S.S.L.C.
SCIENCE
PASSING
PACKAGE
2024 - 25

Naveen Kumar. B.A.
M.Sc, B.Ed, DCA

SCIENCE EXAM PACKAGE

S/No	Chapter Name
01	Chemical reactions and equations
02	Acids , Bases and Salts
03	Metals and Non metals
04	Carbon and its compounds
05	Life processes
06	Control and Co-ordination
07	How do organisms reproduce
08	Our Environment
09	Heredity
10	Magnetic effects of electric current
11	Electricity
12	Light : Reflection and Refraction
13	The Human eye and the colourful world

TYPES OF QUESTIONS

SL.NO	QUESTION TYPE	Number of Questions v/s Marks	TOTAL MARKS
01	MC - questions	8 x 1	8
02	One-mark questions	8 x 1	8
03	2-mark questions	8 x 2 (2 INTERNALCHOICES)	16
04	3-marks questions	9 x 3 (4 INTERNAL CHOICES)	27
05	4-mark questions	4 x 4 (1 INTERNAL CHOICE)	16
06	5-mark question	5 x 1	5
Total Marks		38 questions	80 marks

Chemistry – Chemical Reactions and Equations

1) Why should a magnesium ribbon be cleaned before burning in air?

Ans : Magnesium is very reactive metal. When stored it reacts with oxygen to form a layer magnesium oxide on its surface. This will slow the down burning process.

2) Write the balanced equation for the following chemical reactions.

a) Hydrogen + Chlorine →Hydrogen chloride : $H_2 + Cl_2$ --------> 2HCl

b) Barium chloride + Aluminium sulphate--------> Barium Sulphate + Aluminum chloride

$3\ BaCl_2 + Al_2(SO)_4$ --------> $3BaSO_4 + 2AlCl_3$

c) Sodium + Water →Sodium hydroxide + Hydrogen : $2Na + 2H_2O$-------> $2NaOH + H_2$

3) Types of Chemical reactions with suitable examples.

* Combination reaction : Two or more reactants combine to form single product.
  Ex : $C + O_2$ ------> CO_2
* Decomposition reaction : A single reactants break down to form two or more product.
  Ex : $CaCO_3$ ----------> $CaO + CO_2$
* Displacement reaction : A more reactive element displaces less reactive element to form its Compounds Ex : $Cu + FeSO_4$ ---------> $FeSO_4 + Cu$
* Double Displacement : A reaction in which there is an exchange of ions between reactants .
  Ex : $Na_2SO_4 + BaCl_2$ ---------> $BaSO_4 + 2NaCl$

4) What does one mean by exothermic and endothermic reactions? Give examples.

Ans : Chemical reactions that release energy in the form of heat, light or sound are called exothermic reactions. Ex :- $CH_4 + 2O_2$ --------> $CO_2 + 2H_2O$

Reactions that absorb energy or require energy in order to proceed are called endothermic reactions. Ex :- 2AgCl --------> $2Ag + Cl_2$

5) Why is respiration considered an exothermic reaction? Explain.

Ans : During digestion, food molecules are broken down into glucose. Glucose on reaching cells react with oxygen to release energy. Hence respiration is a exothermic reaction.

Ex :$C_6H_{12}O_6$ (aq) + $6O_2$ (g) ------> $6CO_2$ (g) + $6H_2O$ (l) + Energy.

6) Why are decomposition reactions called the opposite of combination reactions? Write equations for both.

Ans : In Decomposition reaction a single reactant break down to form two or more products, but in combination reaction two or more reactants combine to from single product.
Combination : $C + O_2$ ------> CO_2 Decomposition : $CaCO_3$ ----------> $CaO + CO_2$

7) What is Redox reaction ? Give example.

Ans : One reactant gets oxidized while other gets reduced during a reaction. Such reactions are called Redox reactions. Ex :$CuO + H_2$ ---------> $Cu + H_2O$

8) Explain the following in terms of gain or loss of oxygen with two examples each.
a) Oxidation b) Reduction

Ans : a) Oxidation is the gain of oxygen. $2Mg + O_2$ --------> 2MgO
b) Reduction is the loss of oxygen. $CO_2 + H_2$ ------> $CO + H_2O$

9) Explain the following terms with one example each : a) Corrosion b) Rancidity

(a) Corrosion : When a metal is attacked by substances around it such as moisture , acids , etc. it is said to corrode and this process is called corrosion. Ex: - Rusting of iron

(b) Rancidity: The process of oxidation of fats and oils that can be easily noticed by the change in taste and smell is known as rancidity. Ex: The taste and smell of butter changes when kept for long.

10) Mention the method to prevent Corrosion.

Ans : * Painting * Oiling * Greasing * Galvanization

11) Mention the methods to prevent Rancidity.

Ans : 1. Storing food in air tight containers 2. Storing food in refrigerators
3. Nitrogen flushed in chips bags 4. Adding antioxidants

12) Give reason.

a) Respiration is a exothermic reaction.

Ans : During respiration, glucose on reaching cells react with oxygen to liberate energy.

b) Silvers sulphide turns grey when exposed to air.

Ans : When Silver chloride exposed to sunlight, it under goes decomposition and silver turns grey.

c) Chips bags are flushed with Nitrogen gas.

Ans : To prevent Rancidity.

d) Copper sulphate solution change when an iron nail dipped in it.

Ans : Because Iron is more reactive than copper. Iron displaces copper from copper sulphate solution.

Chemistry – Acids, Bases and Salts

1) Write the difference between Acids and Bases.

ACIDS	BASES
* Acids are sour in taste.	* Bases are bitter in taste.
* Acids turns blue litmus to red.	* Bases turns red litmus to blue
* Acids contain H^+ ions.	* Bases contain OH^- ions

2) What are Indicators or Natural indicators ? Give example.

Ans : The indicator used to tell us whether the given solution is acidic or basic in nature bychange in colour.Ex :- Litmus, Turmeric , red cabbage leaves, etc.

3) What are olfactory indicators ? Give example.

Ans : The indicator used to tell whether the solution is acidic or Basic by change in odour (smell) are called olfactory indicators. Ex : Vanilla , Onion and clove, etc

4) Why should curd and sour substances not be kept in brass and copper vessels ?

Ans : Curd and Sour substances contain acids. when they are kept in brass and copper vessels, the metal reacts with the acids to liberate hydrogen gas and harmful products, thereby spoiling the food.

5) What is Neutralization reaction ? Give example.

Ans : When an acid and base react to give Salt and water is called Neutralization reaction.

$HCl + NaOH \text{ --------> } NaCl + H_2O$

6) Why does an aqueous solution of an acid conduct electricity?

Ans : Acids dissociate in aqueous solutions to form ions. These ions are responsible for conduction of electricity.

7) Why does dry HCl gas not change the colour of the dry litmus paper?

Ans : In aqueous solution only acid dissociates to give ions. Since in this case, neither HCl is in the aqueous form nor the litmus paper is wet, therefore, the colour of the litmus paper does not change.

8) While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

Ans: Since the process of dissolving an acid in water is exothermic, it is always recommended that acid should be added to water. If water is added to acid, large amount of heat generated, the mixture splashes out and causes burns.

9) What are Strong acids (or) Concentrated acids ?

Ans : Acids that give rise to more Hydrogen (H^+) ions are said to strong acids.

10) What are Weak acids ?

Ans : Acids that give rise to less Hydrogen (H^+) ions are said to weak acids.

11) What are Strong bases and Weak bases ?

Ans : Bases that contain less OH^- ions are called Weak bases.
Bases that contain more OH^- ions are called Strong bases.

12) Name the acid present in the following.

Ans :

Nettle leaves	-	Methanoic acid
Curd and Milk	-	Lactic acid
Sour fruits	-	Citric acid
Tamarind	-	Tartaric acid
Tomato	-	Oxalic acid

13) Explain how pH causes tooth decay ? How to prevent tooth decay ?

Ans : When the pH of mouth is less than 5.5. The bacteria in mouth produce acids, that causes tooth decay. The best way to prevent tooth decay is to clean moth using Tooth pastes, which are basic in nature.

14) Explain How antacids prevent excess of acidity in our stomach ? Name one such antacid.

Ans : During indigestion stomach produce too much acid and that causes pain and irritation. To get rid this people use Antacids. Antacids are bases, which neutralize excess of acid.
Example : Magnesium Hydroxide (Milk of Magnesia)

15) Explain the preparation of Sodium hydroxide by Chloro Alkali process. Mention the uses of products.

Ans : When electricity passed through aqueous solution of sodium chloride, it decomposes to from sodium hydroxide with the liberation of Hydrogen and Chlorine.

$2NaCl + 2H_2O$ --------> $2NaOH + Cl_2 + H_2$

Uses of products :

* Sodium hydroxide : Soaps , detergents , paper making and in artificial fibres.
* Chlorine : PVC , CFCs, Pesticides
* Hydrogen : Fuels , Margarine.

16) Explain the preparation of Bleaching powder with suitable example. Mention its uses

Ans : Bleaching powder is produced by the action of chlorine on dry slaked lime.

$Ca(OH)_2 + Cl_2$ ----------> $CaOCl_2 + H_2O$

Uses : * To make drinking water free from germs. * an oxidizing agent in many chemical industries.

17) Explain the preparation of Plaster of Paris with suitable example. Mention its uses

Ans : On heating Gypsum at 373k, it loses water molecules and become Calcium Sulphate hemihydrates called Plaster of Paris. $CaSO_4 \cdot \frac{1}{2} H_2O + 1\frac{1}{2} H_2O$ ----------> $CaSO_4 . 2H_2O$

18) Mention the uses of Baking soda and Washing soda.

Ans : Baking soda Uses :
* It is used in antacids.
* Used in acid fire extinguishers.

Washing soda uses :
* it is used for removing permanent hardness of water
* it is used in manufacture of Borax

19) Why bread and cake prepared in bakery is soft and spongy ?

Ans : When baking soda is heated or mixed with water, carbon dioxide released and that causes bread or cake to rise making them soft and spongy.

20) Give reason for the following.

a) Farmers used slaked lime to soil.

Ans : When soil is more acidic, farmers use slaked lime to neutralize acid content in the soil.

b) Antacids are used prevent acidity in stomach.

Ans : Antacids are bases, which neutralize excess of acid in stomach and give relief from acidity.

c) Plaster of Paris stored in moisture proof containers.

Ans: Plaster of Paris absorbs moisture from surroundings and become a hard solid mass called Gypsum.

Chapter – 3 : Metals and Non-metals

1) Give an example of a metal which

a) is a liquid at room temperature. – Mercury
b) can be easily cut with a knife. – Sodium and Potassium
c) is the best conductor of heat - Copper and Silver
d) is a poor conductor of heat – Mercury and lead

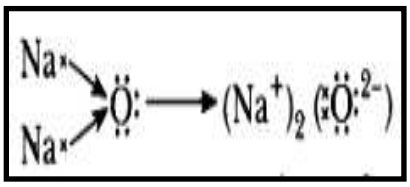
2) Explain the meanings of malleable and ductile.

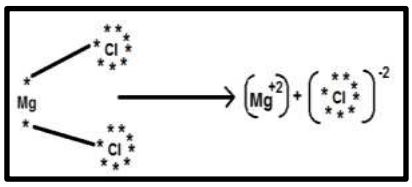
Ans : Malleable : Metals that can be beaten into thin sheets are called malleable.

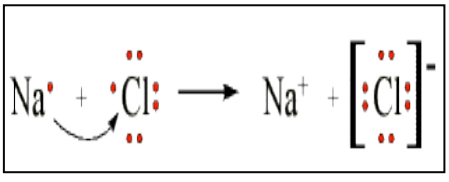
Ductile : Metals that can be drawn into thin wires are called ductile.

3) Write the electron-dot structures Na_2O and $MgCl_2$ and NaCl by the transfer of electrons.

Ans :







4) What are Amphoteric oxides ? Give examples.

Ans : Metal oxides that reacts with both acids and bases to produce salt and water are called amphoteric oxides.

Examples: aluminium oxide (Al_2O_3), zinc oxide (ZnO)

Example : $Al_2O_3 + 6HCl$ --------> $2AlCl_3 + 3H_2O$

$Al_2O_3 + 2NaOH$ -------> $2NaAlO_2 + H_2O$

6) What are Ionic compounds ? Give example.

Ans : The compounds formed by transfer of electrons from a metal to a non-metal are known as Ionic compounds.
Ex : Sodium chloride (NaCl) and Magnesium chloride. ($MgCl_2$)

6) Mention the properties of Ionic compounds.

Ans :
* High boiling point and melting point.
* Solids at room temperature.
* Dissolve in water but in not in organic solvents.
* Conducts electricity in molten state but not solid state.

7) Why Ionic compounds have high melting point ?

Ans : Because considerable amount of energy is required to break down strong force of attraction betweenions.

8) Ionic compounds conducts electricity in molten state but not solid state. Give reason.

Ans : In Molten state the force of attraction between ions break down due to heat, ions move freely and conduct electricity.

9) Why hydrogen gas not evolved when a metal react with Nitric acid ?

Ans : Nitric acid is a strong oxidizing agent. It oxidizes hydrogen produced and itself gets reduced to any of the nitrogen oxide.

10) Write the physical properties of Metals and Non-metals.

METALS	NON- METALS
Metals are Lustrous.	Non-metals are Non-lustrous. (except Iodine)
Metals are Sonorous	Non-metals are Non-sonorous
Metals are malleable and ductile.	Non-metals brittle substance.
Good conductors of heat and electricity.	Bad conductors of heat and electricity.

11) Differentiate between metal and non-metal on the basis of their chemical properties.

METALS	NON- METALS
Metals are electropositive.	Non-metals are electronegative.
They react with oxygen to form basic oxides.	They react with oxygen to form acidic oxides.
They react with dilute acids to release hydrogen	They do not react with dilute acids.
Metals shows displacement reaction.	Metals do not shows displacement reaction.

12) Name the three metals which react with cold water. Write the reactions.

Ans : Sodium, Potassium and Calcium are the three metals which react with cold water.

*Sodium (Na) : $2Na + 2H_2O \text{ --------> } 2NaOH + H_2$

* Potassium (K) : $2K + 2H_2O \text{ --------> } 2KOH + H_2$

* Calcium (Ca) : $Ca + 2H_2O \text{ --------> } Ca(OH)_2 + H_2$

13) Write balanced equation for the following.

a) Iron react with steam : $3Fe + 4H_2O \text{ -------> } Fe_3O_4 + 4H_2$

b) Aluminium react with air : $4Al + 2O_2 \text{ -------> } 2Al_2O_3$

14) Define Roasting and Calcination with suitable equation.

Roasting : The Sulphide ores are converted into oxides by heating strongly in the presence of excess air. this process is known as Roasting.

$2ZnS + 3O_2 \text{ -------> } 2ZnO + 2SO_2$

Calcination : The carbonate ores are converted into oxides by heating strongly in limited supply of air. This process is known as Calcination.

$ZnCO_3 \text{ -------> } ZnO + CO_2$

17) When a calcium react with water, the liberated hydrogen gas do not catch fire. Why ?

Ans : When calcium react with water, the heat liberated is not sufficient for the hydrogen to catch fire.

18) What are alloys ? What are the components of solder alloy and why it is used in welding purpose ?

Ans : Homogeneous mixture of two or more metals are called alloys.

(or)

Homogeneous mixture of metals and Non-metals are called alloys.

Solder alloy components : Lead and Tin. It has low melting point, hence it is used in welding purpose.

19) Define Thermit reaction and mention its uses.

Ans : Reaction of Iron oxide with aluminium is highly exothermic called Thermit reaction. It used to join railway tracks or cracking machine parts.

$Fe_2O_3 + Al \text{ --------> } Al_2O_3 + 2Fe$

20) Give reason :

a) Silver articles turns black when exposed to air.

Ans : Silver articles react with air to form a silver sulphide and turns to black

b) Copper gains green coat when it react with moist air.

Ans : Copper react with moist carbon dioxide in air and turns gains green coat.

Chemistry – Carbon and its compounds

1) What are the two properties of carbon which lead to a huge number of carbon compounds we see around us?

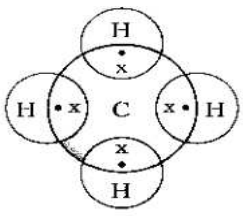
Ans : **Catenation :** Carbon forms bonds with other atoms carbon, giving rise to large molecules. This property is called catenation.

Tetravalency : Carbon has a valency of four, it is capable of bonding with four other atoms of carbon or atoms of some other elements.

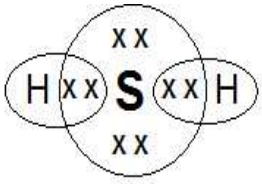
2) Draw the electron dot structures for :

(i) (a) Methane (b) H_2S, (c) Propanone, (d) F_2 e) Carbon dioxide

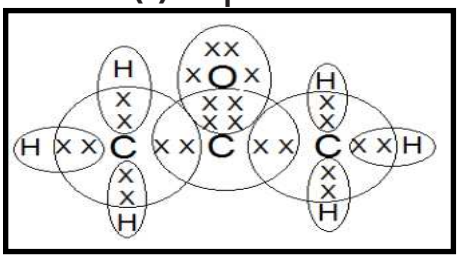
(i) (a) Methane.



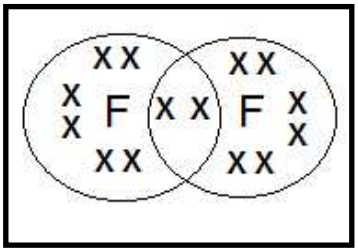
(b) H_2S,



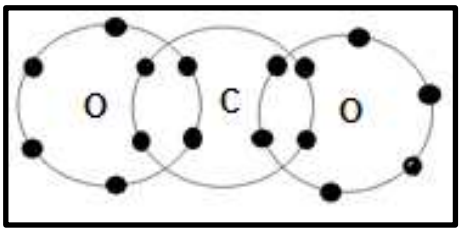
(c) Propanone



(d) F_2 (Fluorine)



e) Carbon dioxide (CO_2)



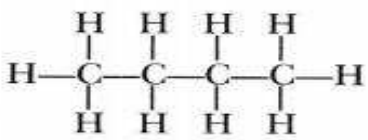
4) Write the difference between Saturated and Unsaturated Hydrocarbons.

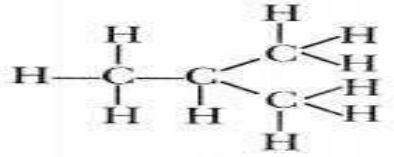
Saturated Hydrocarbons	Unsaturated Hydrocarbons
Single bond	Double or Triple bond
Less reactive	More reactive
Undergoes substitution reaction	Undergoes addition reaction
Ex : Alkanes	Ex : Alkenes and Alkynes

5) What are Isomers ? Give example.

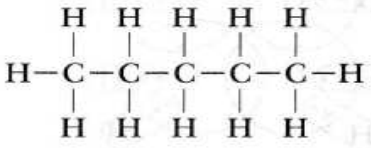
Ans : Hydrocarbons which have same molecular formula but different structuralformula are called Isomers.

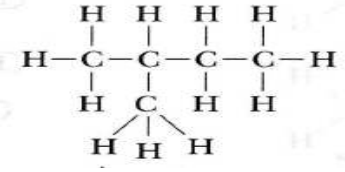
Ex : Normal Butane – C_4H_{10} and Iso Butane - C_4H_{10}





Normal Pentane – C_5H_{12} Iso Pentane – C_5H_{12}





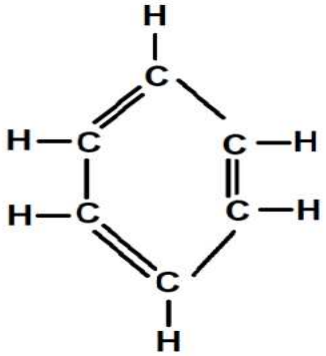
9) Define Homologous series ? Give example.

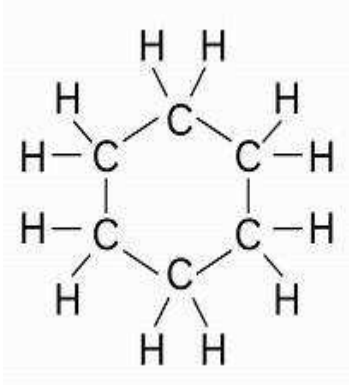
Ans : A series of compounds in which the same functional groups substitutes for hydrogen in carbon chain are called Homologous series.

Ex : CH_2OH , C_2H_5OH , C_3H_7OH and C_4H_9OH

11) Write the molecular and structural formula of Benzene and Cyclohexane.

Ans : Benzene – C_6H_6 Cyclohexane – C_6H_{12}





22) What is Substitution reaction ? Give example

Ans : Chlorine is added to saturated hydrocarbons, in the presence of sunlight fast reactions occurs. Chlorine can replace hydrogen atoms one by one. It is called substitution reaction.

Ex : $CH_4 + Cl_2$ ----------> $CH_3 + HCl$ (in the presence of sunlight)

23) Explain Oxidation reaction with example (or) Explain how to convert Ethanol into Ethanoic acid.

Ans : Carbon compounds can be easily oxidized on combustion. During oxidation alcohols are converted into carboxylic acid.

Ex : $CH_3 - CH_2\text{-}OH \xrightarrow{alkaline\ KMnO4} CH_3COOH$

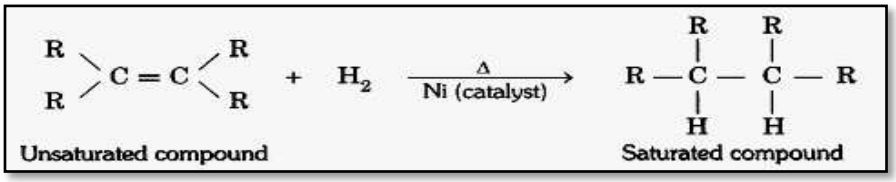
24) Define Catalyst.

Ans : Catalyst is a substance that cause a reaction at a different rate without affecting the reaction.

25) Define Addition reaction with example.

Ans : If Hydrogen added to unsaturated hydrocarbons in the presence of Nickel catalyst to give saturated hydrocarbons.

Example :



26) Mention the properties of Ethanol (or) Ethyl alcohol.

Ans :
* Ethanol is commonly called as alcohol.
* Ethanol is a liquid at room temperature.
* It has low boiling and melting point.
* Ethanol is used in medicines such as tincture iodine.

27) Mention the properties of Ethanoic acid.

Ans :
* Ethanoic acid is commonly called as acetic acid.
* 5 to 8% acetic acid in water is called Vinegar.
* It has low boiling and melting point.
* Ethanoic acid freezes during winter in cold climates.

28) Explain Esterification reaction with example.

Ans : Ethanoic acid react with ethanol in the presence of acid catalyst to give esters.

Ex : $CH_3COOH + CH_3\text{-}CH_2OH \xrightarrow{acid\ catalyst} CH_3 - C(=O) - CH_3 - CH_2 + H_2O$

29) Define Saponification reaction with example.

Ans : When Ethanoic acid treating with Sodium Hydroxide it is converted back into alcohol and Sodium salt of Sodium Acetate.

Ex : $CH_3COOH + CH_3\text{-}CH_2OH \xrightarrow{NaOH} C_2H_5OH + CH_3COONa$

30) What are Micelles ?

Ans : The Ionic end of soap interacts with water while carbon chain interacts with oil/dirt on clothes, thus forms a structures called micelles.

31) Explain the mechanism of the cleaning action of soaps. [OR] Explain the cleansing action of soaps.

Ans : When soap molecules dissolves in water, the Ionic end of soap interacts with water while carbon chain interacts with oil/dirt, thus forms a structures called micelles. The cloth is cleaned thoroughly by rinsing in clean water a number of times. Since soap molecules in the form of micelles cleans the clothes.

32) What is hydrogenation ? What is its industrial application ?

Ans : The process of converting unsaturated oils into saturated fats by passing Hydrogen is called Hydrogenation.

Application : It is used to prepare vegetable ghee (or vanaspati ghee) from vegetable oils.

33) What are Soaps and Detergents ?

Ans : Soaps : Soaps are sodium salts of long chain carboxylic acid
Detergents : Detergents are sodium salts of Sulphonic acid with chlorides or Bromides.

34) Why detergents are better than soaps in cleaning clothes ?

Ans : Detergents are better than soaps because they are less affected by hard water, as the soaps does not cleans well in hard water because they form insoluble scum when they react with salts in hard water.

35) Write the difference between Soaps and Detergents.

Soaps	Detergents
Soaps are sodium slats of carboxylic acid	Detergents are sodium salts of sulphonic acid.
Soaps does not cleans well in hard water.	Detergents cleans well in hard water.
Soaps are eco-friendly.	Detergents causes water and soil pollution.

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Biology : Life Processes

1) What are the outside raw materials used by an organism ?

Ans : Oxygen, Food and Water.

2) Write the difference between Autotrophic and Heterotrophic nutrition.

Autotrophic Nutrition	Heterotrophic nutrition
Food is prepared from materials such as CO_2 and water.	Food is obtained from autotrophs.
Chlorophyll is necessary.	Chlorophyll is not necessary.
Food is generally prepared during day time.	Food can be prepared at all times.

3) Mention the three steps of Photosynthesis.

Ans : * Absorption of light energy by chlorophyll.
* Conversion of light energy into chemical energy and splitting of water molecules into hydrogen & oxygen.
* Reduction of carbon dioxide into carbohydrates.

4) What is Stomata ? Mention the main function of Stomata.

Ans : A small pores present on the surface of leaves called Stomata.

* Stomata helps in exchange of gases. * Helps in transpiration.

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

Ans : Acid create acidic medium for action of Pepsin.

6) Mention the function of Salivary Amylase and Pepsin.

Ans : * Salivary amylase break down starch into simple sugars.

* Pepsin is a protein digesting enzyme.

7) Name the two enzymes secreted by pancreas and mention their function.

Ans : Pancreas secretes two enzymes namely Trypsin and Lipase.

* Trypsin helps in digestion of proteins.

* Lipase for breaking down emulsified fats.

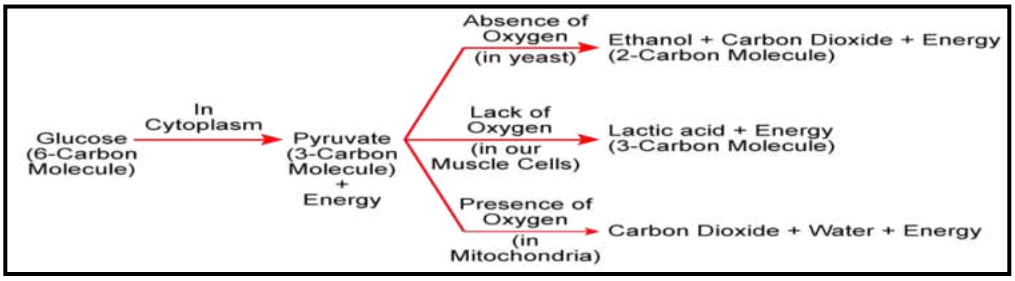
8) Why Herbivores animals have longer small intestine than carnivores animals ?

Ans : Herbivores animals eats grass, it contain cellulose, it takes long time digest. Hence they have longer small intestine.

9) Write the difference between Aerobic and Anaerobic respiration.

Aerobic respiration	Anaerobic respiration
Takes place in presence of oxygen	Takes place in absence of oxygen
Glucose break down into CO_2 and water	Glucose break down into Ethanol and CO_2
More energy is released	Less energy is released

10) Write a flow char to show breakdown of glucose by various pathways.



11) What is the role of Villi in small intestine.

Ans : Villi provide surface area of absorption of digested food and transport to every cell of the body.

12) Why rate of respiration is much faster in aquatic organisms ?

Ans : Because of amount of dissolved oxygen is less in water.

13) What is Alveoli and mention it's function.

Ans : * In the lungs passage divides into smaller and smaller balloon like structure called Alveoli.

* Alveoli provide surface area for exchange of gases.

14) Write the importance of Chambers of Human Heart.

Ans : Chambers of Human heart prevent mixing oxygen rich blood with blood contain carbon dioxide.

13) Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

Ans : Separation of oxygenated separate oxygenated and deoxygenated blood release energy. Birds and mammals constantly use that energy to maintain their body temperature.

14) What is Double circulation ? Write its importance.

Ans : Blood goes twice to Heart to complete one cycle. This is called double circulation. Double circulation is necessary to provides nutrients, Oxygen and other essential substances to tissues and takes CO_2 and other harmful substances away for elimination.

15) What is Blood pressure ?

Ans : The force that blood creates against the wall of vessels called Blood pressure.

16) Write the function of Blood.

Ans : Blood consists of fluid medium called Plasma. Plasma transport food, carbondioxde and nitrogenous wastes in dissolved form.

17) Write the function of Arteries, Veins and Capillaries.

Ans : * Arteries carry oxygen rich blood away from heart to various organs of the body.
* Veins carry blood contain carbon dioxide from different organs and bring it back to Heart.
* Capillaries helps in exchange materials between blood and surrounding cells.

18) Write the Function of Lymph.

Ans : Lymph carries digested and absorbed fat from intestine and drains excess fluid from cells and back into the blood.

19) Write the difference between Arteries and Veins

Arteries	Veins
Arteries have thick elastic walls.	Veins have this walls.
Arteries do not have valves.	Veins have valves.

20) Why Arteries have thick elastic walls ?

Ans : When oxygen rich blood flow through arteries it is under high pressure, hence arteries have thick elastic walls.

21) How Water and Minerals are transported in Plants ?

Ans : Xylem tissue in roots absorbs water and minerals from soil and transport to different parts of the plant body with the help of Tracheoids and Vessels.

22) How food is transported in plants ?

Ans : Phloem tissues transport food prepared in leaves to other parts of the plant body with the help of Sieve tubes and companion cells.

23) What is Nephron ? Write its function.

Ans : Each kidney has large number of filtration units called Nephron. Nephron helps to filters the blood.

24) What is excretion ?

Ans : The process of removal of harmful nitrogenous wastes from the body is called excretion.

25) What are the methods used by plants to get rid of excretory products ?

Ans : * Plants remove excess of water by Transpiration.
* Plants stores waste products in leaves and that fall off.
* Plants remove other waste products are stored as resins and gums.
* Plants excrete some wastes substances into the soil around them.

26) What is Translocation ?

Ans : The process of transfer of soluble products of Photosynthesis is called translocation.

27) What is Transpiration ?

Ans : The loss of water from aerial parts of the plant body is called transpiration.

Biology : Control and Co-ordination

1) What is Neuron ?

Ans : Nervous tissue made up of network of nerve cells called Neuron.
It is specialized for conducting information though electrical impulses from one part of the body to another.

2) Write the function of Dendrites, Axon and Synapse.

Ans : * Dendrites - carry information towards Neuron.
* Axon - Carry massages away from the neuron.
* Synapse – where impulses must be converted into chemical signals.

3) What is Synapse ?

Ans : A small gap between two neurons is called Synapse.

4) What is reflex action ?

Ans : Sudden and involuntary response to stimulus is called reflex action.
Ex : When we touch hot or cold objects suddenly we withdraw our hands.

5) What is Reflex arc ?

Ans : The process of detecting singles and responding to it by output action is called reflex arc.

6) Write the function of Cerebrum, Cerebellum, Medulla and Pons.

Ans : * Cerebrum – it is main thinking part of the brain.
* Cerebellum – it controls posture and balance of body.
* Medulla – It controls involuntary activities of the body such as Heart beat, Blood pressure, secretion of enzymes, salivation , vomiting , etc.
* Hypothalamus – It stimulate pituitary gland to secrete hormones.

7) What is Phototropism ? Give example.

Ans : Plants response to light is called phototropism
Ex : Aerial part of plants bending towards light.

8) What is Hydrotropism ? Give example.

Ans : Plants response to water is called hydrotropism.
Ex : Movement of roots towards water.

9) What is Geotropism ? Ex.

Ans : Plants response to gravity is called geotropism
Ex : The upwards and down ward growth of shoots and roots to gravity.

10) What is chemotropism ? Ex

Ans : Plants response to chemicals is called Chemotropism.
Ex : Growth pollen tubes towards ovule.

11) What are trophic movements ? (OR) Tropism ?

Ans : Plants response to various stimulus in the environment is called trophic movements.

12) Write the function of Auxins, Gibberllins, Cytokinins and Abscisic acid.

Ans : * Auxins – it helps the cells to grow longer at shoot tip.

* Gibberllins – Helps in growth of stem.

* Cytokinins - It promotes rapid cell division.

* Abscisic acid – It inhibits growth and responsible for wilting of leaves.

13) What are Hormones ?

Ans : Chemical substances secreted by Endocrine glands are called Hormones.

14) Write the function of following Hormones.

Ans : * Growth Hormone - It directly helps in growth of all the organs.

* Thyroxin Hormone – It regulates carbohydrates, proteins and fat metabolism in the body.

* Insulin Hormone – It regulates blood sugar level.

* Adrenalin Hormone – It prepares body to face emergency situation.

* Testosterone – Development of male sex organs.

* Estrogens – Development of female sex organs.

15) How does our body respond when adrenaline is secreted into the blood?

Ans : * Heart beat faster, resulting more supply of oxygen of Our muscles.

* Breathing also increases because of the contraction of the diaphragm and the rib muscles.

16) Why is the use of iodized salt advisable?

Ans: Iodine stimulates the thyroid gland to produce thyroxin hormone. It regulates carbohydrate, fat, and Protein metabolism in our body. Deficiency Thyroxin hormone leads to goiter.

Biology : Our Environment

1) Define Ecosystem ? Name two components of ecosystem.

Ans : An interaction between biotic and abiotic components of an environment is called ecosystem.

Components of ecosystem :

* Biotic components : Plants , animals & micro organisms.

* Abiotic components : soil, water, air, etc.

2) Define Trophic level ?

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

3) Define Food chain and Food web ?

* Food Chain : A series of organisms feeding on one another as a source of food is called food chain.

* Food Web : Interconnection of different food chains of an ecosystem is called food web.

4) Why flow of energy is unidirectional in a food chain ?

Ans : The energy captured by autotrophs does not reverse to environment and energy captured by herbivores does not reverse to autotrophs. Hence the flow of energy is unidirectional in a food chain.

5) Why food chain contain maximum 3 to 4 trophic levels ?

Ans : If food chain contain more than 3 to 4 trophic levels, there is great loss of energy to environment and very little amount of energy available to next trophic levels.

6) What is Ozone ? Write its function.

Ans: Ozone is a molecule formed by three atoms of oxygen in the atmosphere.

Ozone prevent entry harmful UV radiations from Sun to Earth.

7) Write the effects ozone depletion ?

Ans : If ozone layer is depleted UV radiations from the Sun reach the earth surface causes skin cancers in Human beings.

8) Name the pollutant responsible for ozone depletion.

Ans : Chloroflurocarbons (CFCs) responsible for ozone depletion.

9) Why are some substances Biodegradable and some Non-biodegradable ? Example.

Ans : * Biodegradable : Substances that are broken down by microbial action are called Biodegradable substances.
Example : Kitchen waste, Garbage, paper, wood, etc

* Non – Biodegradable : Substances that nor broken down by microbial action are called Non-biodegradable
Example : Plastics , Leather, Pesticides. Glass, Etc.

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

Ans : The decomposers break down complex organic substances into simple inorganic substances that go into the soil and are again used by plants.

11) Give any two ways in which biodegradables substances would affect the environment.

Ans : * Decomposition of biodegradable substances release foul smell that cause air pollution.
* They will provide breeding ground for flies & mosquitoes which carries diseases like cholera, Malaria,etc.

12) Give any two ways in which non-biodegradable substances would affect the environment.

Ans : * Excess use of pesticides and fertilizers run off with rain water causes water and soil pollution.
* Excess use of plastics and detergents leads to water and soil pollution.
* Non-biodegradable chock the sewage system and pollute the soil.

13) Write methods to manage garbage we produce ?

Ans : * Garbage should be separated as Biodegradable and Non-biodegradable before disposal.
* Biodegradable wastes is disposed in pits to make manure.
* Non-biodegradable wastes to be send for recycle.

14) What is Biomagnifications or Biological magnification?

Ans : When Non-biodegradable substances like pesticides enter the food chain through plants or water. There concentration increasing from one tropic level to another. This phenomenon is called Biomagnifications or biological magnification.

15) We clean aquarium buy we do not clean ponds and lakes. Why ?

Ans : Ponds and lakes are natural ecosystem they contain decomposers but Aquarium is a man made ecosystem it do not contain decomposers.

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Biology : How do organisms reproduce

1. What is the importance of DNA copying in reproduction?

Ans : *The genetic information from generation to generation is carried by DNA.
* DNA copying mechanism helps to maintain similar body designs of organisms.

2) How does binary fission differ from multiple fission?

Binary Fission	Multiple Fission
A single organism divides into two equal parts during cell division. Ex : Amoeba and Leishmania.	A single organism divides into many daughter cells during cell division. Ex : Plasmodium

3) Define Fragmentation and Regeneration with suitable example.

Ans. * If an organism breaks into many pieces or fragments. Each piece or fragment grows into new individual is called Fragmentation. Ex : Spirogyra.

* If an organism breaks into many pieces. Each piece grows into separate individual is called Regeneration. Ex : Planaria, Hydra, Etc.

4) What is Vegetative propagation ? Mention its advantages.

Ans : * There are many plants in which parts like root, stem and leaves develop into new plants under suitable conditions is called vegetative propagation.

Advantages : * Plants developed by vegetative propagation can bear flowers and fruits earlier than plants developed from seeds.
* vegetative propagated plants are similar to the parent plant in all characteristics.

5) How is the process of pollination different from fertilization?

Ans. * Pollination is the transfer of pollen grains from anther to the stigma of a flower
* Fertilization is the fusion of male gamete with the female gamete takes place in ovary of flower.

6) Write the difference between Self-pollination and Cross pollination.

Ans : * Transfer of pollen grains from stamens to stigma of same flower is called self pollination.
* Transfer of pollen grains from stamens to stigma from one flower to another is called cross

7)What is Sexual reproduction ?

Ans : The fusion of male and female gametes is called sexual reproduction.

8) What is Germination ?

Ans : The seed contain future plant or embryo, which develops into a seedling under appropriate conditions. This process is called germination.

9) What are the changes takes place in plants after fertilization ?

Ans : After pollination entire ovule develops a tough coat and is gradually converted into a seed. The ovary grows rapidly and ripens to form a fruit. Meanwhile, the petals, sepals, stamens, style and stigma may shrivel and fall off.

10) What are the changes seen in girls at the time of puberty?

Ans :- * Skin becomes oily. Pimples often develop, mostly on the face.

* Breast size begins to increase.

* Thinner hair appears on legs, arms and face.

* Beginning of menstruation occurs.

11) What are the changes seen in Boys at the time of puberty?

Ans. * New thick hair grows on the face. * Voices begin to crack (rough)

* Penis become enlarged and erect. * Thinner hair appears on legs , arms and on the face.

12) What is the role of seminal vesicle and the prostate gland?

Ans : Prostate and Seminal vesicle add their secretions to sperms, are now in a fluid which makes their transport easier and their fluid also provides nutrients.

13) What are the functions of Testis and Vas deference.

Ans : * Testes secretes male germ cells called Sperms and Male sex hormone called Testosterone.

* Sperms secreted in testis reach the urethra through Vas deference.

14) Write the function of Ovary , Fallopian tube and Uterus.

Ans : * Ovaries release egg for fertilization and secretes female sex hormone called Estrogens.

* Egg released in the ovary reach Uterus through fallopian tube.

* Uterus receives and nourish growing embryo.

15) How does the embryo get nourishment inside the mother's body?

Ans : Embryo get nourishment from the mother blood with the help a special tissue called Placenta.

16) Mention the functions of Placenta.

Ans: * Placenta contain Villi, it provides a large surface area for glucose and oxygen to pass from mother to embryo.

* Embryo will generate waste substances which can be removed into mother's blood through the placenta.

17) How does menstruation occur?

Ans : Every month uterus prepares itself to nourish embryo, Its lining becomes thick and spongy. But if fertilization does not occur then this lining is not required any more. Hence, the thickened lining of the uterus breaks down, it comes out through vagina as blood and mucus. This process is called menstruation.

18) What are the different methods of contraception?

OR

Mention the different methods used to prevent unwanted pregnancy.

Ans : * Condoms on penis or similar coverings on vagina.

* If the vas deference in the male blocked sperms cannot reach the uterus.

* If the Fallopian tube in the female blocked egg cannot reach the uterus. In both the cases fertilization cannot takes place.

* Surgery can be used for removal of unwanted pregnancies.

19) What is Sexual maturation ?

Ans : The stage at which both boys and girls sexually mature and reproductive organs starts functioning.

Biology : Heredity

1) What is Heredity ?

Ans : Inheritance of parental characteristics by their off springs is called Heredity.

2) What are Variations ?

Ans : Differences in characteristics of off-springs compare to their parents is called variations.

3) How does creation of variations in a species promote survival?

Ans : Depending on the nature of variations different individuals would have different kinds of advantages. For example Bacteria that can withstand heat will survive better in heat wave and multiply.

4) How is the sex of the child determined in human beings?

Ans : In Human beings female chromosomes are called XX and male chromosomes are called XY. During formation of zygote if child receives X chromosome from her father will be a girl. If child receives Y from her father will be a boy. Thus sex of the child will be determined by the father.

3) How do Mendel's experiments show that traits may be dominant or recessive?

Ans : When Mendel cross tall and short plants, he got all tall plants in F_1 generation but in F_2 Generation he got 75% Tall plants and 25% short plants. 75% Tall plants are dominant and 25% short plants recessive.

4) How do Mendel's experiments show that traits are inherited independently?

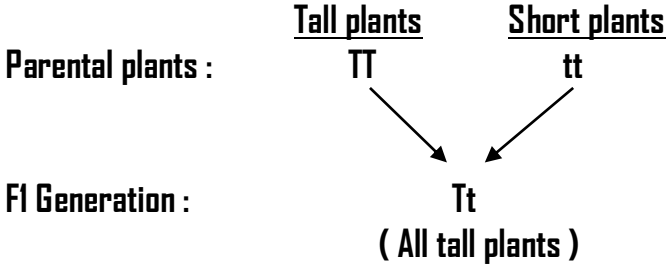
Ans : Mendel's Dihybrid cross experiment he got all Round yellow seeds in F_1 generation but in F_2 generation he got mixed variety of plants. This experiment shows that traits are inherited independently.

5) Why Mendel choose pea plants for his experiments ?

Ans :
* They can be grown easily in open ground and in pots.
* They produce large number of seeds.
* They bear self pollination flowers.
* They have a short growth period.

6) Explain Mendel's Monohybrid cross experiment. Write the ratio with the help of checker board.

Ans : A cross between two pea plants which differ in one character is called monohybrid cross.

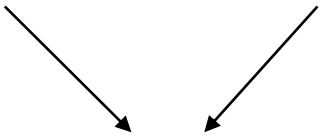


F2	T	t
T	TT	Tt
t	Tt	tt

Ratio - 3 : 1 or 1 : 2 : 1

7) Explain Mendel's Dihybrid cross experiment. Write the ratio with the help of checker board.

	Round Green Seeds	Wrinkled Yellow Seeds
Parental plants :	RR yy	rr YY



F_1 Generation : **RrYy**

(All round yellow seeds)

F_2 Generation : **RY, Ry, rY, ry**

F_2	RY	Ry	rY	ry
RY	RRYY	RRYy	RrYY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYY	rrYY	rrYy
ry	RrYy	Rryy	rrYy	rryy

Ratio = 9 : 3 : 3 : 1

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Physics – Magnetic effect of Electric current

1) What is meant by magnetic field ? What is the SI unit ?

Ans : It is the region surrounding the magnet in which the force of the magnet can be detected is called Magnetic field.

The SI unit of magnetic field strength is Oersted or Telsa.

2) State the properties of Magnetic field lines.

Ans : * The Magnetic field lines emerge from North pole and merge at south pole.

* Inside the magnet, the direction of magnetic field lines is from south pole to North pole.

* Magnetic field lines are closed curves.

* Magnetic field lines do not intersect each other.

3) State Right hand thumb rule ?

Ans : If a current carrying conductor is hold by right, the thumb point towards the direction of current and fingers wrapped around the conductor is in the direction of magnetic filed lines.

4) What is solenoid ? mention the properties of magnetic field lines inside the solenoid.

Ans : A coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder is called a solenoid.

properties of magnetic field lines

* At the centre of solenoid field lies are parallel straight lines.
* Field lines are same at all the points.
* Magnetic field lines are closed curves.
* Magnetic field lines do not intersect each other.

5) What is an Electromagnet ? Name the material used or write any one use of magnetic field.

Ans : Electromagnet is formed by magnetization the piece of magnetic material by the strong magnetic filed produced inside the solenoid. The material used is soft iron.

6) Describe Flemings left hand rule.

Ans : According to the rule, stretch the thumb, fore finger and middle finger of the left hand such that. The fore finger points in the direction of magnetic field, middle finger points in the direction of current and the Thumb will be in the direction of motion.

7) What is Galvanometer ?

Ans : A galvanometer is an instrument used to detect the presence of current in a circuit.

8) What is over loading and short circuiting in a domestic circuit current ? How it can be prevented ?

Ans :
* When the live wire and the neutral wire come into direct contact, current in the circuit increases heavily and causes over loading.
* When the insulation of the wires is damaged or there is a fault in the applainces, the current in the circuit increases. This is called short circuit.
* Fuse is a safety device which prevents the electric circuits and appliances from over loading and short circuit.

9) What is a fuse and why it is used in electric circuit ?

Ans : Fuse is a safety device which protects the electric circuit and appliances from over loading and short circuiting.

10) Name any two precautions to be taken to avoid over loading of domestic electric circuit.

Ans :
* Avoid the connect too many appliances to a single socket.
* Use of fuse
* Use of MCBs

11) How a current carrying conductor experiences mechanical force in a magnetic field ?

Ans :
* Aluminium rod placed in a magnetic field and both ends of rod connected to Battery.
* When current flows to 'B' end of rod, 'A' end will move downwards.
* When we reverse the current 'B' end will move downwards.
* This experiment shows, direction of conductor depends on direction of current and direction of magnetic field.

12) Why metallic body electrical appliances are connected to Earth wire ?

Ans :
* Earth wire provide low resistance conducting path to current.
* It ensure leakage of current in metallic body and keeps its potential to earth, thus user may not get a severe electric shock.

13) <u>Give reason :</u>

a) Why Magnetic field lines do not intersect each other ?

Ans : At the point of intersection two directions of same magnetic field is not possible.

b) Why compass needle get exerted from the bar magnet ?

Ans : Bar magnet exerted same force from both poles on the compass needle. Force experienced by the compass needle get exerted from the bar magnet.

Physics – Light

1) What is the nature of image formed in plane mirror ?

Ans : The nature of image formed by a plane mirror is always virtual and erect.

2) What is meant by magnification of mirror ? Write its formula ?

Ans : Magnification of mirror gives the relative extent to which the image of an object is magnified with respect to the objects size.

$m = \frac{\text{height of image (h1)}}{\text{height of image (h)}}$ $m = \frac{h}{h} = \frac{v}{u}$

3)What is reflection of light ?

Ans : The change of direction of light because of change in medium is known was reflection of light.

4) State Snell's law of refraction.

Ans : The ratio of sine of angle of incidence to the sign of angle of refraction is a constant.

$\frac{\text{Sin } 1}{\text{Sin r}}$ = Constant

5) What is meant by aperture ?

Ans : The diameter of reflecting surface of spherical mirror is called aperture.

6) What is lens formula ?

Ans : $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$

7) What is meant by magnification of lens ?

Ans : The ratio of the height of the image and the height of the object. $m = \frac{h}{h} = \frac{v}{u}$

8) Define power of lens.

Ans : The power of lens is defined as the reciprocal of its focal length.

It is represented by letter P. The SI unit of power of lens is Dioptre. $P = \frac{1}{f\ (\text{ in meteres})}$

7) Define Dioptre.

Ans : Diaoptre is the power of lens whose focal length is 1 meter.

8) Find the power of concave lens of focal length 5m.

Ans : $P = \frac{1}{f} = \frac{1}{5} = 0.2$

9) Define principal focus.

Ans : The point where the reflected rays meet / intersect on principal axes is called principal focus.

10) 11) State the laws of reflection.

Ans : * The angle of incidence is equal to the angle of reflection.
* The incident ray, the normal to the mirror at the point of incidence and the reflected ray all lie in the same plane.

11) What are the uses of convex lens ?

Ans : * It is used to convert hypermetropic eye object.
* It can be used as magnifying lens.

11) State the laws of refraction.

Ans : * The incident ray, the reflected ray are normal to the interface of two transparent media at the point of interference, all lie in the same place.

* The ratio of sign of angle of incidence to the sign of angle of refraction is a constant. This is also known as Snell's law of refraction.

12) Why does a ray of light bend when it travels from one medium to another ?

Ans : Due to change in velocity in the medium and to reduce the time taken to travel the same.

13) What is refractive index ? Mention the refractive index of water.

Ans : The extent of the change in direction that take place in a given pair of media is expressed in term of refractive index.
Refractive index of water is n = 1.33

14) Find the focal length of a lens of power -2.0 D. What type of lens is this ?

Ans : Power of lens P = -2.0 D
Focal length f = ?
Power of lens $P = \frac{1}{f}$

Focal length $f = \frac{1}{p}$

$= \frac{1}{-2}$

= -0.5 m

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Physics – Electricity

1) Define Electric current. Write the SI unit.

Ans : It is the amount of charge flowing through a particular area in unit time.
SI unit of electric current is Ampere.

2) Define unit of electric current.

Ans : A current is said to be one ampere of one coulomb of charge flowing in a conductor in one section.

3) Define potential difference (V) ? What is its SI unit ?

Ans : It is the work done to move a unit charge from one point to the other.
The SI unit of potential difference is Volt.

4) State Ohm's law.

Ans : The potential difference across the ends of the given wire in an electric is directly proportional to the current flowing through it, provided its temperature remains same.
i.e. If V is the proportional difference and I is the current.

5) Define resistance ?What is its SI unit.

Ans : It is the property of the conductor to resist the flow of charge through it.
Its SI unit is Ohm.

6) Define Ohm or Unit of resistance.

Ans : A resistance is said to be 1 ohm when one ampere of current flows through the conductor having the potential difference 1 V across its ends. Ohm's law : $R = \frac{V}{i}$

7) What is variable resistance ? Name the device used for this.

Ans : It is the component used to regulate the flow of current without changing the voltage source.The device used is Rheostat.

8) Mention the factors on which resistance of a conductor depends.

Ans : The resistance of a conductor depends upon

* Length
* Area of cross section
* Nature of the material

9) Define resistivity ? Mention its unit.

Ans : It is the resistance of unit length and unit area of cross section of the material.The SI unit is Ohm-meter.

10) Why alloys are used in electrical heating devices ? Name the alloys used in electric bulb.

Ans : * Because the resistivity of an alloy is higher than its constituent metals. And alloys do not oxidize readily at high temperature.
* Tungsten is an alloys used in the filament of electric bulb.

11) Why should we connect ? a) Resistors in series b) Resistors in parallel

Ans : * Resistors is connected in series to obtain maximum effective resistance.
* Resistors is connected in parallel to obtain minimum effective resistance.

12) What is Joules heating effect of electric current ? Derive its expression.

Ans : When a current flows through a resistor the energy is dissipated in the resistor in the form of heat is called Joules heating effect. $V = \frac{W}{q}$

13) State Joules laws of Heating.

Ans : According to this law, $H = I^2Rt$, i,e, heat produced in a resistor is

* Directly proportional to square of the current.
* Directly proportional to its resistance of the current.
* Directly proportional to the time for which the current flows through the resistor.

14) Write the applications of heating effect of electric current.

Ans : * It is used in electric iron, toaster, oven, heater, etc.
* It is also used to produce light in case of bulb.
* It is also used in fuse in electric circuit.

15) Explain Electric power ? What is its SI unit ?

Ans : It is the rate at which electric energy is dissipated or consumed in an electric circuit.
The SI unit of electric power is watts.

16) Define Power.

Ans : It is the power consumed by the device that carries 1A of current when operated at a potential difference of 1V.

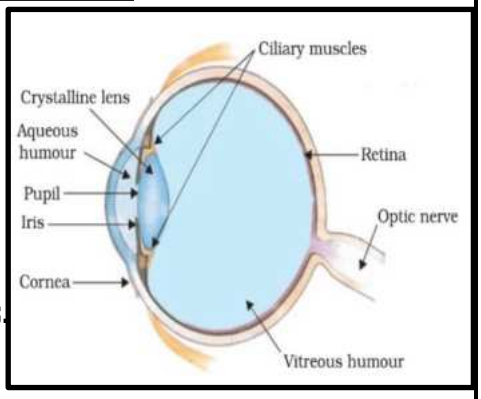
17) Distinguish between Resistance and Resistivity.

Resistance	Resistivity
It is the property of the conductor to resist the flow of charge through it.	It is the resistance of unit length and unit area of cross section of the material.
Its SI unit is Ohm	Its SI unit is Ohm-meter
Resistance is dependent on the material	It is dependent of the material

18) Mention the reasons why Tungsten is used for making electric fans.

Ans : * Tungsten has high resistivity.
* High melting point.

THE HUMAN EYE AND THE COLOURFUL WORLD



1) Mention the function of following parts of Human eye.

* Cornea : Light enters the eye through a thin membrane called Cornea.
* Iris : Iris controls the size of the Pupil.
* Pupil : Pupil regulates and controls the amount of light entering the eye.
* Eye lens : Eye lens forms an inverted image of the object on the retina.
* Retina : Retina is delicate membrane having number of light sensitive cells.
* Ciliary Muscles : Ciliary muscles helps to adjust focal length of lens.

2) Explain the mechanism of function of Human eye.

Ans : When light reflected from the object, an inverted image is formed on the retina. The retinal cells convert images into electrical signals. The signals sent to brain through optic nerve. The brain interprets the signals, enables us to see the objects.

3) What is Meant by power of Accommodation of Human eye ?

Ans : The ability of eye lens adjust its focal length is called accommodation of eye.

2) A person with a myopic eye cannot see objects beyond 1.2 m distinctly. What should be the type of the corrective lens used to restore proper vision ?

Ans : Concave lens.

3) What is the far point and near point of the human eye with normal vision ?

Ans : The far point is Infinity and near point is 25 cm from the eye.

4) A student has difficulty reading the blackboard while sitting in the last row. What could be the defect the child is suffering from ? How can it be corrected ?

Ans : The child is suffering from myopia. The child should use concave lens of suitable focal length. A person needs a lens of power -5.5 dioptres for correcting his distant vision. For correcting his near vision he needs a lens of power +1.5 dioptre.

5) Define Least distance of Distinct vision ? or Define Near point of the eye ?

Ans : The minimum distance at which objects can be seen clearly without strain is called Least distance of Distinct Vision or Near point of the eye

6) Why is a normal eye not able to see clearly the objects placed closer than 25 cm ?

Ans : When objects are closer than 25 cm, cilliary muscles get strained & focal length of the eye lens decreases.

7) Explain how Humans adjust its lens to see near and far objects ?

OR

Explain the accommodation of Human eye to see nearby and far objects ?

Ans : * When the ciliary muscles are relaxed, the lens become thin, thus its focal length increases and enables to see distant objects.

* When the ciliary muscles are contract, the lens become thick , thus its focal length decreases and enables to see near by objects.

8) Define Myopia. Mention the reason and how to correct Myopia ?

Ans : * A person with Myopia can see nearby objects clearly but cannot see far objects clearly.
* Excessive curvature of the eye lens (or) Elongation of the eye ball.
* Myopia can be corrected by using Concave lens.

9) Define Hypermetropia Mention the reason and how to correct Hypermetropia ?

Ans : * A person with Hypermetropia can see far objects clearly but cannot see near objects clearly.
* The eyeball has become too small.
* Hypermetropia can be corrected by using Convex lens.

10) Define Presbyopia. How to correct Presbyopia ?

Ans : * The power of accommodation of the eye usually decreases with ageing. The people with Presbyopia difficult see near and far objects clearly.
* Presbyopia defect can be corrected by using convex lens.

11) What happens to the image distance in the eye when we increase the distance of an object from the eye ?

Ans : The eye lens of a normal eye forms the images of objects at various distances on the same retina. Therefore, the image distance in the eye remains the same.

12) Why do stars twinkle ?

Ans : Stars appear to twinkle due to atmospheric refraction. The light of star after the entry of light in earth's atmosphere , the atmospheric refraction occurs in a medium of gradually changing refractive index.

13) Explain why the planets do not twinkle ?

Ans : If a planet is considered to be a collection of large number of point sources of light. The amount of light entering the eye from all point size light sources is zero. Due to this the effect of twinkling is nullified.

14) Why does the sun appear reddish early in the morning ?

Ans : When Sun is near the horizon, most of the blue light scattered by atmospheric particles. Where as red light with longer wave lengths scatters least. The red light reaches our eyes give rise to reddish appearance of the sun.

15) Why is the colour of clear sky blue ?

Ans : When Sunlight enters the atmosphere, Blue light with shorter wavelength scatter more than the red light with longer wave length. The scattered blue light enters our eyes, thus causes blue colour of clear sky.

16) Why does the sky appear dark instead of blue to an astronaut ?

Ans : As astronaut flying at very high altitudes, as scattering is not prominent at such heights.

17) Why Sun appears white at noon ?

Ans : At noon only a little of the blue and violet colours are scattered. This gives white appearance of sun.

18) Define Dispersion of light ?

Ans : The splitting of light into its component colours is called dispersion of light.

19) Define Spectrum and refraction of light.

Ans : * <u>Spectrum</u> :- The band of coloured components of a light bean is called spectrum of light.

* <u>Refraction of light</u> :- Bending of light when it travels from one medium to another.

20) Define Tyndall effect. Where do we observe Tyndall effect ?

Ans : The phenomenon of scattering of light by the colloidal particles give rise to Tyndall effect.
* Tyndall effect can be seen when sunlight enters a smoke filled room through a small hole.
* Tyndall effect can be seen when sunlight passes through a canopy of a dense forest.

21) Danger signal light are red in colour. Why ?

Ans : Red light scattered least by smoke and fog.

21) Explain Newton experiment show Sunlight made up of with seven colours ?

Ans : * Newton pass light through a glass prism, he found spectrum of light but he could not get any more colors.
* He then placed second prism, inverted position with respect to first prism and allowed colours of spectrum pass through the second prism.
* He found different colours of spectrum of light.
* By this experiment Newton comes to conclusion that sunlight made up of with seven colours.

22) What is Rainbow ? State the two necessary conditions for the formation of rainbow in the sky ?

Ans : Rainbow is a natural spectrum appearing in the sky after a rain shower.

Conditions for formation of Rainbow

* Water droplets should be there in the sky.
* Sunlight should come from behind us.

23) How Rainbow is formed ?

Ans : Rainbow is formed by dispersion of sunlight by tiny water droplets present in the atmosphere.

24) Name the two natural phenomenon caused by atmospheric refraction ?

Ans : * Twinkling of Stars
* Advanced sunrise and delayed sunset.

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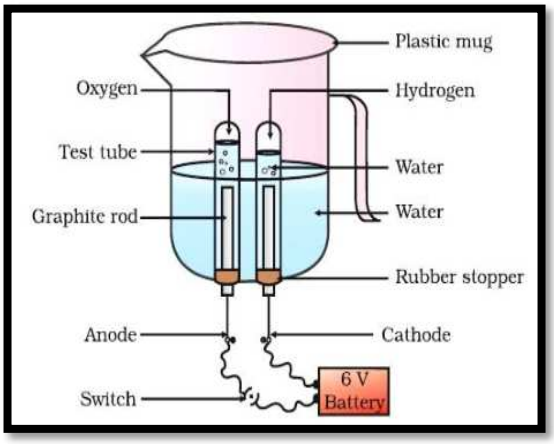
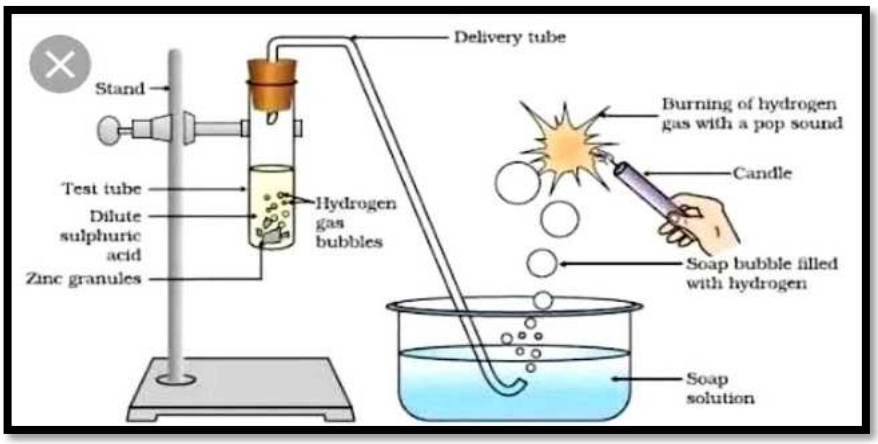
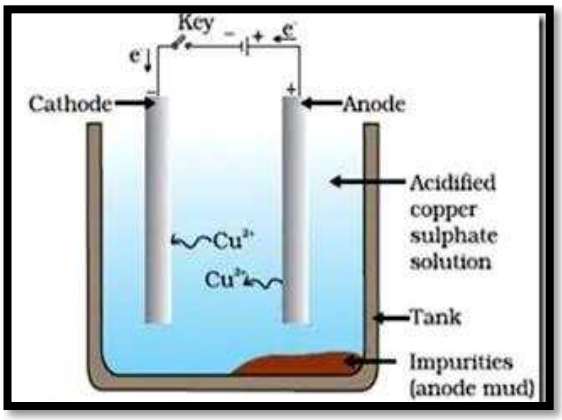


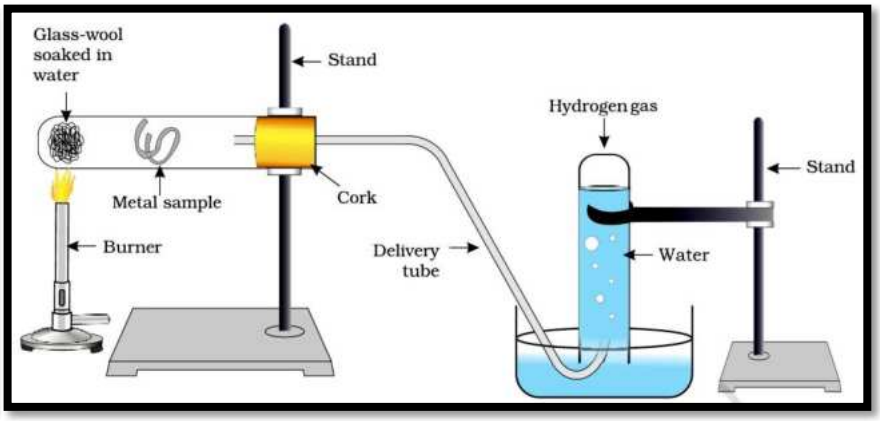
Electrolysis of Water



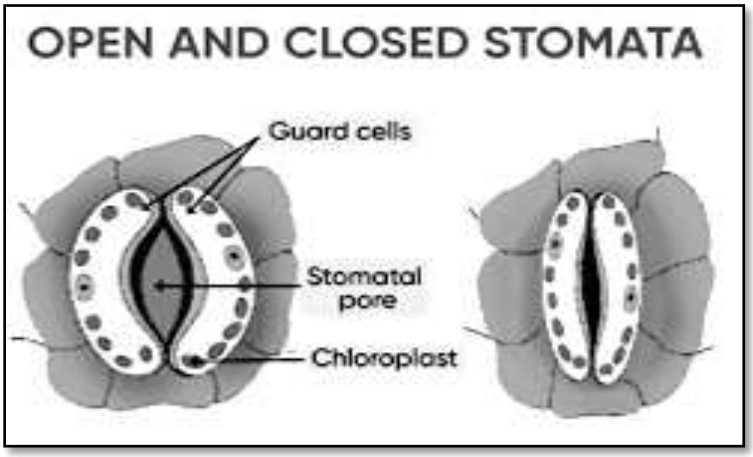
Zinc react with dil. Sulphuric acid



Electrolytic refining of copper



Action of steam on metals



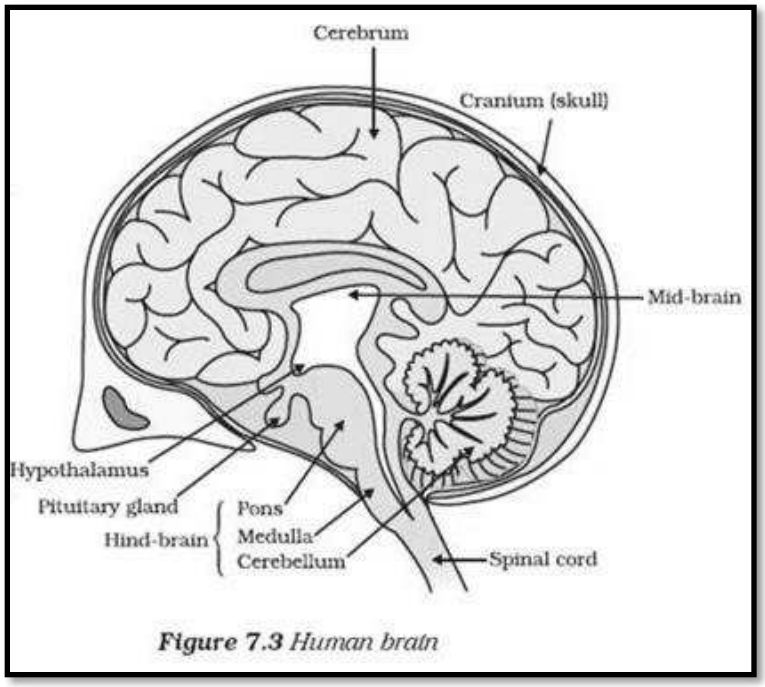
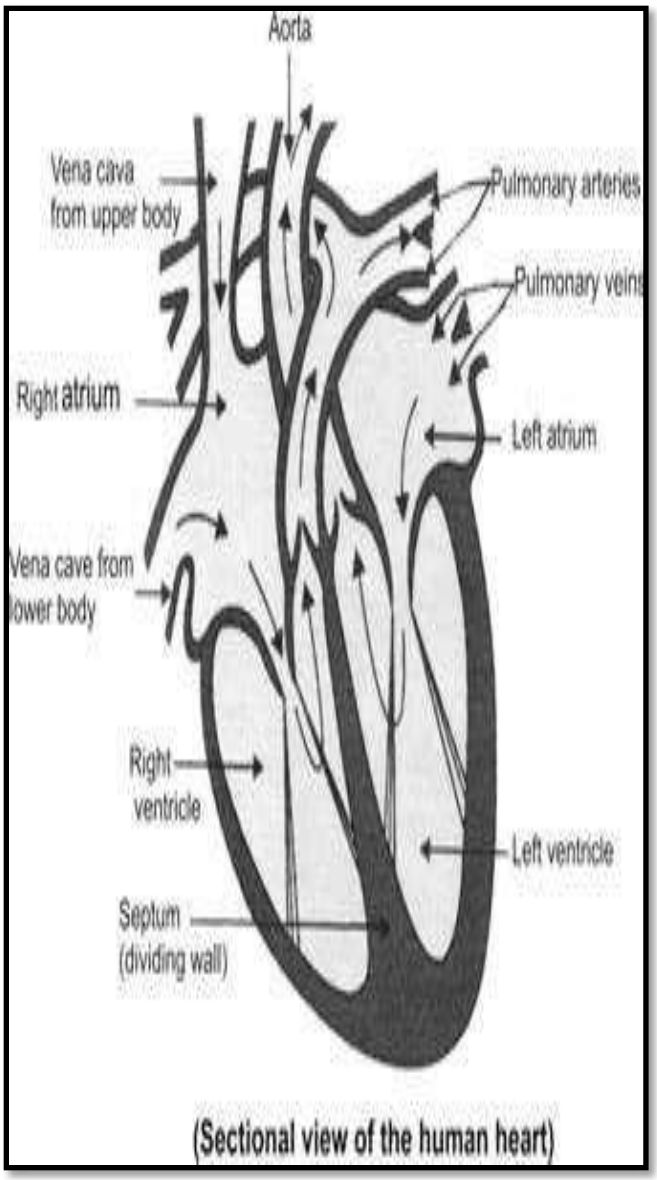
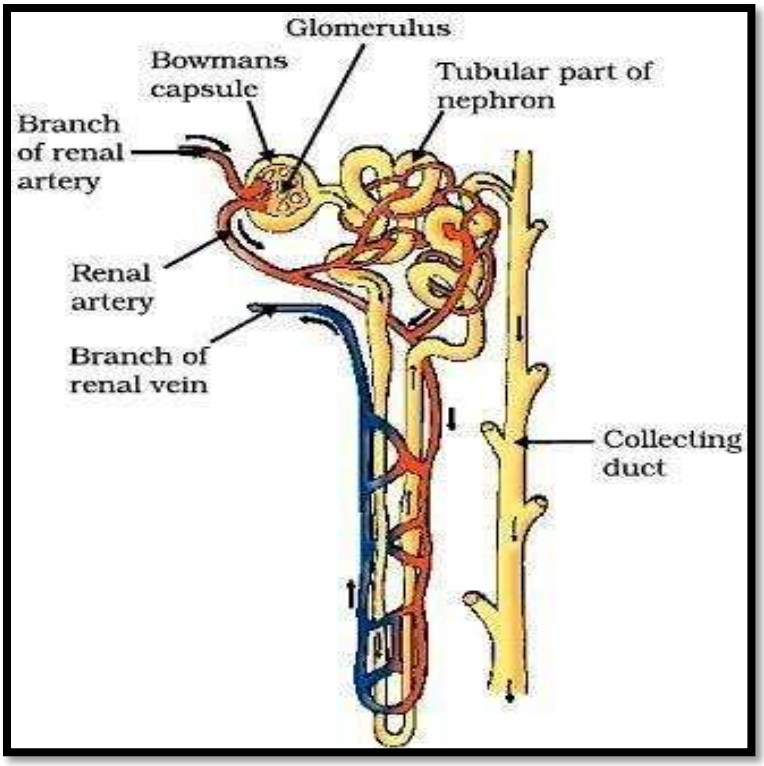


Figure 7.3 Human brain



(Sectional view of the human heart)



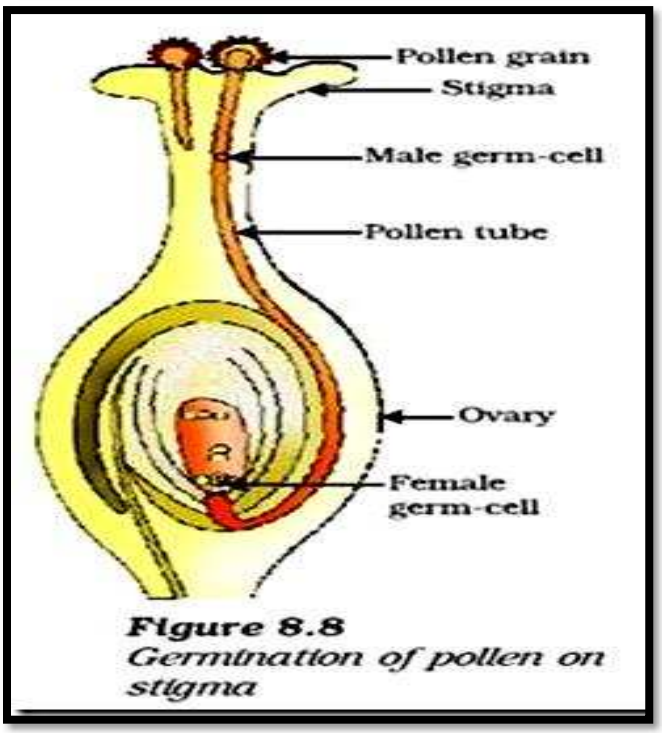
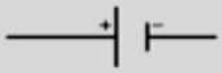
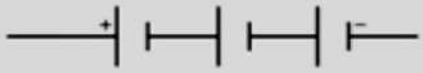
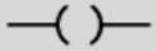
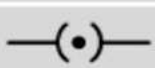
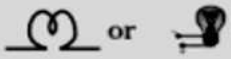
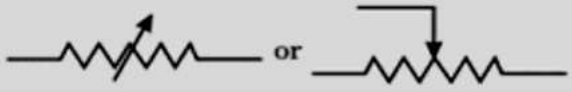
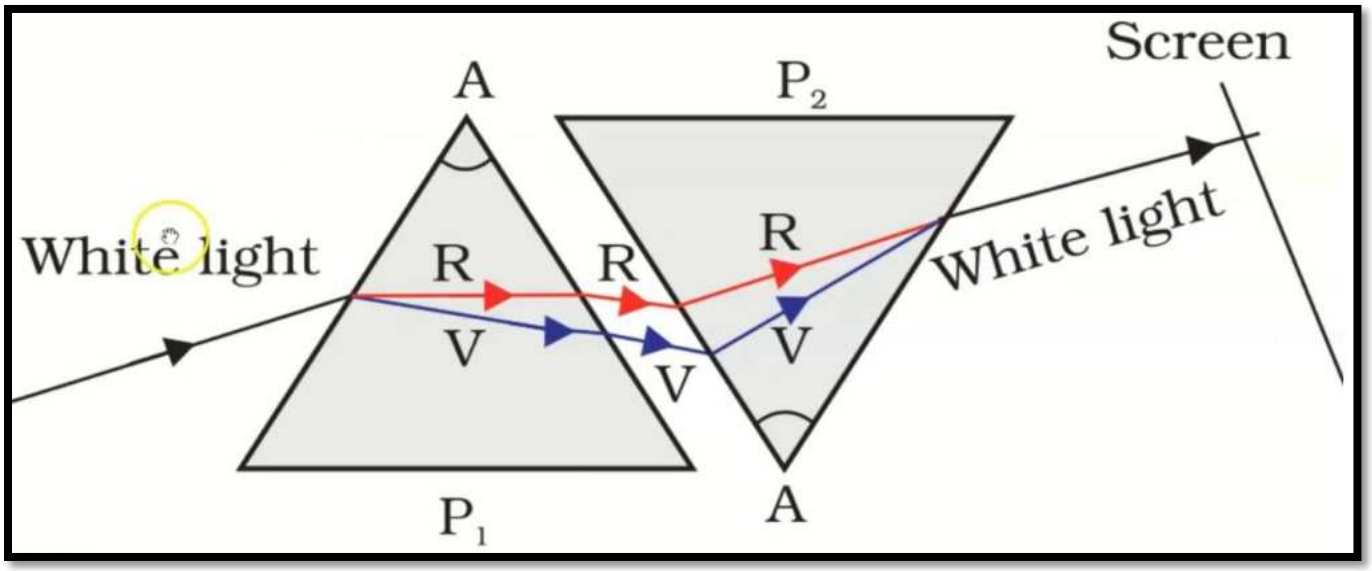
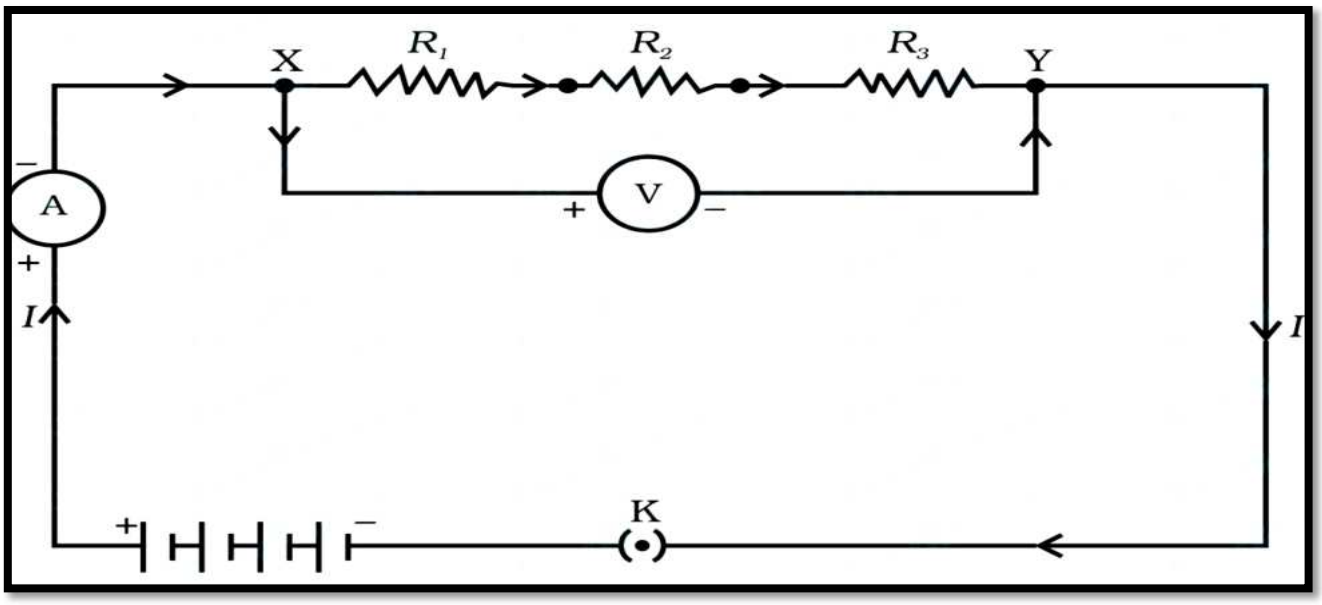
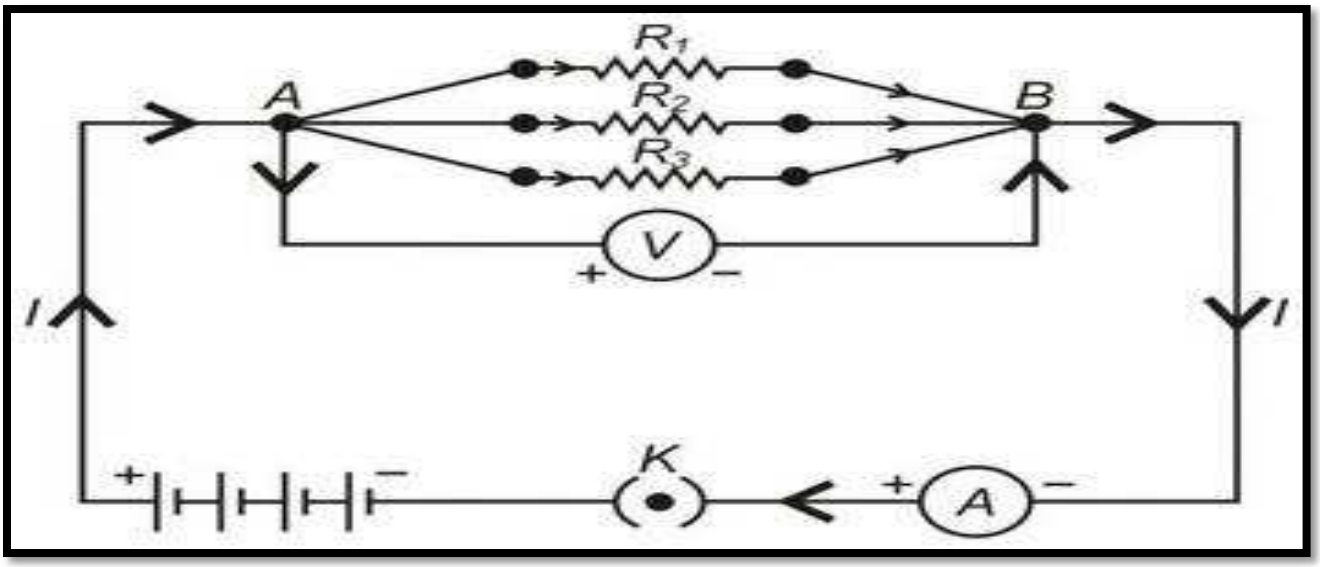


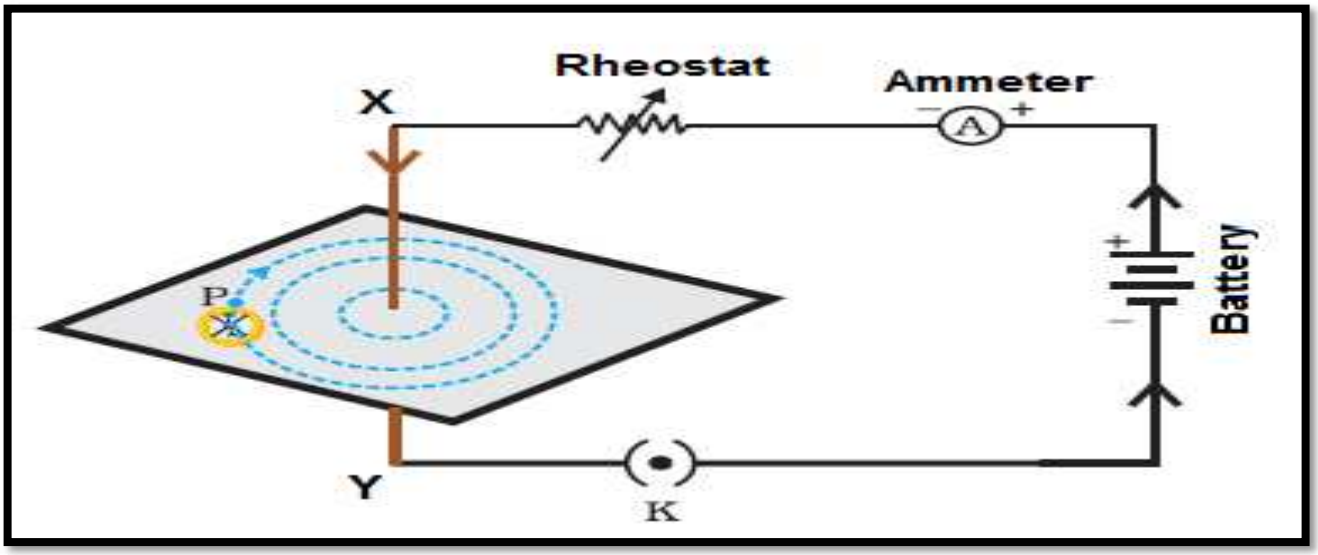
Figure 8.8
Germination of pollen on stigma

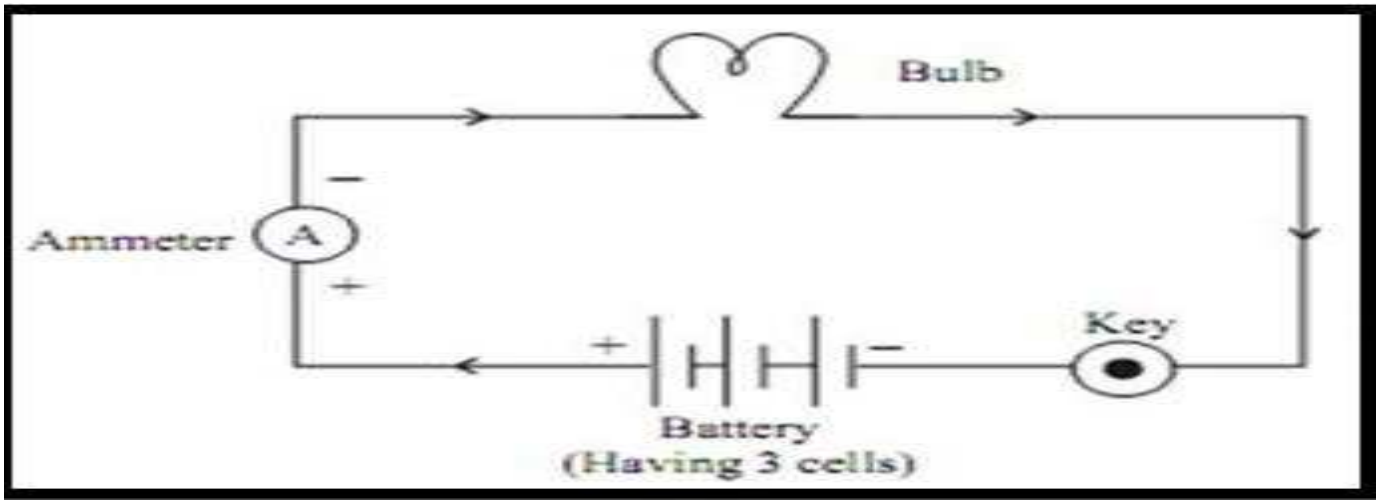
Sl. No.	Components	Symbols
1	An electric cell	
2	A battery or a combination of cells	
3	Plug key or switch (open)	
4	Plug key or switch (closed)	
5	A wire joint	
6	Wires crossing without joining	
7	Electric bulb	
8	A resistor of resistance *R*	
9	Variable resistance or rheostat	
10	Ammeter	
11	Voltmeter	



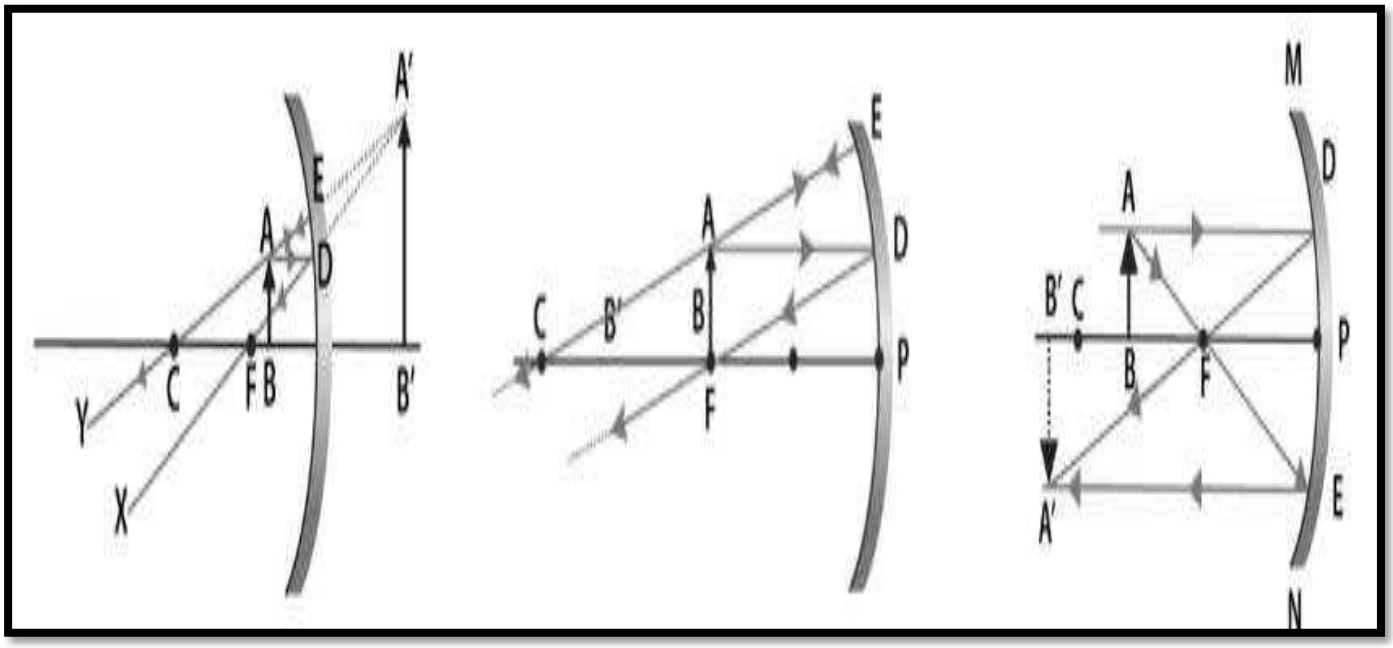

X
R_1
R_2
R_3
Y
A
V
I
I
K

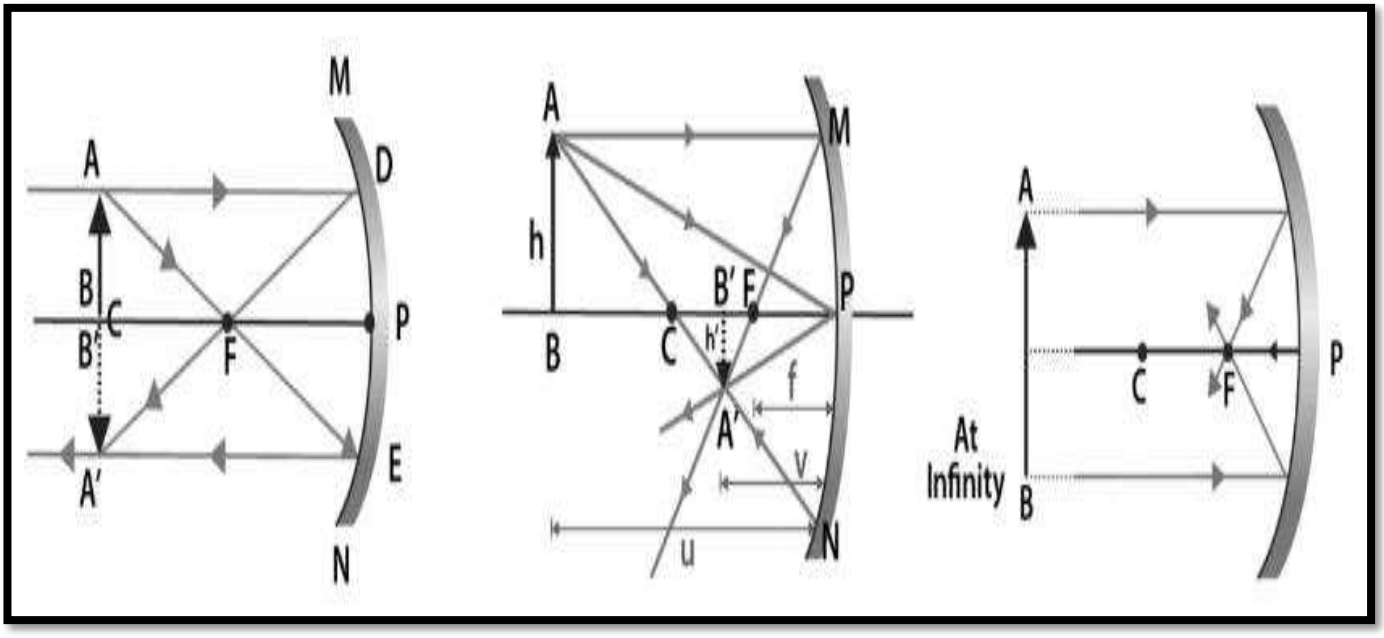

R_1
R_2
R_3
A
B
V
I
I
K
A


Rheostat
Ammeter
X
A
P
Battery
Y
K



Ray Diagrams for the image formation by a concave mirror





Ray Diagrams for the image formation by a Convex lens