OR

What are amphoteric oxides?

The metal oxides which react with acids as well as bases to produce salt and water.

Ex: aluminium oxide , zinc oxide .

2. List the properties of ionic compounds?

- Crystalline solid
- Conducts electricity in molten state
- Soluble in water
- High melting point and boiling point.

3. Write the differences between metal and non-metals?

Metals	Non-metals
<ul style="list-style-type: none">• Malleable• Ductile• Lustrous• Good conductor of heat and electricity	<ul style="list-style-type: none">• Non-malleable• Non-ductile• Non-lustrous• Bad conductor of heat and electricity

4. Write differences between calcination and roasting?

calcination	Roasting
<ul style="list-style-type: none">• The carbonate ores are converted into oxides by heating strongly in limited air.• Ex: $\text{ZnCO}_3 \xrightarrow{\text{heat}} \text{ZnO} + \text{CO}_2$	<ul style="list-style-type: none">• The sulphide ores are converted into oxides by heating strongly in the presence of excess air.• Ex: $2\text{ZnS} + 3\text{O}_2 \xrightarrow{\text{heat}} 2\text{ZnO} + 2\text{SO}_2$

5. Give reason:

a) Electric wire is covered with PVC .

To prevent electric shock.

b) Potassium and sodium are kept in kerosene .

Potassium and sodium are highly reactive. They react with air and water and catch fire.

c) Ionic compounds have high melting point and boiling point.

Because a large amount of energy is needed to break the strong inter ionic force.

6. what is thermit reaction? Mention its application.

The reaction between iron oxide with aluminium is called thermit reaction.

Application: To join railway track or cracked machine parts.

CARBON AND ITS COMPOUNDS

ONE MARK QUESTIONS:

1. What is catenation?

The ability of carbon to bond with other atoms of carbon forming large molecules.

2. What is covalent bond?

The bond formed by sharing of electrons between 2 atoms.

3. What is structural isomerism ?

Compounds with the same molecular formula , but different structures.

4. Name the first member of alkanes that shows structural isomerism?

Butane

5. What is functional group?

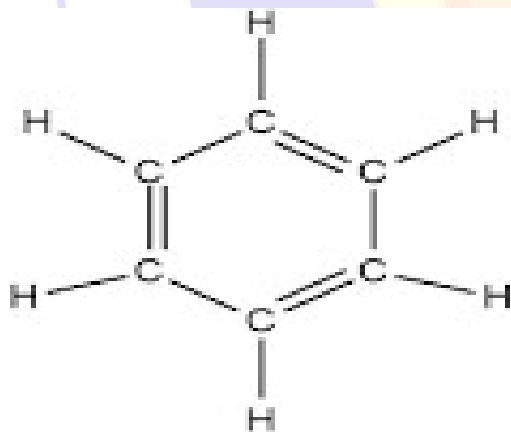
A group of atoms which makes the carbon compounds reactive.

6. Define tetravalency?

Carbon atom that can form bond with four other atoms.

7. Structure of benzene?

C_6H_6



8. What is hydrogenation? What is its industrial application?

It is a chemical reaction between hydrogen and other compounds in the presence of catalyst.

Application: it is used to prepare vegetable ghee from vegetable oil.

TWO MARKS QUESTIONS:

1. Carbon atom does not form C^{4+} cation and C^{4-} anion . why?

- Carbon can gain four electrons but it would be difficult for the nucleus with six protons to hold ten electrons.
- It can lose four electrons but it would require a large amount of energy to remove four electrons .

2. Write the differences between saturated and unsaturated hydrocarbons.

Saturated hydrocarbon	Unsaturated hydrocarbon
<ul style="list-style-type: none">• The single bond is present between C-C bond• It burns with blue flame.• Ex: Alkane	<ul style="list-style-type: none">• Double or triple bond is present between C-C bond.• It burns with sooty flame.• Ex: Alkene , Alkyne

3. What is a homologous series? Give examples.

Carbon compounds having similar structures and chemical properties but differ by CH_2 group.

Ex: Methane – CH_4 and Ethane – C_2H_6

4. Explain the mechanism of the cleaning action of soap?

When soap is dissolved in water , its hydrophobic ends attach themselves to the dirt and remove it from the cloth.

5. Write the general formula of alkanes, alkenes and alkynes.

Alkane : C_nH_{2n+2}

Alkene : C_nH_{2n}

Alkyne : C_nH_{2n-2}

No. of Carbon Atoms	Name	Formula	Structure
1	Methane	CH ₄	$ \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{H} \\ \\ \text{H} \end{array} $
2	Ethane	C ₂ H ₆	$ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H} - \text{C} - \text{C} - \text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array} $
3	Propane	C ₃ H ₈	$ \begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{H} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array} $
4	Butane	C ₄ H ₁₀	$ \begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array} $
5	Pentane	C ₅ H ₁₂	$ \begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \quad \\ \text{H} - \text{C} - \text{C} - \text{C} - \text{C} - \text{C} - \text{H} \\ \quad \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array} $

PERIODIC CLASSIFICATION OF ELEMENTS

ONE MARK QUESTIONS:

1. State modern periodic law?

The properties of elements are periodic functions of their atomic number.

2. State mendeleev's periodic law .

The properties of elements are periodic functions of their atomic mass.

3. What are the limitations of mendeleev's periodic table?

- Position of isotopes could not be explained
- No fixed position for hydrogen.
- Wrong order of atomic masses of some elements could not be explained .

4. What is atomic size?

The distance between the centre of an atom to outermost orbit is called atomic size.

5. How does atomic size vary in groups and periods in the modern periodic table . why?

Atomic size of an atom decreases as we move from left to right in period because of large positive charge on the nucleus, the electrons are pulled in more close to the nucleus and size decreases

Atomic size increases as we go down the group because new shells are being added and thus increases the distance between nucleus and outermost electron.

6. How many periods and groups are there in modern periodic table?

There are total of 7 periods and 18 groups.

7. State dobereiner's law of traids?

When 3 elements are arranged in a increasing atomic masses, the atomic mass of middle element is the average of the atomic masses of other two elements.

8. Define valency?

Valency is the combining capacity of an atom.

9. Who discovered modern periodic table ?

Henry Mosely

10. How do the following property vary in a periodic and in a group of periodic table.

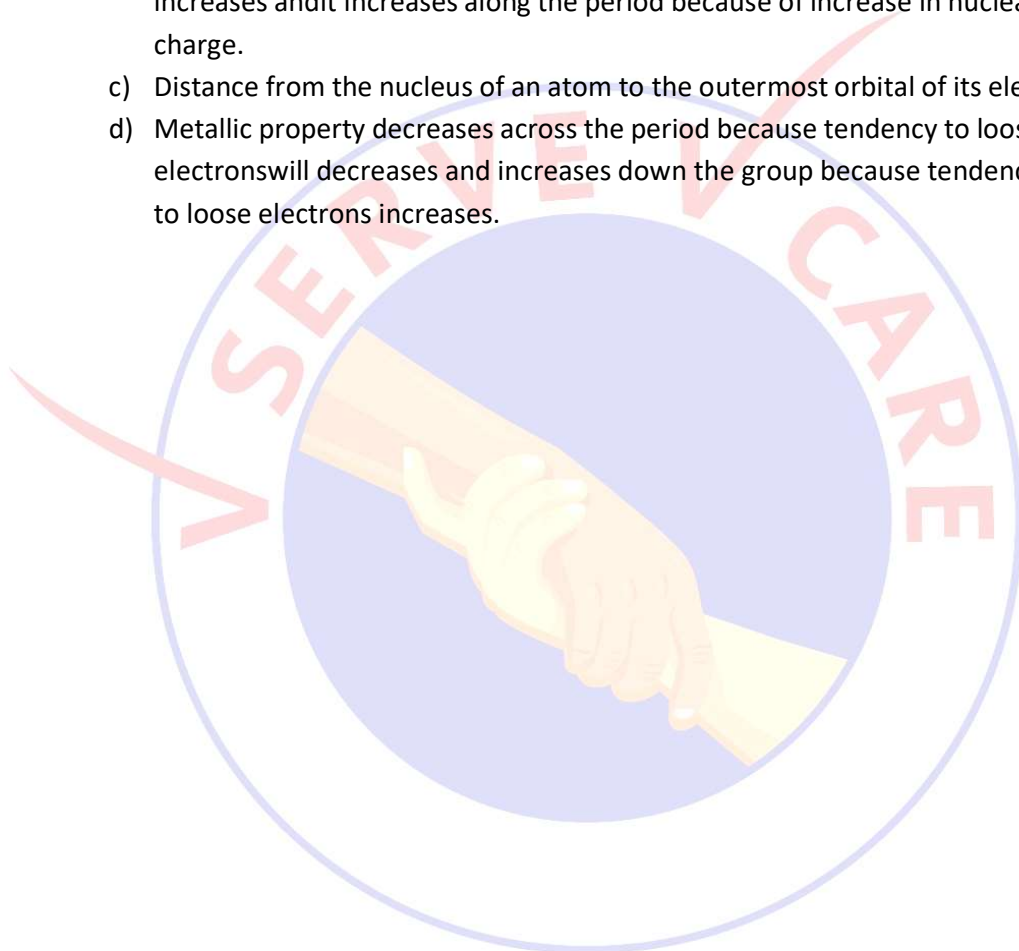
a) Electropositivity

b) Electronegativity

c) Atomic radius

d) Metallic property

- a) Electropositivity increases down the group because addition of shell increases distance between nucleus and outermost electron and it decreases along the period because tendency to lose electrons decreases .
- b) Electronegativity decreases down the group because addition of shell increases and it increases along the period because of increase in nuclear charge.
- c) Distance from the nucleus of an atom to the outermost orbital of its electron.
- d) Metallic property decreases across the period because tendency to lose electrons will decrease and increases down the group because tendency to lose electrons increases.





BIOLOGY

CHAPTER 6 - Life Processes

1 mark questions

1) What is a double circulation?

Ans: The blood passes twice through the heart to complete one round through the body. This is called double circulation.

2) What are the functions of xylem and phloem in plants?

Ans: Xylem: To transport water.

Phloem: To transport food.

3) Write the function of lymph.

Ans: Lymph carries digested and absorbed fat from intestine.

4) Mention the function of ATP produced during Cellular respiration?

Ans: ATP provides the energy needed for many processes in organisms and cells.

5) Why does lactic acid form in muscle?

Ans: Lack of oxygen

6) In which part of the digestive system, complete digestion takes place.

Ans: Small intestine

7) Name the plant part in which exchange of gases takes place?

Ans: Stomata.

8) Give reason:

(a) Ventricles of the human heart have thick walls.

Ans: Because ventricles have to pump high pressure blood to different organs

(b) It is necessary to separate oxygenated and deoxygenated blood in mammals and birds.

Ans: Because that allows highly good supply of oxygen to the body, this is useful in animals that have high energy needs.

9) Which organ produces bile juice?

Ans: Liver

10) State the role by the following in the process of digestion:

a) Enzyme trypsin b) Enzyme lipase c) Enzyme pepsin.

Ans: a) Enzyme trypsin : It is produced by the pancreas. It digests complete proteins.

b) Enzyme Lipase : It is secreted by pancreas and small intestine. It converts fats into fatty acid and glycerol.

(c) Enzyme Pepsin - It is secreted by stomach. It breaks down of protein.

11) Define translocation.

Ans: Transport of soluble products of photosynthesis.

12) What are the raw materials required for photosynthesis.

Ans: Carbon dioxide, water, Chlorophyll and Sunlight.

13) In which organism anaerobic respiration takes place.

Ans: Yeast

14) Which molecule is formed during the first step of cellular respiration by the breakdown of glucose molecule in cytoplasm?

Ans- Pyruvate

2 mark questions

1) What are differences between Arteries and Veins?

Ans: Arteries: They carry oxygenated blood from heart to different organs except pulmonary artery.

Veins: They transports deoxygenated blood from different organs to heart except pulmonary veins.

2) Write the functions of the components of blood

Ans: Red Blood Cells (RBC): They carry the protein haemoglobin, which transports oxygen from the lungs to the rest of the body.

White blood cells (WBC): They are primarily responsible for protecting the body from infection.

Blood platelets: They help the blood clotting process in the event of an injury.

3) What are the differences between autotrophic nutrition and heterotrophic nutrition?

Ans:

Autotrophic nutrition

- Food is synthesized from the inorganic substances.

- Food is prepared at day time.

- Chlorophyll is required.

- Ex: plants

Heterotrophic

- Food is obtained from the or another organism.

- Food is obtained any time.

- Chlorophyll is not required

- Ex: Animals

4) What is the Role of saliva in the digestion of food? Or Eating chapatti by chewing it very slowly tastes sweeter Why?

Ans: Saliva contains salivary amylase which breaks down starch into sugar.

5) Differentiate between xylem and phloem.

Ans:

Xylem

- Xylem tissue helps in the transport of Water and minerals.

- Water is transported upwards from upward roots to all other plant parts.

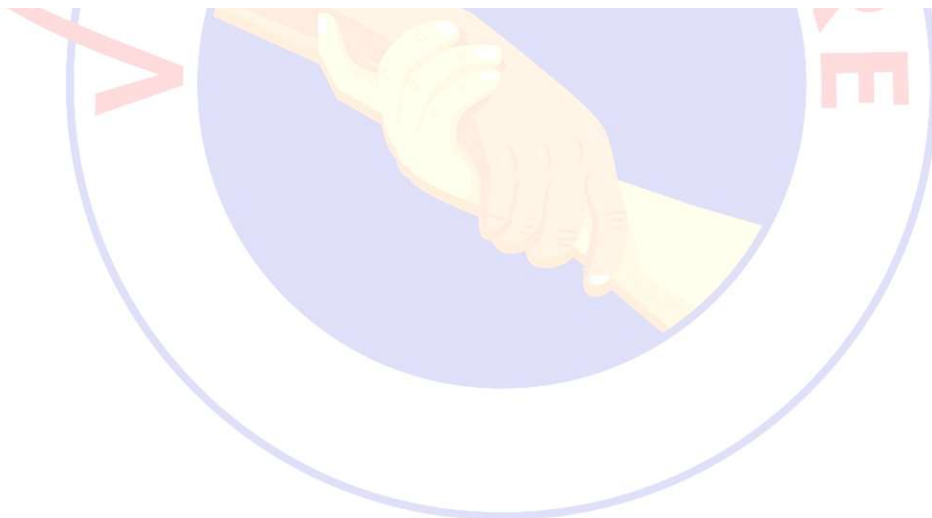
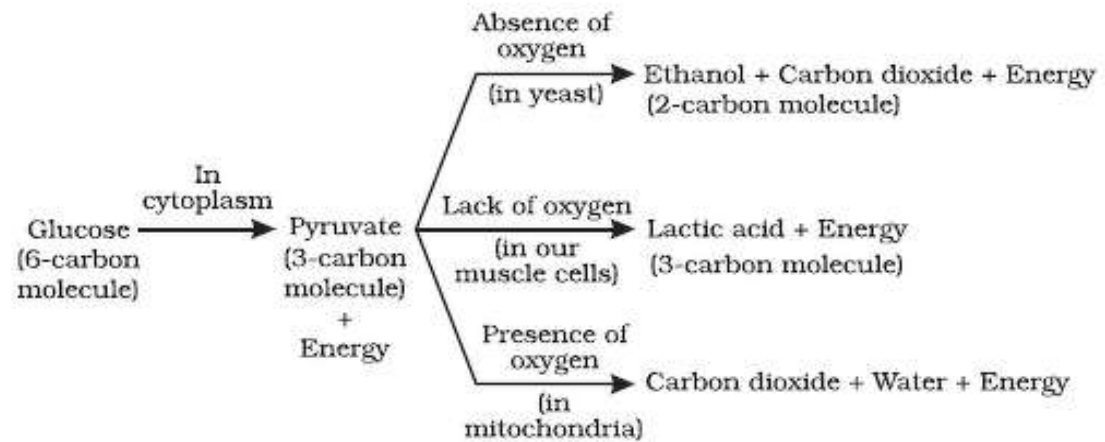
Phloem

- phloem tissue helps in the of food.

- Food is transported in both and downward directions.

- 6) What are the methods used by plants to get rid of excretory products ? Ans: -Transpiration
-Gaseous exchange by stomata
-Stored as resins and gums.

7) Explain 3 pathways of breakdown of glucose.



3 marks questions

1) Explain the structure and function of nephron .

Ans: These are the structural and functional unit of kidney.

Bowman's capsule - Cup like capsule. Lower end is tube like structure called tubule.

Functions:- Filtration of blood

-Re absorption of glucose, amino acid and salt.

-Re absorption of water

-Removing Urea and other wastes.

2) Mention the events that occur during photosynthesis.

Ans: i) Absorption of light energy

ii) Conversion of light energy to chemical energy.

iii) Reduction of carbon dioxide to carbohydrates.

3)a) How are the photosynthetic products translocated in the plants? b) Mention the wastes generated during this process.

Ans: a) Through phloem

b) oxygen

4) What are the differences between aerobic and anaerobic respiration?

Ans:

Aerobic respiration

- Takes place in the presence of oxygen

oxygen.

- Releases large amount of energy

(38 ATP)

- It occurs in cytoplasm and mitochondria.

-Ex: Humans

Anaerobic respiration

- Occurs in the absence of

- It releases small amount of

(2ATP).

- It occurs only in cytoplasm.

-Ex: Yeast

5) What is the role (function) of the acid in our stomach?

Ans: a) It creates acidic medium to activate pepsin.

b) It kills the bacteria.

6) How are alveoli designed to maximise the exchange of gases?

Ans: Alveoli provide a surface for the exchange of gases.

7) What are villi? What is the function?

Ans: The finger-like projections present in the small intestine. It increases the surface area of absorption.

8) Mention the functions of kidney.

Ans: functions of kidney are:

- Removes the poisonous substances
- Regulates water balance of blood
- Regulates pH of blood



Chapter 7- Control and Coordination.

1 mark questions

1)What is Synapse?

Ans: The gap between two neurons is called Synapse.

2) What are Plant hormones or Phytohormones?

Ans: These are chemical substances which help in growth, flowering and development of the plants.

3)Name the part of the brain which controls posture and balance of the body.

Ans: Cerebellum in Hind brain.

4) Name the parts of the brain which controls the following functions?

a)Detecting the smell

b) A man walking on the rope

Ans:a)Forebrain (Cerebrum)

(b) Cerebellum.

5) Why is the use of Iodized salt advisable?

Ans: It is essential for the synthesis of thyroxin hormone from thyroid gland.

6) In the present days while cultivating the fruits that have more demand are injected by cytokinin hormone why?

Ans: • It helps in rapid cell division in Fruits.

• It helps in Ripening of Fruits.

7) Why are some patients of diabetes treated by giving injections of insulin?

Ans: Patients of diabetes are given insulin injection to control the sugar level.

8) What is reflex arc?

Ans: Pathway of reflex action is called reflex arc.

9) Define Phototropism.

Ans: Bending of Plants in response to light.

10) Define Geotropism.

Ans: Movement of plant in response to gravity.

11) Define Hydrotropism.

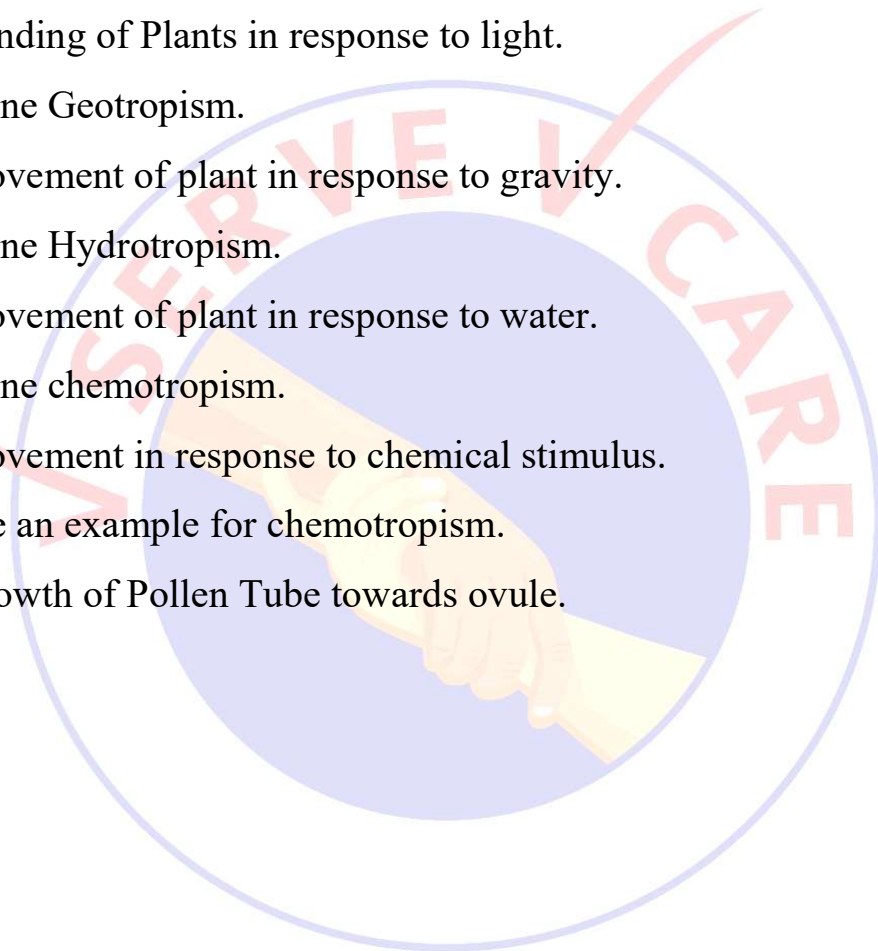
Ans: Movement of plant in response to water.

12) Define chemotropism.

Ans: Movement in response to chemical stimulus.

13) Give an example for chemotropism.

Ans: Growth of Pollen Tube towards ovule.



14) A boy runs on seeing a stray dog. His breathing becomes very fast and blood pressure also increases. Name the hormone to be high in his blood and

the gland which produces it.

Ans: Adrenaline.

2 marks questions

1) How do we detect the smell of an agarbatti? (incense stick).

Ans: The smell of an agarbatti spreads in the air. It is detected by olfactory receptors in the nose and this information is sent to forebrain.

2) Write the different types of plant hormones and their functions

Ans:

1. Auxins :- It helps in growth of plants.
2. Gibberellins:- It helps in growth of stem
3. Cytokinin: - It helps in cell division such as in fruits and seeds.
4. Abscisic acid: It inhibits growth
5. Ethylene: Flowering and ripening of fruits.

3) What happens at the synapse between two neurons?

Ans: At synapse electrical signal is converted to chemical substances.

4) Write the functions of different parts of brain.

Ans: Forebrain :Cerebrum: Thinking part of brain.

Midbrain: Involuntary action like eye movement.

Hindbrain:

1. Pons: Controls respiration
2. Medulla: Controls blood pressure, salivation and Vomiting
3. Cerebellum: Posture and body balance

5) Write the different types of hormones and along with functions.

Ans: 1. Growth hormone: Secreted by pituitary gland.

It stimulates growth in all organs.

2. Thyroxin hormone: Secreted by thyroid gland. It regulates carbohydrate, protein and fat metabolism in the body.

3. Insulin: Secreted by pancreas.

It regulates blood sugar level

4. Adrenaline: Secreted by adrenal gland.

It regulates blood pressure and heart beat.

5. Testosterone: Secreted by testes.

It regulates, development of sex organs

6. Oestrogen: Secreted by ovaries. It regulates development of female sex organs.

6) Mention the part of the body where gustatory and olfactory receptors located.

Ans: Gustatory receptor: Tongue

Olfactory receptor : Nose.

Chapter 8- How do organisms reproduce.

1 mark questions

1) Name the special tissue that embryo gets nutrition from mother's blood.

Ans:placenta.

2) Define Puberty

Ans: The period of during which boys and girls reach sexual maturity and capable of reproduction.

3) What is pollination?

Ans: Transfer of pollen grains from anther to the stigma of a flower is called pollination.

4)How does menstruation occur?

Ans: The uterus prepares itself every month to receive a fertilized egg. Thus its lining becomes thick and sponge. If egg is not fertilised, lining slowly breaks and come out through vagina as blood and mucus.

5) Differentiate between self pollination and cross pollination

Self pollination

- The transfer of pollen from anther to stigma of the same flower

-- It shows less variation

Cross pollination

- The transfer of pollen from one flower to the stigma of the flower.

- It shows more variation

6) In males, testes are located outside abdominal cavity in scrotum why ? Ans: To regulate temperature, necessary for the production of sperm.

7) Name one sexually transmitted disease each caused due to bacterial infection and viral infection.

Ans: Bacterial infection is gonorrhoea

Viral infection is AIDS.

8) If a woman is using copper-T, will it help in protecting her from sexually transmitted diseases why?

Ans: It will not help in protecting from sexually transmitted diseases because it will prevent only pregnancy.

2 marks questions

1) What are the advantages of sexual reproduction?

Ans:- More variations are produced

-Ensure survival of species

2) What are the differences between sexual and asexual reproduction?

Sexual reproduction

-Two individuals are involved

- Variations are seen.

Asexual reproduction

- Only one individual is involved.

- Variations are not seen.

3) What is placenta? Mention its function.

Ans: Placenta is special tissue that embryo gets nutrition from mother blood. Function: Placenta helps the embryo to get nutrition and oxygen from mother.

4) What is Fertilization? Mention the changes that occur in the flowers after fertilization.

Ans: Fertilization is the process of fusion of male and female gametes.

After fertilization, zygote forms an embryo in the ovule. This ovule has a tough coat and gets converted into in to seed. The ovary grows and ripens into a fruit.

5) How does uterus prepare to receive the fertilized egg in woman ?
What happens if egg does not fertilise? Explain.

Ans: Its lining becomes thick and spongy. If the egg is not fertilised, it lives for about a day, then the lining of uterus slowly breaks and comes out through vagina as blood and mucuous.

6) Explain the significant functions of each structure in human male reproductive system.

a. Testes: They produce sperms

b. Scrotum: They regulate temperature necessary for the production of sperms.

c. Urethra and vas deferens: Transport sperm from testes

d. Prostate gland and seminal vesicle: They add their secretion to make the sperm transport easier and provide nutrition.

e. Penis: Delivers the sperm to the site of fertilization

7) Explain different types of asexual reproduction

(a) Fragmentation: Multicellular organisms break down into two or more fragments Ex: Spirogyra

(b) Budding: Daughter organisms formed from the small projections known as bud. Ex: Hydra

(c) Regeneration: Organisms can be cut into any number of pieces. Each piece grows into complete organism Ex: Planaria

(d) Fission: For unicellular organisms, from a cell division or fission leads to the formation of new individuals Ex: Amoeba

(e) Vegetative propagation: In plants, the parts like root, stem and leaves develops into new plant. Ex: Sugarcane, rose etc.

8) Write the different types of contraceptive methods.

Ans: Natural method: Naturally preventing meeting of sperms with egg

Barrier method: Using condoms

Oral method: Taking tablets & drugs orally

Implants and surgical methods: Using loops and copperT's.



Chapter -9 Heredity and Evolution

1 Mark questions

1) Define Heredity.

Ans: Transfer of characters from parents to offspring to known is heredity.

2) Define Evolution.

Ans: Gradual change of organism from simple to complex forms in a long period called evolution

It occurs by 1) Speciation 2) Natural Selection 3) Genetic drift

3) List three evidences for evolution.

Ans: 1) Fossils

2) Homologous organs

3) Analogous organs

4) Define Speciation.

Ans: Formation of new species from the existing ones called speciation. Factors: - geographical isolation, genetic drift, natural selection

5) Define variation.

Ans: Differences among the individuals

6) Define fossils.

Ans: The remains of the organisms that lived in the past.

8) Define a) Genotype b) Phenotype

Ans: a) Genotype: Genetic composition of an individual.

b) Phenotype :- Physical appearance is called phenotype.

2 marks questions

1) What are the differences between homologous and Analogous organs?

Homologous organs

- They have same structure and different function.
- Organs of different organisms have common origin.

Ex: Forelimbs of frog and bird

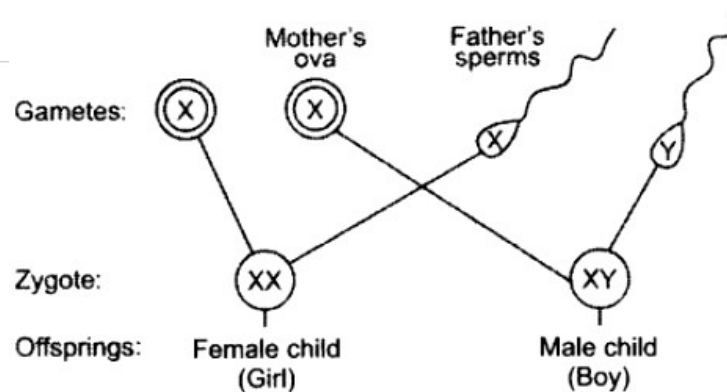
Analogous organs

- They have a different structure and same function.
- Organs of different organisms have different origin.

Ex: Wings of bird and bat

2) Sex of the child is determined by Father. How?

Ans: A child inherits X chromosome from her father will be a girl and the child inherits Y chromosome from his father will be a boy. Both the girl and the boy inherit only X chromosome from the mother. Therefore sex of the child is determined by the father.



3) Write difference between sex chromosome of man and sex chromosome of woman.

Ans: Woman has a perfect pair of sex chromosome called XX.

Man has normal sized chromosome X and short sized chromosome Y.

4) Write the differences between acquired and inherited characters.

Ans:

Acquired characters

- The characters develops in organism in their life time.
- This will last by the death of generation Individual.

Ex: Good skills in sports.

Inherited characters

- The characters received from their parents.
- This is transferred to the next

Ex. Free and joint ear lobes.

Chapter 16- Sustainable management of natural resources

1) Three R's to save the environment are
- Reduce, Recycle, Reuse

2) Write the difference between Renewable (inexhaustible) and non renewable (exhaustible) resources.

Ans:

Renewable (inexhaustible)

- Resources are unlimited in nature.
nature.

Eg : Sun light, air, water
and

Non-Renewable (exhaustible)

- Resources are limited in

Eg: Forest, soil, wildlife, coal

Petroleum.

3) How can we save the environment?

Ans: 5R's:

- a. Refuse to buy the plastic
- b. Repurpose – reusing the waste products.
- c. Reduce - reduce the use of energy sources.
Eg:- Switching of the fan when it is not required.
- d. Recycle - Re-manufacturing the waste products
- e. Reuse - use the things again and again

4) Reuse of plastic products is better than recycle method. Why?

Ans: During recycling pollution occurs which causes damage to living things.

5) Why forests are considered biodiversity hot spots?

Ans: Wide variety of plants, animals, microorganisms are found in forests. So they are known as biodiversity hot spots.

6) a) List the disadvantages of fossil fuels or

b) List the advantage of reduce and reuse to save the environment.

Ans:

a)- It leads to air pollution.

- It leads to acid rain.

- It leads to global warming.

Ans. b) 1. Reduce the wastage of water

2. Reuse the glass bottles again and again.

7) List any two advantages of water harvesting.

Ans: a) Helps to recharge ground water.

b) Provides moisture to the soil and crops.

8) Building of big dams gives rise to some problems. List three main problems that may arise.

Ans: Problems that may arise would be:

- Social problems

- Economic problems

- Environmental problems

9) Who are the four stakeholders that we have to consider during the conservation of forests and wildlife?

Ans: 1) Local people living in villages near forest area.

2) Industrialists using the forest product.

3) Wildlife and nature enthusiasts

4) Forest department of the government.



Chapter 15 - Our Environment

1 mark questions

1) What is food chain?

Ans: The unidirectional flow of energy from one organism to another in the form of food.

2) What is trophic level? Or Define trophic level?

Ans: Each step of a food chain is called trophic level.

3) Define Bio magnification.

Ans: The highest concentration of chemical gets collected at the top of trophic level.

4) Define Ecosystem.

Ans: The interaction between living and non-living .

5) Which compounds are responsible for the depletion of ozone layer.

Ans: Chlorofluoro Carbons - (CFC's)

6) Nowadays CFC's free refrigerators are being manufactured why?

Ans: To reduce depletion of Ozone layer.

7) What will happen if we kill all the organism in one trophic level?

Ans: The lower trophic level will grow higher more in number and the higher will not survive because flow of energy will not take place.

8) What are decomposers?

Ans: These organisms depend upon dead plants and animals.

They change complex organic substances into simple inorganic substances.

9) Give reason: Energy flow is always unidirectional

Ans: - The energy captured by plants does not return to the sun

-The energy which passes to the next level does not come back to autographs.

10) What is food web?

Ans: Interconnecting food chains of an ecosystem is called food web.

11) What are the components an ecosystem?

Ans: 1. Biotic components : plants, animals and micro organisms

2. Abiotic components: water, soil, wind etc.

2 mark questions

1) What are the differences between biodegradable and non-biodegradable pollutants.

Ans: Biodegradable

- It is decomposed by the microorganisms.
- It does not cause pollution.

Ex: Plant and animal wastes.

Non biodegradable

- It is not decomposed by the microorganisms.
- It causes pollution.

Ex: Plastic, glass.

2) What is the role of decomposers in the ecosystem?

Ans: 1. They decompose the biodegradable substances into useful substances

2. They release nutrients into the soil.

3) How ozone layer is formed? Explain with equation.

Ans: Ozone at high level of atmosphere, higher energy UV radiation split O_2 into free O atoms. Then it combine with oxygen to form ozone.



4. What are the causes of ozone layer depletion?

Ans: - CFC

- Nitrogenous compounds

5) Why is the damage of the ozone layer a cause of concern? Or Effects of ozone layer depletion.

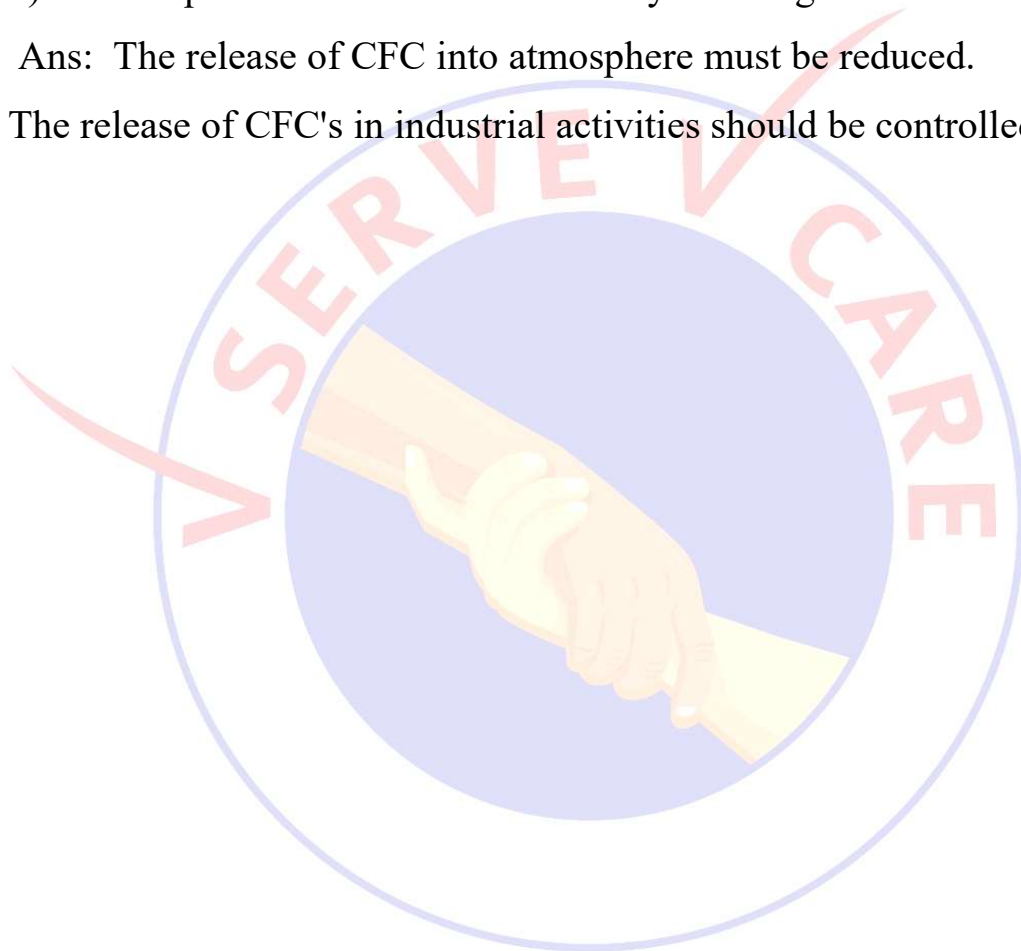
Ans: - It causes skin cancer and skin darkening.

- It increases global warming.

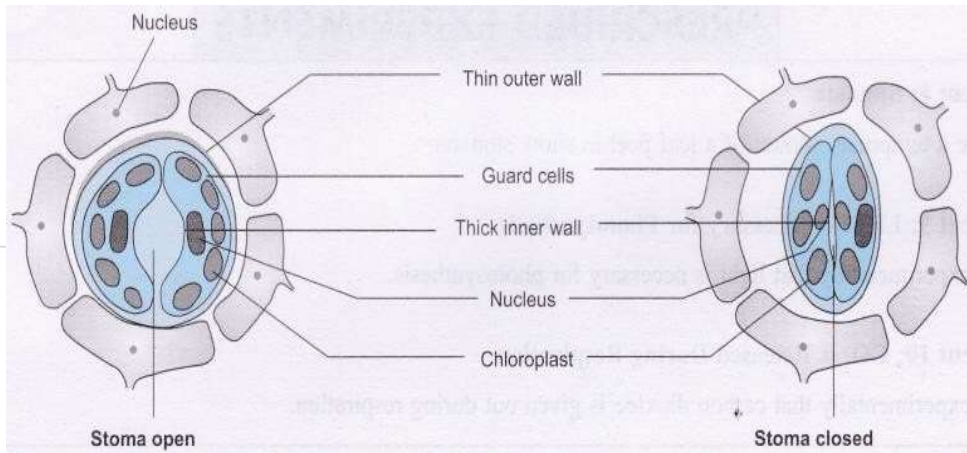
6) What steps are taken to limit ozone layer damage?

Ans: The release of CFC into atmosphere must be reduced.

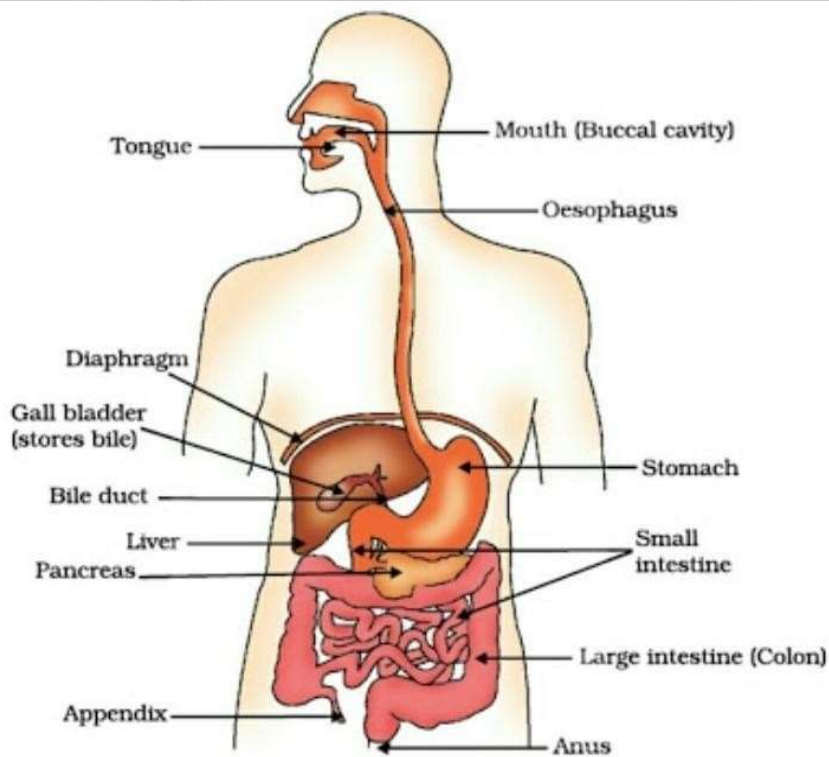
The release of CFC's in industrial activities should be controlled.



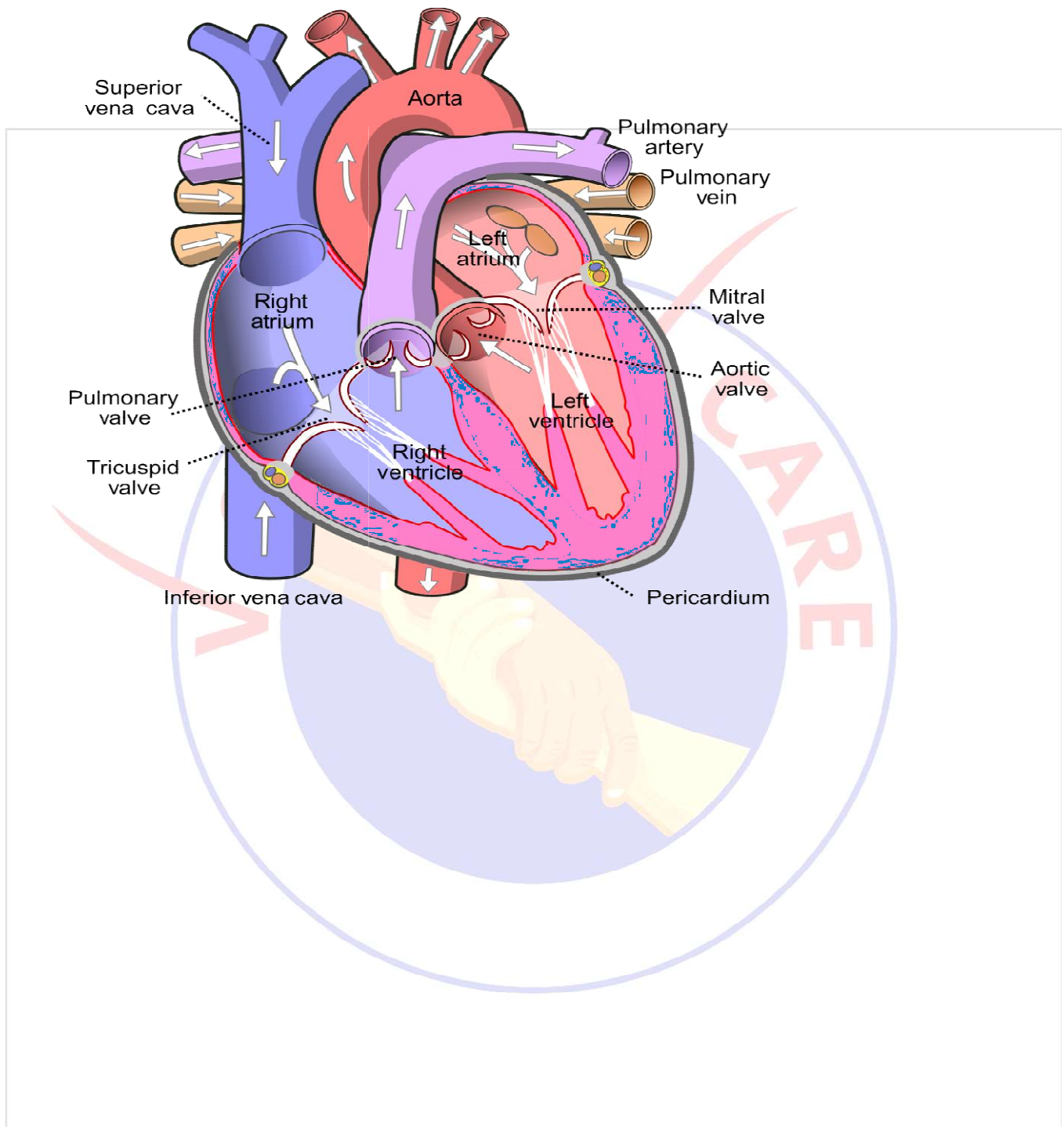
Open and closed stomatal pore



Human alimentary canal

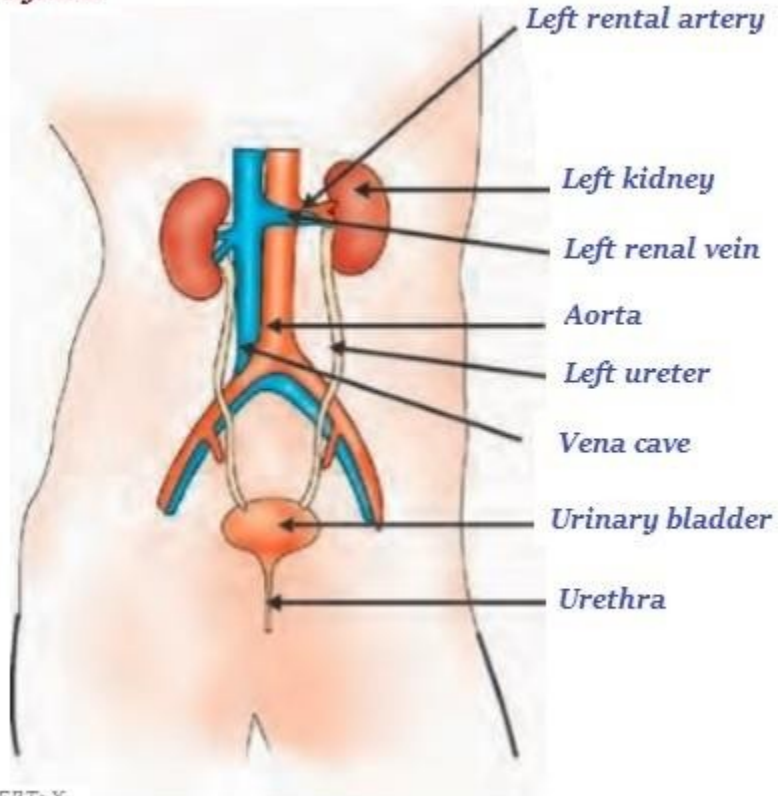


Sectional view of human heart



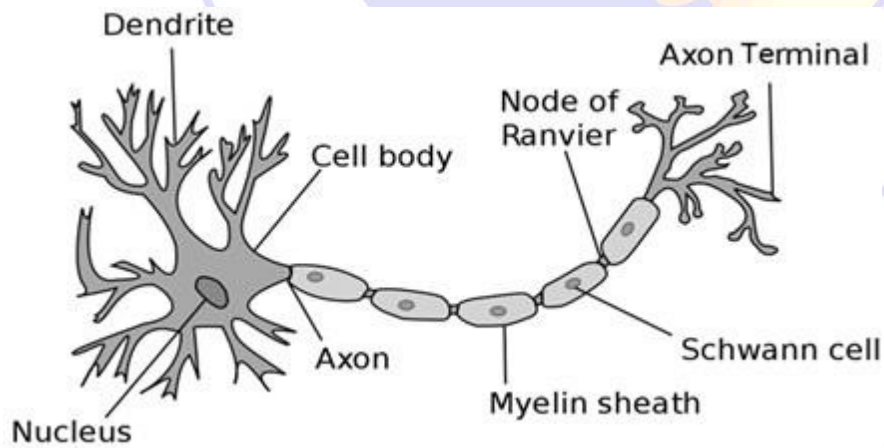
Excretory system of human beings

Excretory System

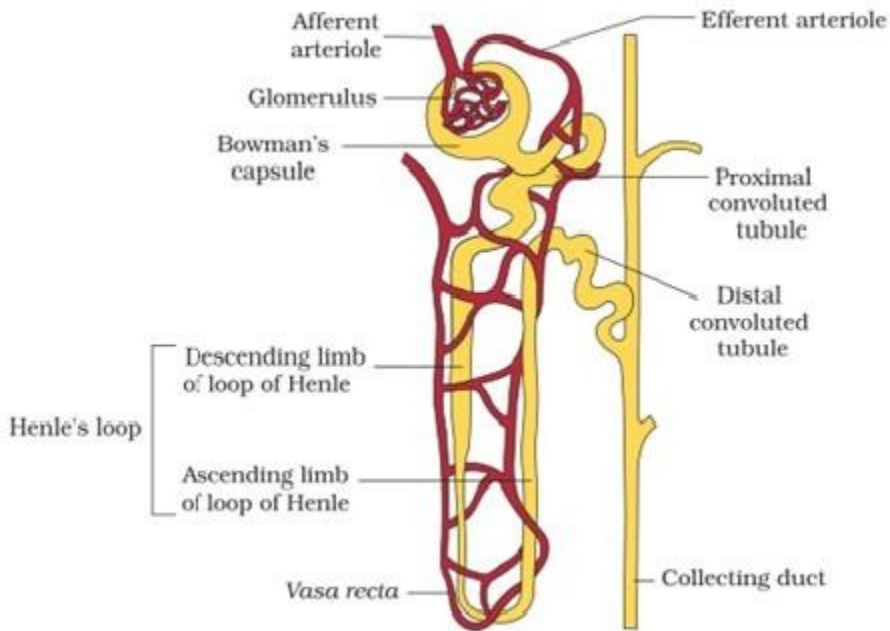


Source: Science NCERT; X

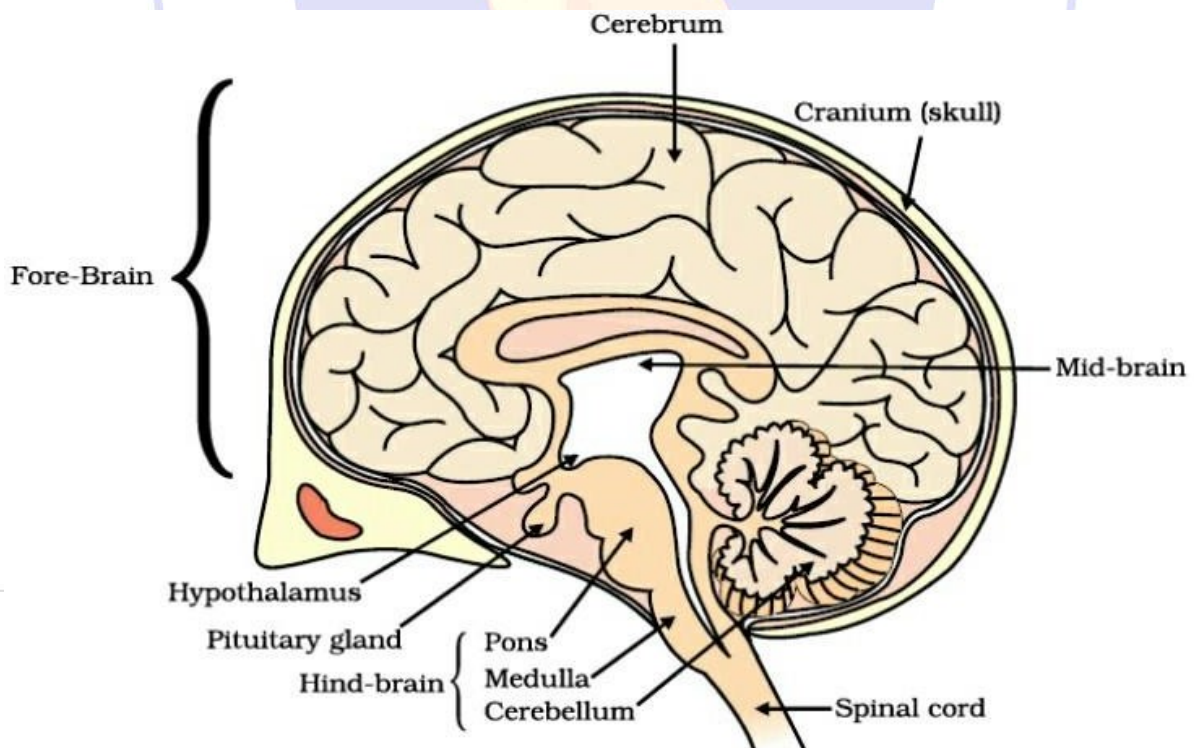
Structure of neuron



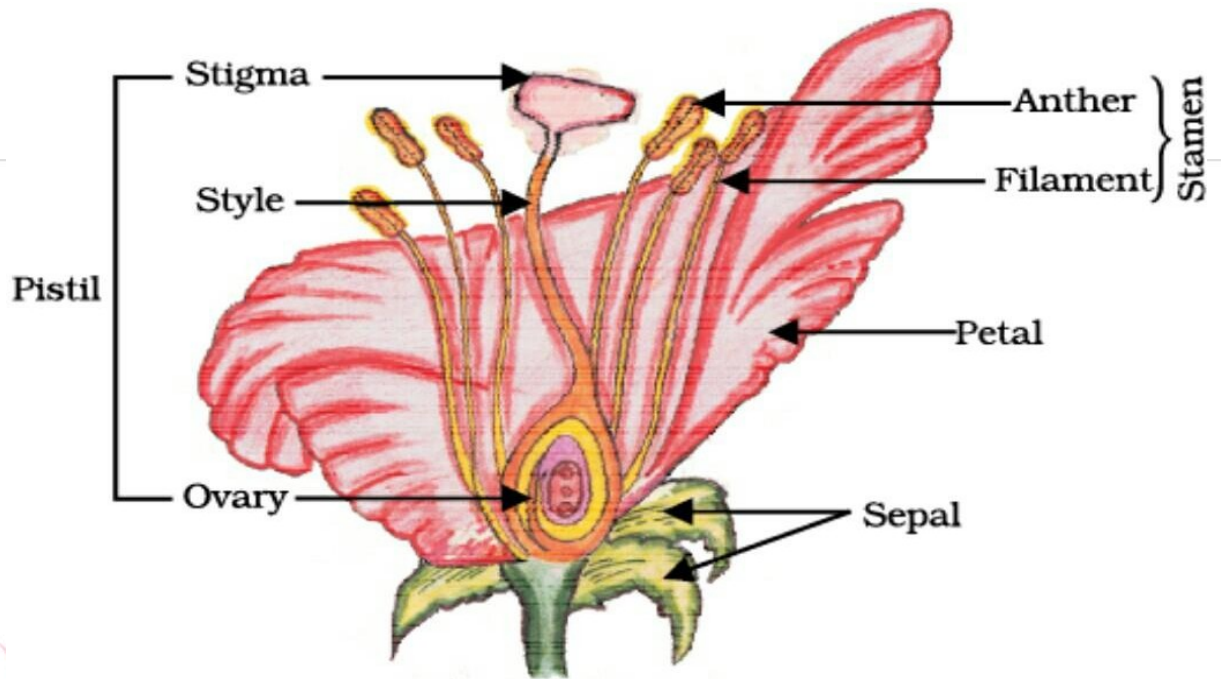
Structure of nephron



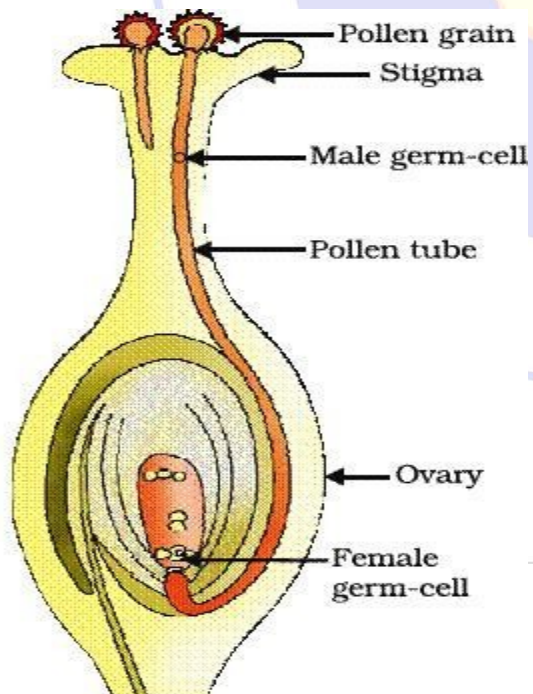
Human brain



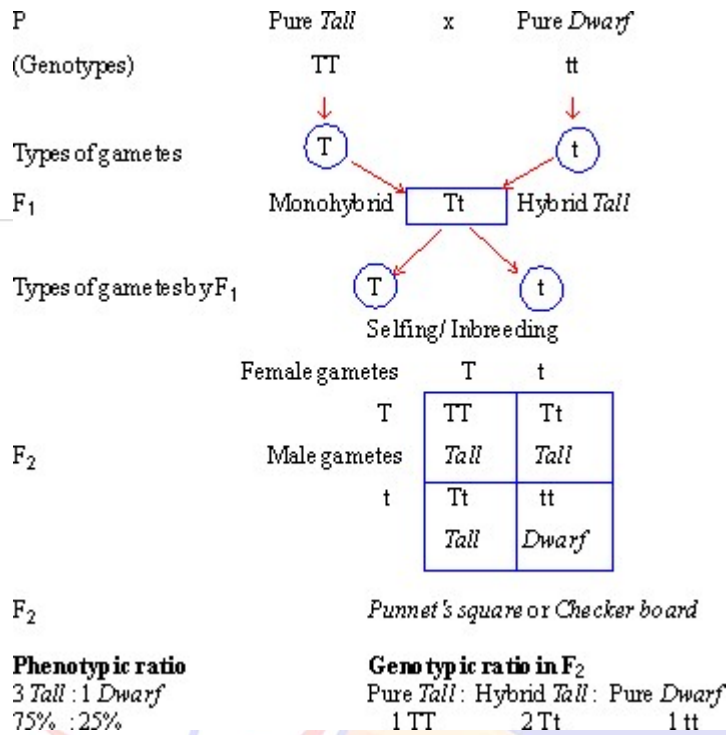
Longitudinal section of flower



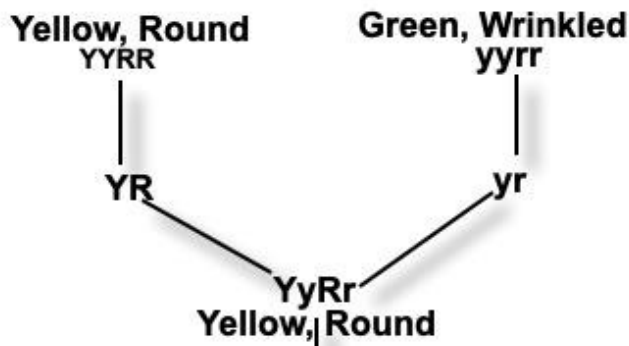
Germination of pollen on stigma



Monohybrid cross

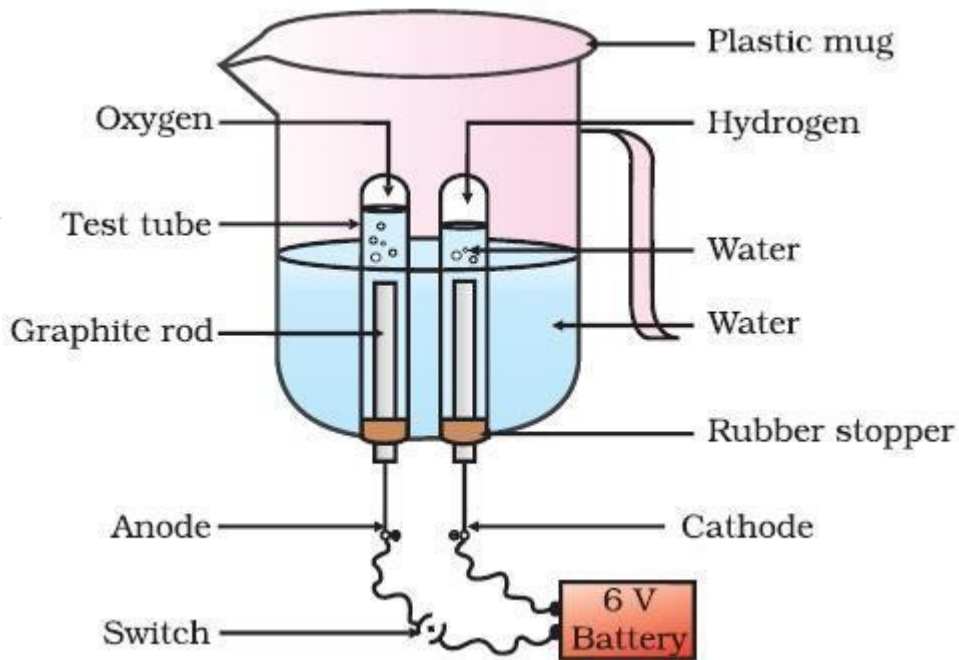


Dihybrid cross

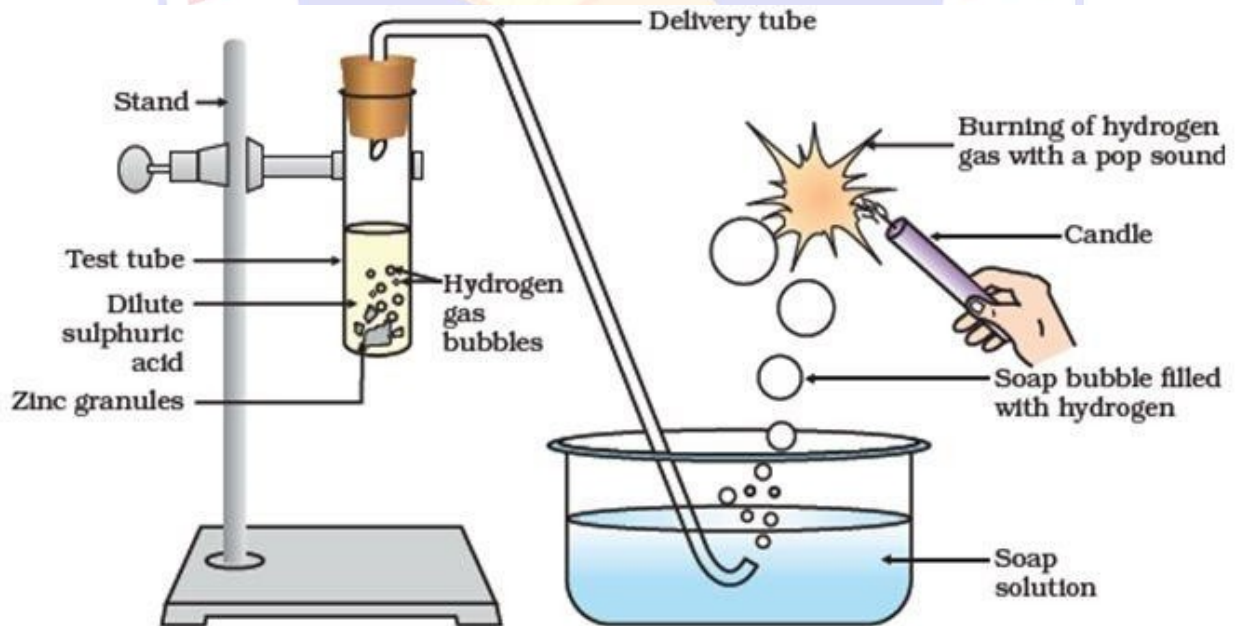


	YR	Yr	yR	yr
YR	YYRR Yellow Round	YYRr Yellow Round	YyRR Yellow Round	YyRr Yellow Round
Yr	YYRr Yellow Round	YYrr Yellow wrinkled	YyRr Yellow Round	Yyrr Yellow wrinkled
yR	YyRR Yellow Round	YyRr Yellow Round	yyRR Green Round	yyRr Green Round
yr	YyRr Yellow Round	Yyrr Yellow wrinkled	yyRr Green Round	yyrr Green round

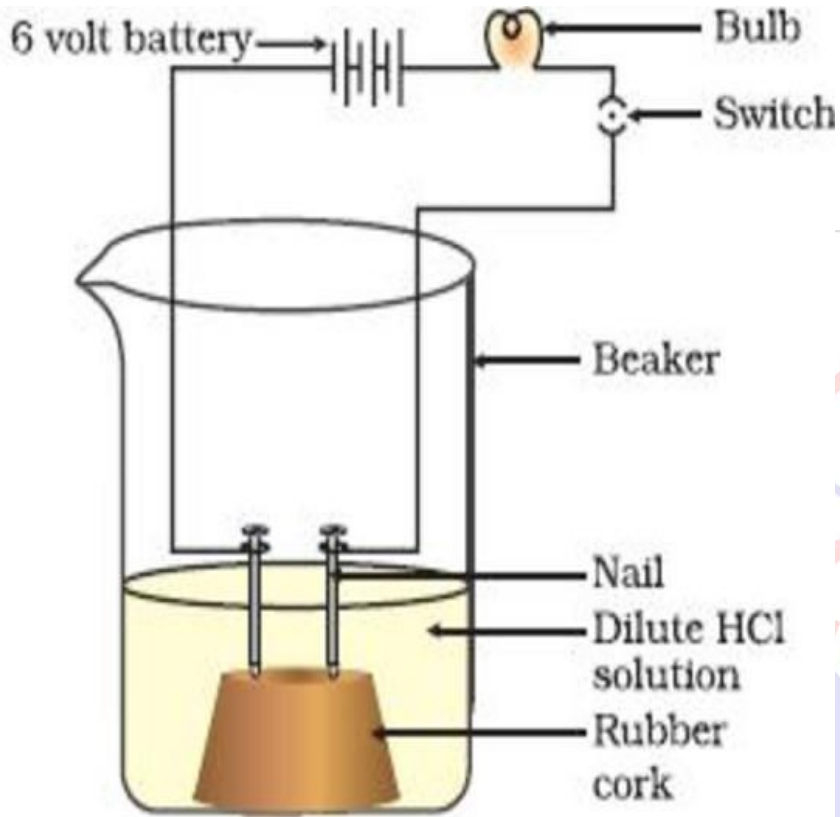
Electrolysis of water



Reaction of zinc granules with dil. sulphuric acid and testing hydrogen gas by burning.



Acid solution in water conducts electricity



Action of steam on metal

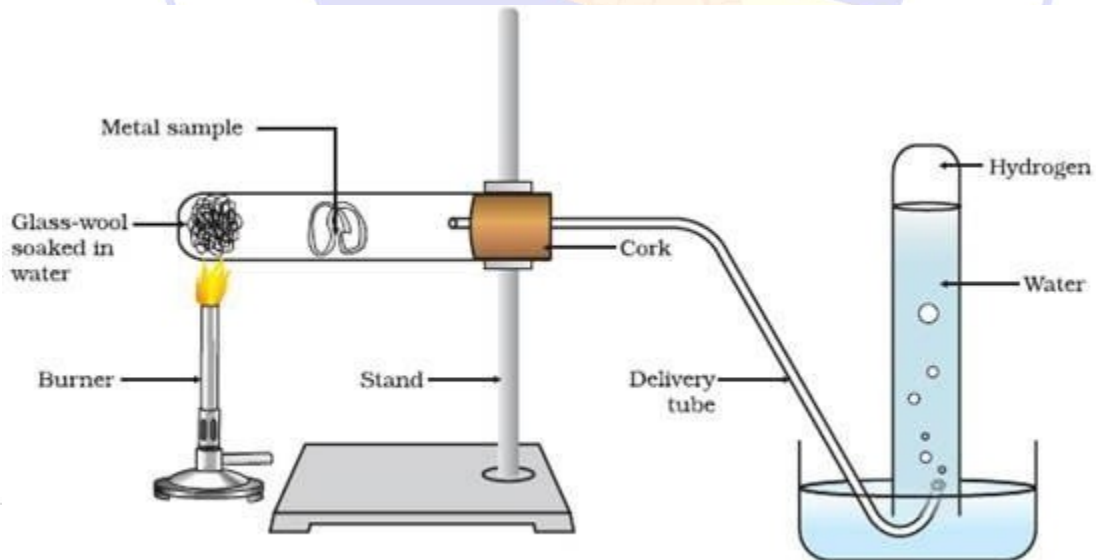
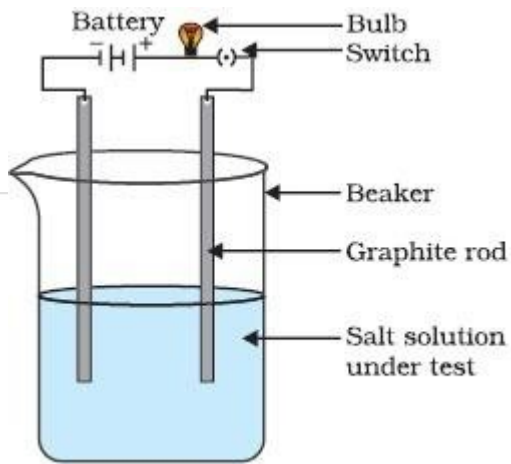
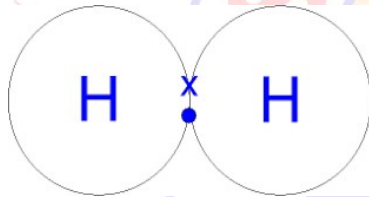


Figure 3.3 Action of steam on a metal

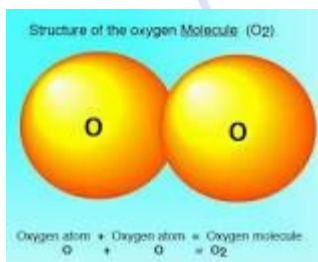
Testing the conductivity of salt solution



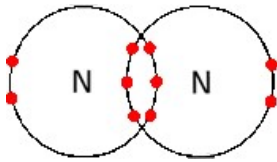
A molecule of hydrogen



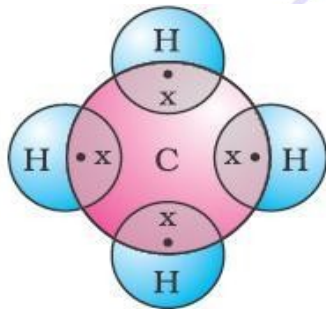
A molecule of oxygen



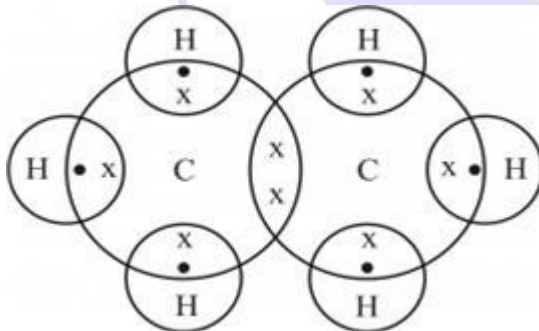
A molecule of nitrogen



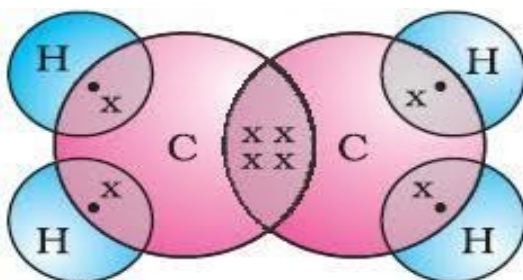
Electron dot structure for methane



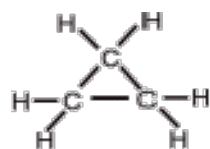
Electron dot structure of ethane : C₂H₆



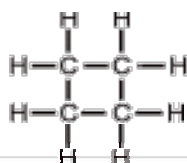
Electron dot structure of ethene : C₂H₄



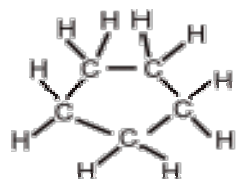
Cyclic hydrocarbons :



Cyclopropane



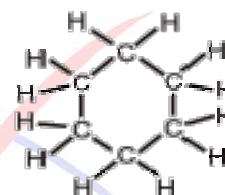
Cyclobutane



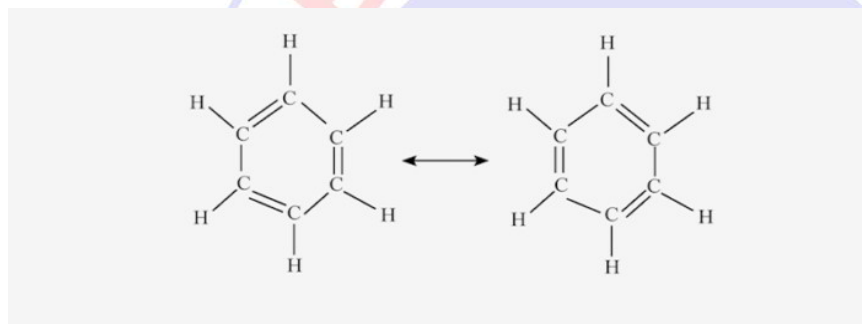
Cyclopentane



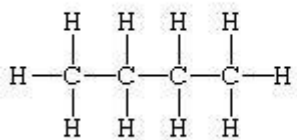
Cyclohexane



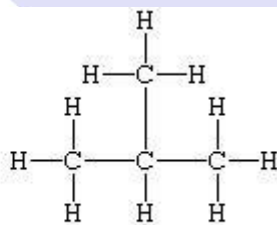
Benzene



N-butane and isobutane

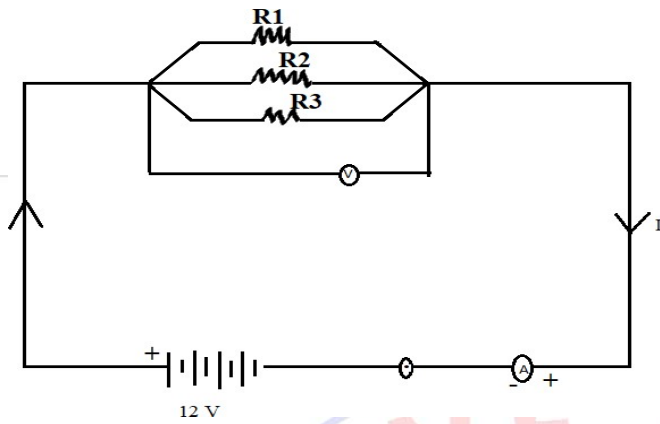


n-butane, $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$

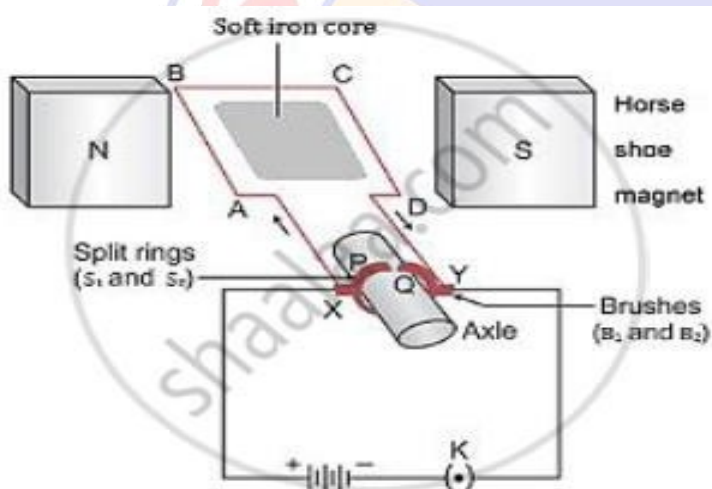


isobutane, $(\text{CH}_3)_3\text{CH}$

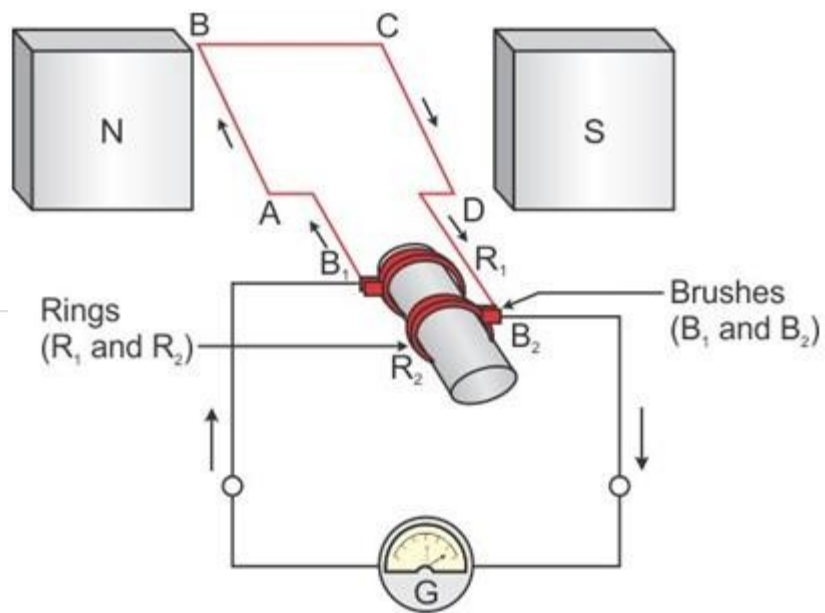
Resistors in parallel



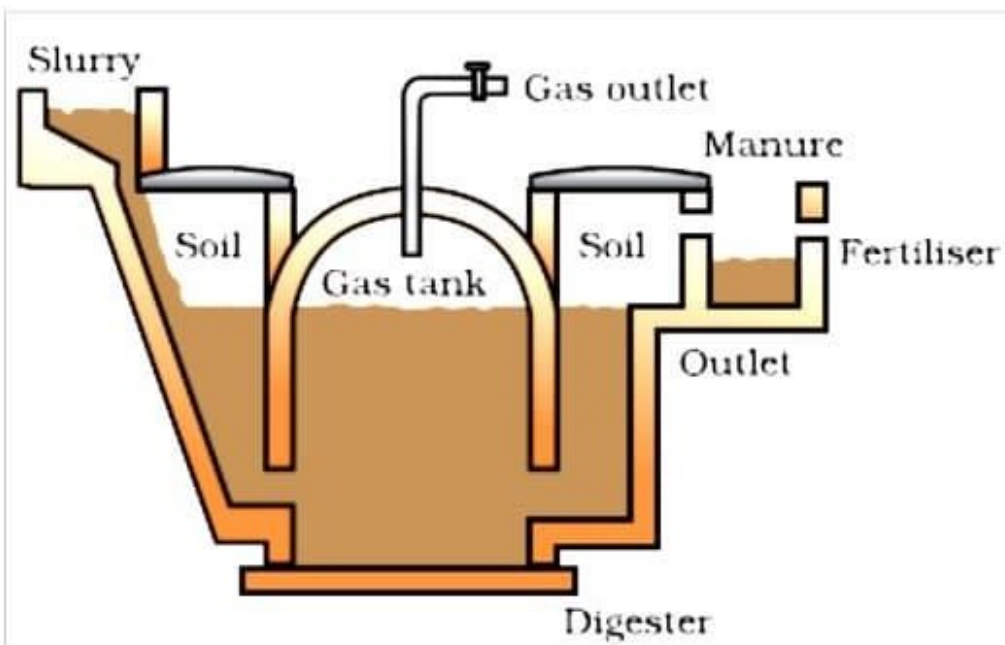
A simple electric motor



Electric generator

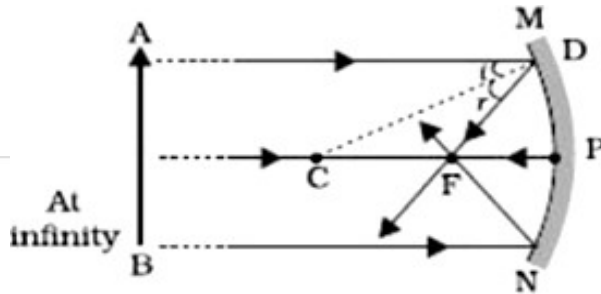


Schematic diagram of a bio-gas plant

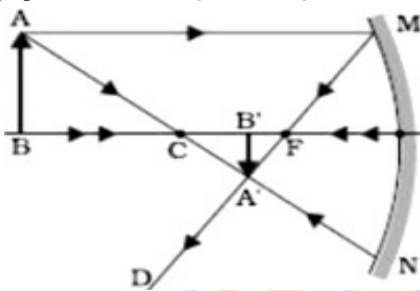


Ray diagram for the image formation by concave mirror

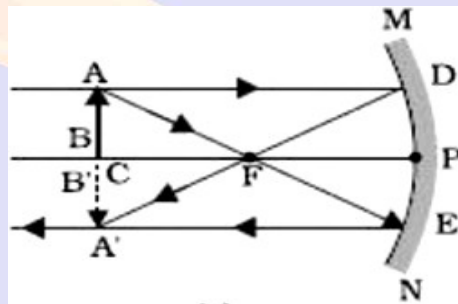
(i) When the object is at infinity:



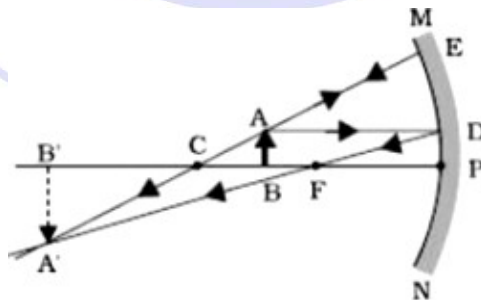
(ii) When the object is beyond centre of curvature (C):



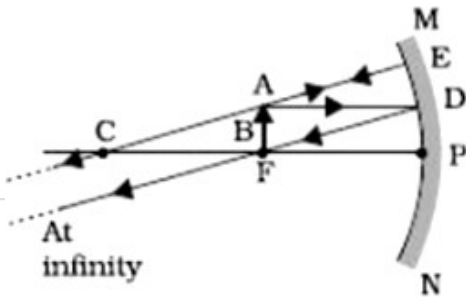
(iii) When the object is at centre of curvature:



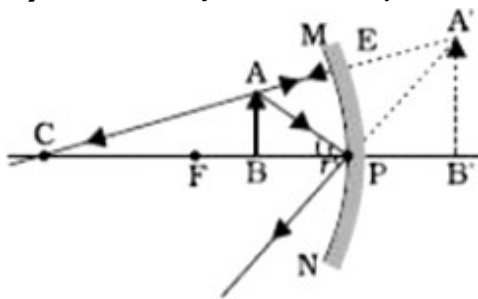
(iv) When the object is between C and Focus:



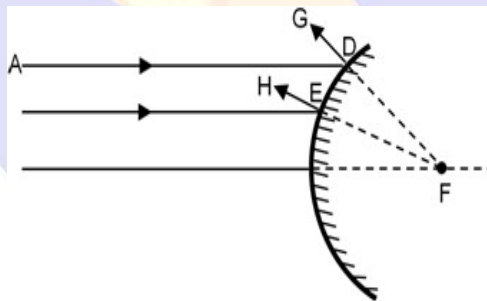
(v) When the object is at focus:



(vi) When the object is between pole and focus:

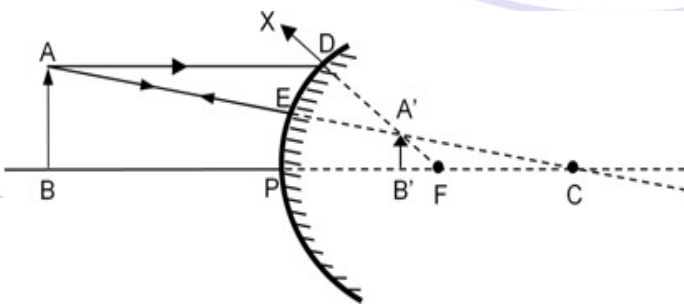


Ray diagram for the image formation by convex mirror

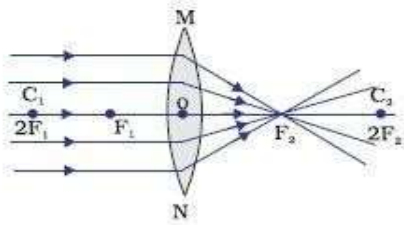


When the object is at infinity:

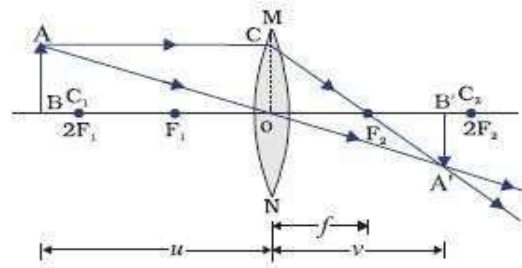
When object is placed in between infinity and pole :



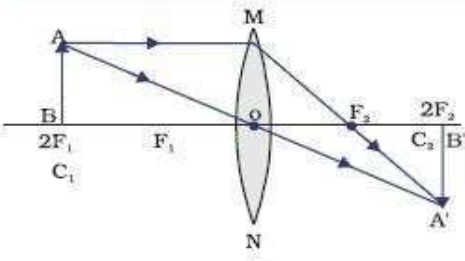
Ray diagram for the image formation by convex lens



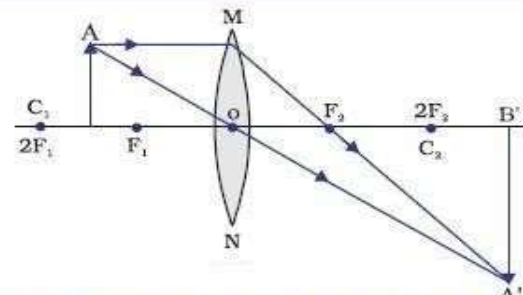
Case (i) Object at infinity



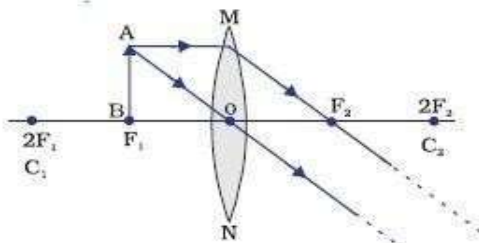
Case (ii) Object at beyond $2f$



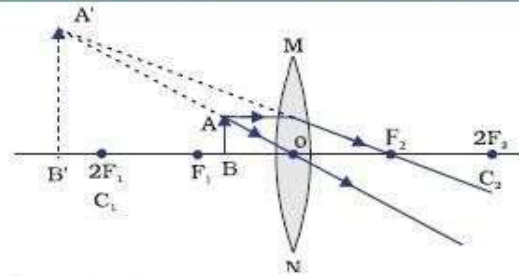
Case (iii) Object at $2f$



Case (iv) Object in between f and $2f$



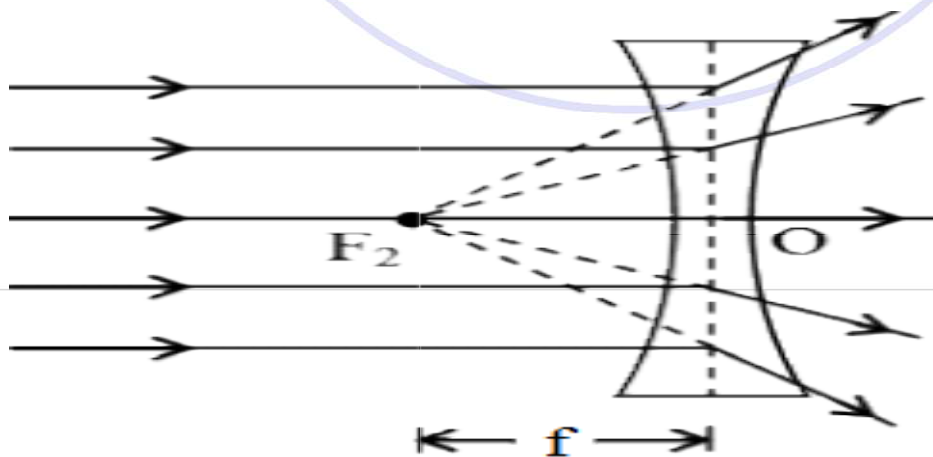
Case (v) Object at f



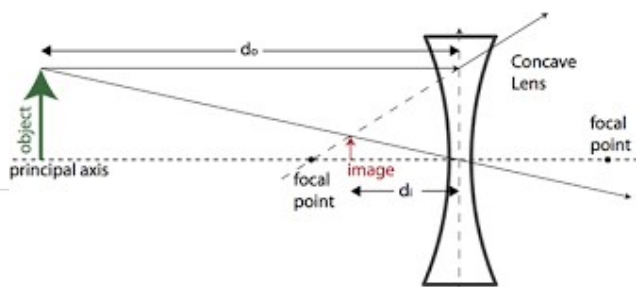
Case (vi) Object distance $< f$

Ray diagram for the image formation by concave lens

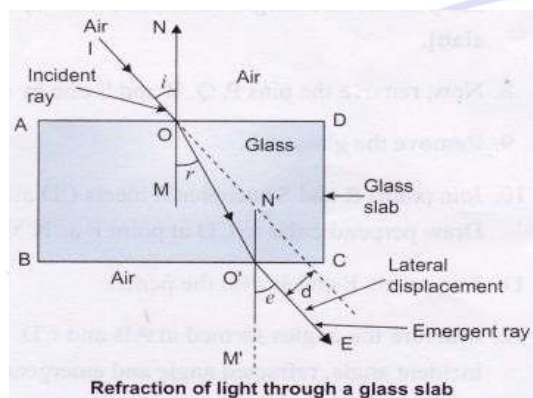
When the object is at infinity:



When object is placed in between infinity and pole :



Refraction of light through a glass slab



Balanced chemical equations

