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Q & A

Subject: General Science

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I. Answer the following: (1 Marks)

1. Identify the reactants and products in the following reaction

$Zn+2HCl \longrightarrow ZnCl_2+H_2$

Zn and HCl

2. Why should a magnesium ribbon be cleaned before burning it in air?

A magnesium ribbon be cleaned before burning it in air to remove the oxide layer on it.

3. Why do we apply paint on iron articles?

We apply paint on iron articles to avoid rusting of iron.

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

curd and sour substances not be kept in brass and copper vessels because the these substances react with brass and copper to form harmful salts making food poison

5. Why does an aqueous solution of an acid conduct electricity?

Aqueous solution of an acid conduct electricity because it contains ions which are responsible for conduction of electricity.

6. What is the common name of the compound $CaOCl_2$?

the common name of the compound $CaOCl_2$ is Bleaching powder

7. Name the substance on which treatment with chlorine yields bleaching powder?

The substance on which treatment with chlorine yields bleaching powder is slacked lime [$Ca(OH)_2$]

8. Name the sodium compound which is used for softening hard water.

The sodium compound which is used for softening hard water is Na_2CO_3 [Sodium Carbonate]

9. Baking soda is used in soda-acid fire extinguishers. Give reason

Baking soda is used in soda-acid fire extinguishers because

10. What is Malleability?

Malleability is Property of metals that can be beaten into sheets

11. What is Ductility?

Ductility is Property of metals that can be drawn into thin wires.

12. Why are school bells made up of Metal?

School bells made up of Metals because they produse sound on striking a hard surface are said to be sonorous.

13. Name the non-metal which possess lustre?

The non-metal which possess luster are Iodine and Graphite.

14. Name any two soft metals.

Soft metals are sodium, potassium and Lithium.

15. Why is sodium kept immersed in kerosene ?

Sodium react so vigorously that they catch fire if kept open hence to protect and to prevent from accidental fires Sodium kept immersed in kerosene

16. Name the metals that are found in the native state.

The metals that are found in the native state are gold, silver,platinum and copper.

17. What chemical process is used for obtaining a metal from its oxide?

The chemical process is used for obtaining a metal from its oxide is reduction.

18. Name the metals which do not corrode easily?

The metals which do not corrode easily are gold and platinum

19. What are alloys?

An alloy is a homogeneous mixture of two or more metals or metal and a non-metal

20. Platinum, gold and silver are used to make jewellery . Give reason

Platinum, gold and silver are used to make jewellery because they do not corrode easily and they are very ductile.

21. What are triads ?

Group of three elements having similar properties are called triads.

Dobereiner arranged the three elements in the order of increasing atomic masses, the atomic mass of the middle element was roughly the average of the atomic masses of the other two elements.

22. What are Octaves?

Octaves are group of eight elements having similar properties.

when the elements are arranged in order of increasing atomic masses then every eighth element has properties similar to that of the first element.

23. Who proposed the law of Triads?

Dobereiner proposed the law of Triads

24. Who proposed the law of Octaves?

Newland proposed the law of Octaves

25. State Mendeleev's periodic law?

The physical and chemical properties of all the elements are a periodic function of their atomic masses. This is known as Mendeleev's periodic law.

26. State Modern periodic law?

The properties of the elements are **periodic** functions of their atomic numbers

27. What is catenation?

Carbon has the unique ability to form bonds with other atoms of carbon, giving rise to large molecules.

28. How does the valency vary in a period on going from left to right in periodic table ?

The valency in a period on going from left to right in periodic table increases and then decreases

29.Define

- **Ohm's law:**

  The potential difference,V across the ends of a given metallic conductor in a electric circuit is directly proportional to the current flowing through it. Provided its temperature remains same.

- **Snell's law:**

  The ratio of the sine of the angle of the incidence to the sine of the angle of the refraction is a constant, for light of given colour and for the given pair of media.

- **Power:**

  The rate of consumption of energy

- **Resistance:**

  The property that resists the flow of electrons in a conductor.

- **1 coulomb:**

  1 coulomb is equivalent to the charge contained in nearly $6X10^{18}$ electrons

- **Potential difference:**

Potential difference between two points in an electric circuit carrying some current as the work done to move a unit charge from one point to the other.

- **1 volt:**
  One volt is the potential difference between two points in a current carrying conductor when 1 joule of work is done to move a charge of 1 coulomb from one point to the other.
- **1 Ohm:**
  If the potential difference across the two ends of a conductor is 1 volt and current through it is 1A, then the resistance R, of the conductor is 1Ohm

30. Name the units for the following

a. Current - Ampere (A)

b. Electric charge - Coulomb (C)

c. Work- Joule (J)

d. Resistivity- Ohm metre (Ωm)

31. Tungsten is used for filament of electric Bulbs. Why?

Tungsten is used for filament of electric bulbs because,

1. Tungsten retain as much of the heat generated as possible, so that it gets very hot and emits light.
2. It has high melting point.

32. Define Solenoid

A coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder.

33. Define Fuse

Fuse is a safety device, if the current larger than the specified value fiows through the circuit the fuse wire melts and breaks the circuit.

34. Why is it necessary to earth metallic appliances ?

Earth wire ensures that any leakage of current to the metallic body of the appliance keeps its potential to that of earth and the user may not get asevere electric shock. therefore it is necessary to earth metallic appliances.

35. The needle is deflected on passing an electric current through a metallic conductor why?

The needle is deflected on passing an electric current through a metallic conductor because it produces magnetic field.

36. The unit of magnetic field.

Tesla / Oersted

37. Two magnetic field lines are never found to cross each other. Why?

No two magnetic field lines are found to cross each other . If they did, it would mean that at point of intersection, the compass needle would point towards two directions, which is not possible.

38. Write the use of electromagnets.

Electromagnets are used in

1. Commercial motors
2.

39. What is short circuit?

When a live wire and neutral wire come into direct contact, the current in the circuit abruptly increases. This is called short circuiting.

40. When does overloading occurs?

Overloading occurs when

1. When a live wire and neutral wire come into direct contact.
2. When a faulty appliance is connected in the circuit
3. When too many appliances are connected to a single socket.

41. State electromagnetic induction.

The process by which a changing magnetic field in conductor induses a current in another conductor.

42. Name the principles behind the following

a) Dynamo:

Mechanical energy is used to rotate a conductor in a magnetic field to produce electricity.

b. Motor:

When a current carrying conductor is placed in a magnetic field such that the direction of the current is perpendicular to the magnetic field, it experiences a force. This force causes the conductor to move.

43. Write formula of

(a) Lens : $1/f=1/v-1/u$

(b) Mirror : $1/f=1/v+1/u$

44. What is magnification?

Magnification is the ratio of the height of the image to the height of the object.

$$m=\frac{h'}{h}$$

45. Define the term refractive index

The ratio of speed of light in air to the speed of light in medium is called refractive index.

46. What is principle focus of a convex lens and concave lens?

The rays of light parallel to principal axis after refraction from the lens are converging to a point on the principal axis. This point on the principal axis is called the principal focus of the convex lens.

The rays of light parallel to principal axis after refraction from the lens are appearing to divergefrom a point on the principal axis. This point on the principal axis is called the principal focus of the concave lens.

47. What is power of lens?

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

$P=1/f$

48. If magnification of lens is more than one, then what is the size of the image?

If magnification of lens is more than one, then it is a enlarged image

49**. What is the power of accomodation?**

The ability of the eye lens to adjust its focal length is called power of accomodation

50. What is reason for refraction of light in atmosphere?

The reason for refraction of light in atmosphere

1. The earth atmosphere has several layers

2.The physical conditions of the earths atmosphere are not stationery

51. What is Tyndall effect?

The phenomenon of scattering of light by the colloidal particles gives rise to tyndal effect.

52. What is dispersion of light?

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

53. What is angle of deviation

The peculiar shape of the prism makes the emergent raybend at an angle to the direction of incident ray. This angle is called angle of deviation

54. Name the components of Biogas?

The components of Biogas are Methane, hydrogen sulphide, Hydrogen and Carbon dioxide

55. Why Solar cookers are coated black?

Solar cookers are coated black because a black surface absorbs more heat than any other colour.

56. What is Geothermal energy?

Due to geological changes, molten rocks formed in the deeper hot regions of earth's crust are pushed upward. When underground comes in contact with hot spot steam is generatedHot from the outlets the steam trapped in rocks is routed through pipe to a turbine to generate electricity is called geothermal energy.

57. Wind energy is not convenient sources of energy. Why?

Wind energy is not convenient sources of energy because,

1.The wind speed should be higher than 15 km/h

2.There should be some back-up facilities to take care of the energy needs during a period when there is no wind.

3. Requires a large area of land

4. the tower and blades are exposed to rain, sun, storm and cyclone, they need a high level of maintenance.

58. What is good fuel?

A good fuel is one which which would do a large amount of work per unit volume or mass

59. Name the elements in the solar cell.

Silicon and silver

60. Which of the following groups contain only biodegradable items?

a) Grass, flowers, leather

b) Grass, wood, Plastic

c) Fruit-peels cake & lime juice

d) cake, wood, grass

a) Grass, flowers, leather

61. What is Bio-Magnification?

Accumulation of harmfull chemicals in higher trophic levels is called Bio-Magnification

62. List two problems caused by non-biodegradable waste that we generate.

problems caused by non-biodegradable waste that we generate are

1. causes Bio-Magnification

2.causes environmental pollution

3.produce

63. Why is damage to the ozone layer a cause for concern?

Damage to the ozone layer a cause for concern because, it protects the earth from UV radiations from the sun. this radiation is highly damaging to organisms.

64. What steps are being taken to limit ozone depletion?

Steps are being taken to limit ozone depletion are

1. decrease in synthetic chemicals like CFC
2. manufacture of CFC free AC, fire extinguishers and refrigerators

65. What is ecosystem?

All the interacting organisms in an area together with the non-living constituents of the environment form an ecosystem

66. What is food chain?

The series of organisms feeding on one another taking part at various biotic levels form a food chain.

67. What is food web?

Each organism is generally eaten by two or more other kinds of organisms which in turn are eaten by several other oraganisms, this relationship can be shown as aseries of branching lines called a food chain.

68. What is the role of decomposers in ecosystem?

Decomposers decompose the organic matter/ biodegradable substances The planmts would get essential nutrients by the decomposers in ecosystem.

69. How can you help in reducing the problem of waste disposal? Give any two methods

1.use eco friendly things
2.reuse of the things
3.repurpose of the things
4.recycle the things

70. Why are green plants called producers?

Green plants called producers because they prepare their own food and all other organisms are depend on plants

71. Why should we conserve forests and wild life?

Forests are biodiversity hotspots. The main aim of conservation is to try and preserve the diversity we have inherited. The loss of diversity may lead to loss of ecological stability.

72. List the advantages of building dams.

The advantages of building dams are

1.we can produce hydro electricity.
2.we can store large amount of water for irrigation
3.we can prevent floods and soil erosion.

73. List two causes of pollution of river Ganges.

1.release of city sewage water into the river Ganga
2.release of factory waste into river Ganga

74. Name some traditional water harvesting system in India

Khadins, tanks and nadis in Rajasthan, bandharas and tals in Maharashtra. Bundhis in Madhya Pradesh, ponds in the Kandi belt of jammu region and eris in Tamilnadu. Surangams in Kerala, kattas in Karnataka.

75. What is Sustainable development? State its two main objectives

Judicial use of natural resources for the welfare of mankind is the sustainable deveiopment The main objectives of sustainable deveiopment is using our natural resources so as to sustain and conserve our environment

76. List four activities on 5-R approach

i) avoid the use of plastic,
ii) recycling of plastic,
iii) rain water harvesting
iv) use of public transport

77. Define (i) Biomass (ii) Anaerobic degradation

(i) Biomass : Biomass is plant or animal waste used for energy production

(ii) Anaerobic degradation : Degradation of organic matter in absence of air

78. Why are forests considered "Biodiversity hot spots?

Forests are considered biodiversity hotspots because, a large number of species are found in the forests.

79. State meaning of "biodiversity" list two advantages

One measure of biodiversity of an area is number of species are found biodiversity of an area helps in maintaining

1.ecological balance

2.good environment

80. List four advantages of conserving water?

1.To avoid the pollution of water and reduce the scarcity of water

2. saving environment and energy

81. suggests two measure for controlling Co_2 levels in atmosphere.

measures for controlling Co_2 levels in atmosphere are

1.planting of trees

2. avoid burning organic matter

82. what is isomerism?

Compunds having same molecular formula but different structural arrangement

83. Name the Substance used for white washing ?

Calcium Oxide or lime or quick lime

84. What are Antioxidants ?

The substances which prevent the oxidation are called Antioxidants.

II. Answer the following: (2 Marks)

1. Classify the following into physical change and chemical change

a) Glowing of an electric bulb

b) Digestion of food

c) Formation of dew

d) Burning of carbon

Physical change	Chemical change
a) Glowing of an electric bulb b) Formation of dew	a) Digestion of food b) Burning of carbon

2. List the types of chemical reactions

1.Combination reaction

2. Decomposition reaction

3. Displacement reaction

4. Double displacement reaction

3. Identify the type of chemical reactions in the following

a) $CaO+H_2O \longrightarrow Ca(OH)_2$

b) $CaCO_3 \longrightarrow CaO+CO_2$

a) $CaO+H_2O \longrightarrow Ca(OH)_2$

Combination reaction

b) $CaCO_3 \rightarrow CaO+CO_2$

Decomposition reaction

4. Identify the type of chemical reactions in the following

a) $Fe+CuSO_4 \rightarrow FeSO_4+Cu$

b) $Na_2SO_4+BaCl_2 \rightarrow BaSO_4+2NaCl$

a) $Fe+CuSO_4 \rightarrow FeSO_4+Cu$

Displacement reaction

b) $Na_2SO_4+BaCl_2 \rightarrow BaSO_4+2NaCl$

Double displacement reaction

5. Name the following

a) The addition of oxygen to a substance

b) The removal of oxygen from a substance

a) The addition of oxygen to a substance :**Oxidation**

b) The removal of oxygen from a substance : **Reduction**

6.Oil and fat containing food items are flushed with nitrogen. Why?

Oil and fat containing food items are flushed with nitrogen to prevent oxidation

7. Explain Corrosion with an example

When the metals are attacked by substances such as moisture, acids etc… it is said to corrode and thi process is called corrosion.

Copper reacts with moist carbon dioxide in the air slowly loses its shiny brown surface and gains green coat.

8. Explain Rancidity with an example

When oils and fats are exposed to air or Oxygen are oxidized. They become rancid and their smell and taste change.

The taste of chips changes after few days.

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

While diluting an acid, it is recommended that the acid should be added to water and not water to the acid because, if the water is added to conc.acid the heat generated may cause the mixture to splash out and cause burns. The glass container may also break due to excessive heating.

10. You have two solutions, A and B. the pH of solution A is 6 and pH of Solution B is 8. Which solution has more hydrogen ion concentration? Which of this is acidic and which is basic?

Solution A has more hydrogen ion concentration.

Solution A is acidic and solution B is basic.

11. Under what soil condition do you think a farmer would treat the soil of his fields with quick lime (Calcium oxide) or slaked lime (calcium hydroxide) or chalk (Calcium carbonate)

When the soil is acidic a farmer should treat the soil of his fields with quick lime (Calcium oxide) or slaked lime (calcium hydroxide) or chalk (Calcium carbonate)

12. In a bakery, baking powder was not added while preparing cake. Give reasons for the same

In a bakery, baking powder was not added while preparing cake CO_2 is not released so the cake will not rise ,small in size and become hard

13. Name the acid present in the following

a) Tomato b) Vinegar c) Tamarind d) lemon

a) Tomato: Oxalic acid

b) Vinegar : acetic acd

c) Tamarind : Tartaric acid

d) lemon : Citric acid

14. Mention the pH of the following substances

a) Gastric juice b) Pure water c) Milk of Magnesia d) sodium hydroxide solution

a) Gastric juice: 1.2

b) Pure water : 7

c) Milk of Magnesia: 10

d) sodium hydroxide solution: 14

15. Tooth decay starts when the pH of the mouth is lower than 5.5. Give your reasons

Tooth enamel is made up of Calciumhydroxyappatite it corrodes when pH of the mouth below 5.5. The bacteria present in the mouth produse acids by degradation of sugar and food particles remaining in the mouth after eating.

16. Write an equation to show the reaction between plaster of Paris and water?

$CaSO_4.{}^1/_2H_2O + 1\ {}^{1}/_2H_2O$ ----------> $CaSO_4.2H_2O$

17. Write any two uses of washing soda.

Two uses of washing soda are

1. used in glass, soap and paper industries
2. used as a cleaning agent
3. used for removing permanent hardness of water
4. used in the manufacture of borax.

18. Write any two uses of Bleaching powder.

Uses of Bleaching powder are

1.for bleaching cotton and linen in the text industry

2. for bleaching wood pulp in paper industry

3. for bleaching washed clothes in laundry

4.to make drinking water free from germs

5.as an oxidizing agent in chemical industries

19. Name the important products from the chlor-alkali process.

The important products from the chlor-alkali process are sodim hydroxide, chlorine and hydrogen

20. What are amphoteric oxides? Give examples.

Metal oxides which react with both acids as well as bases to produce salts and water are called amphoteric oxides.

Ex: Aluminium oxide, Zinc oxide.

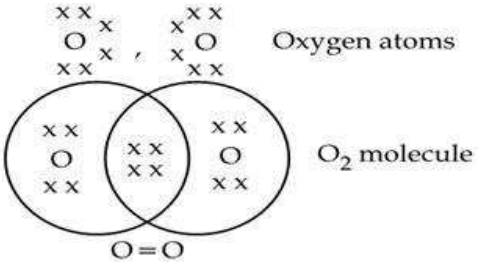
21. How are alkalis prepared ?

Alkalies are prepared by dissolving bases in water.

22. Write the differences between metals and non-metals?

METALS	NONMETALS
Metals are generally solids. (exception : mercury, gallium)	Nonmetals are found in all three states.
Metals are heavy. (exception : sodium, potassium, magnesium)	Nonmetals are generally light in weight.
They are hard and nonbrittle. (exception : sodium, potassium and lead which are soft)	Solid nonmetals are hard but brittle.
They are good conductors of heat and electricity. (exception : lead)	They are bad conductors of heat and electricity.(except graphite)
They are ductile and malleable.	They are neither ductile nor malleable.
Their melting point and boiling point are generally high.	Their melting point and boiling point are geoerally low.
They generally produce ringing sound on collision.	They do not produce ringing sound.
They are generally lustrous and can be polished.	They are generally non-lustrous and cannot be polished.

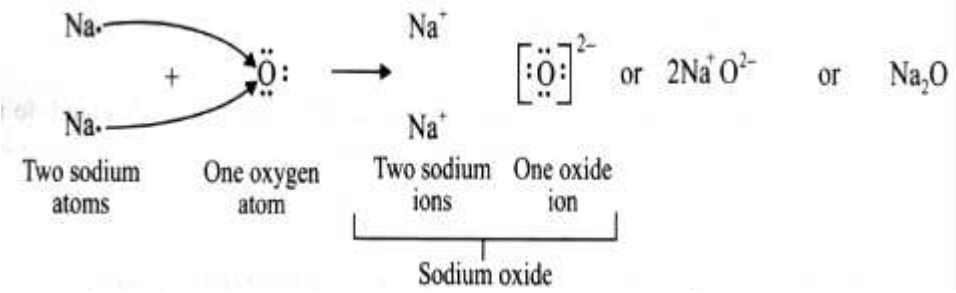
23. Write the electron dot formula for sodium, oxygen and magnesium.



24. Ionic compounds have high melting points. Give reasons

Ionic compounds have high melting points because, a considerable amount of energy is required to break the strong inter-ionic attraction.

25. Show the formation of Na_2O by the transfer of electrons



26. Show the formation of MgO by the transfer of electrons

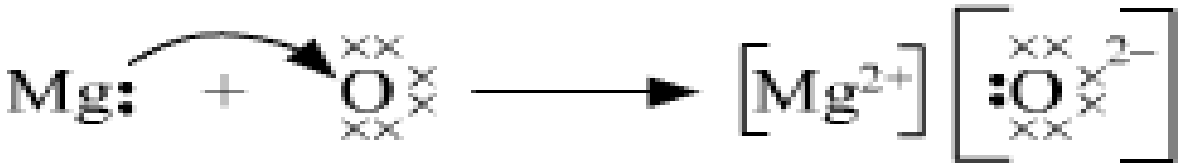
MgO

$Mg \longrightarrow Mg^{2+} + 2e^{\ominus}$

2, 8, 2 2, 8

Magnesium cation

$O + 2e^{\ominus} \longrightarrow O^{2-}$



27. Name the metals that are extracted by reduction using carbon.

Iron, zinc,

28. Name the metals that are extracted by electrolysis.

Sodium , Magnesium, Calcium, Aluminium.

29. Define the following terms

a) Mineral b) Ore c) Gangue

a) Mineral : The elements or compounds which occur naturally in the earth's crust are known minerals

b) Ore : The minerals which contain a very high percentage of a perticular metal and the metal can be profitably exstracted

c) Gangue : Ores are usually contaminated with large amounts of impurities such as soil sand etc.. called gangue.

30. State two ways to prevent the rusting of iron?

Rusting can be prevented bypainting, oiling, greasing,galvanizing,chrome plating anodising or making alloys.

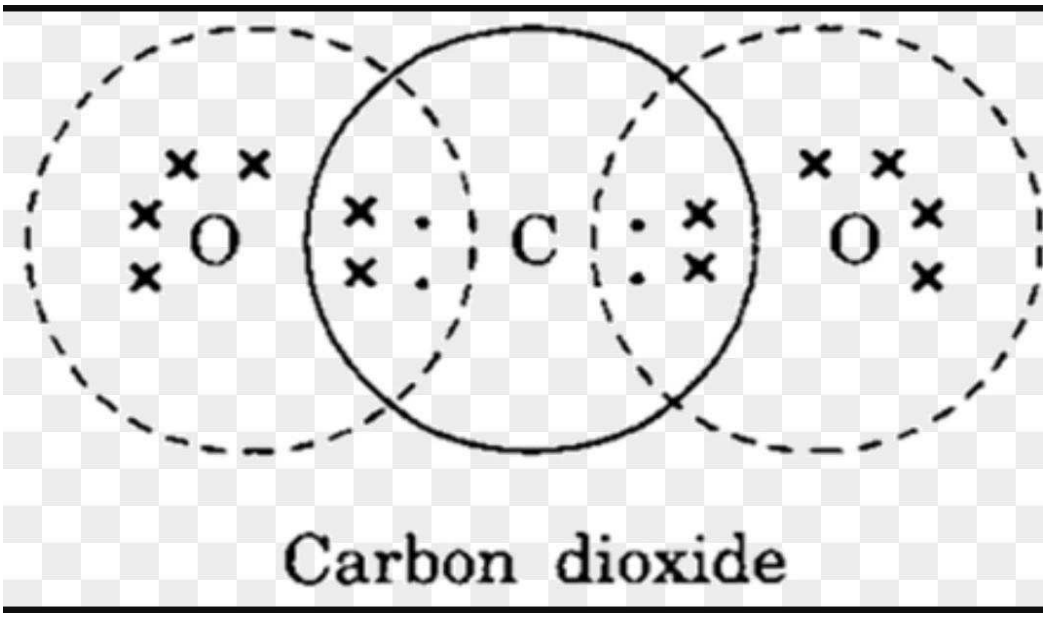
31. Give reasons why copper is used to make hot water tanks and not steel

copper is used to make hot water tanks and not steel because copper donot react with cold water,hot water and steam where as Iron reacts with steam and the tank spoils.

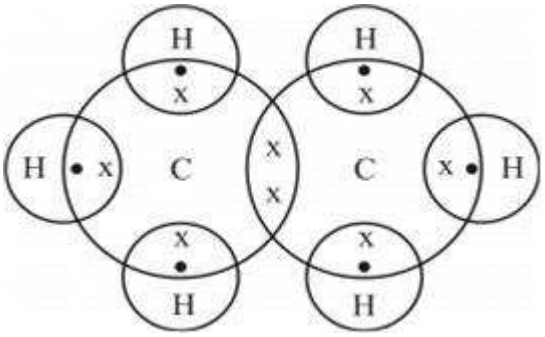
32. why is Iodized salt is Advisable ?

Iodine is necessary for the synthesis of thyroxin, in case iodine is deficient in our diet we might suffer from goiter.

33. Write the electron dot formula of CO_2



34. Write the electron dot structure of ethane.



35. Write the difference between saturated and unsaturated hydrocarbons.

Saturated hydrocarbons	Unsaturated hydrocarbons
Compounds in which all the carbon-carbon bonds are single bonds	Compounds in which at least one carbon-carbon bond is a double or triple bond
Generally not very reactive. Shows substitution reaction(s)	More reactive than saturated hydrocarbons. Responds to addition reaction(s)
Burns with clean flame in sufficient amounts of oxygen	Burns with sooty flame in sufficient amounts of oxygen.

36. Name the following :

i) The simplest hydrocarbon. Ii) The compound used for supporting fractured bones

i) The simplest hydrocarbon : Methane

Ii) The compound used for supporting fractured bones : calcium sulphate hemihydrates.

37. Write the difference between ethanol and ethanioc acid based on physical properties

Physical Properties (Difference)	
Ethanol	Ethanoic Acid
Ethanol is a liquid at room temperature with pleasant smell.	Ethanoic acid is a liquid at room temperature with vinegar like smell.
Ethanol does not freeze in winter.	Ethanoic acid freezes below 17°C in winter.
Ethanol is known as spirit or alcohol.	Ethanoic acid is known as glacial acetic acid.
Ethanol evaporates at room temperature.	Ethanoic acid does not evaporate at room temperature.

38. Write the difference between ethanol and ethanoic acid based on chemical properties

Ethanoic acid	Ethanol
1. Pungent smell	Pleasant smell
2. Melting point 290 K	M.P. is 156 K
3. Boiling point 391 K	B.P. is 351 K

Chemical Properties

Ethanoic acid	Ethanol
1. Ethanoic acid + Sodium bicarbonate gives CO_2 gas.	No CO_2 gas produced.
2. On addition of alk. $KMnO_4$ the colour does not disappear.	2. On addition of alk. $KMnO_4$ the colour disappear.

39. Why does micelle formation take place when soap is added to water? Will a micelles be formed in other solvents such as ethanol also?

Soaps are molecules in which the two ends have differing properties,one is hydrophilic that interacts with water,while the other end is hydrophobic it interacts with hydrocarbons. These molecules have unique orientation that keeps the hydrocarbon portion out of the water. Thus cluster of molecules in which the hydrophobic tails are in the interior of the cluster and the ionic ends are on the surface of the cluster forming micelle when soap is added to water

Micelles are not formed in other solvents such as ethanol

40. What are homologous series?

A series of compounds in which the same functional group substitutes for hydrogen in a caron chain.

41. Explain the mechanism of the cleaning actions of soaps.

The molecules of soap are sodium or potassium salts of long chain carboxylic acids. The ionic end of soap interacts with water while carbon chain interacts with oil. The soap molecules thus form micelles where one end of the molecules is towards oil droplet while the ionic end faces outside. This forms an emulsion in water. The soap micelle thus help in pulling out the dirt jn water and we can wash our clothes clean.

42. Explain the formation of scum when hard water is treated with soap.

when hard water is treated with soap calcium and magnesium salts present in hard water reacts with soap to form scum (insoluble substance)

43. What are the disadvantages of Mendeleev's periodic table

1.The position of the hydrogen could not be explained.

2.

44. What is the valency of magnesium with atomic number 12 and sulphur with atomic number 16?

The valency of magnesium with atomic number 12 is 2.

Sulphur with atomic number 16 is also is 2.

45. Which elements have the largest and the smallest atoms in the 3rdperiod?

The largest element in the 3rdperiod is sodium(Na)

The smallest element in the 3rdperiod is Argan (Ar)

46. How does the atomic radius change as you go from left to right in a period?

The atomic radius decreases as we go from left to right in a period.

47. How does the atomic size vary as you go down a group?

The atomic size increases as we go down a group

48. On which side of the Periodic Table do you find metals, and non-metals.

On left side of the Periodic Table we do find metals, and On right side of the Periodic Table we do find non-metals.

49. The atomic number of a element 'X' is 12 write its electronic configuration and find out

a) its period b) its group c) and block

a) its period is 3

b) its group is 2

c) it belongs S block

50. Write the factors on which the resistance of a conductor depends?

The factors on which the resistance of a conductor depends are

1.on its iength

2.on its area of cross section

3.temperature

4.nature of the material

51. Parallel connection is more advantageous than series why?

1. Parallel circuit devides the current through the electrical gadgets.

2. The total resistance in a parallel circuit decreases and helps each gadget having different resistance and requires different current to operate properly.

52. what are the factors does heating effect of electric current depends ?

The factors on which heating effect of electric current depends are

1.current

2.time

3.resistance

53. List the applications of Joule's heating effect?

1. The electric iron, electric oven, electric toaster, electric heater etc.. are based on Joule's heating effect.

2.The fuse works on the principle of Joule's heating effect.

3. The electric bulb works on the principle of Joule's heating effect.

54. Alloys are used in the electrical heating device why ?

Alloys are used in the electrical heating device because,

1.the resistivity alloys are generally higher than that of its constituent metals.

2.alloys do not oxidize readily at high temperatures.

55. An electric iron draws a current 0.5A when voltage 200V. Calculate the amount of charges flowing through it in 1 hour?

I=0.5A

V=200V

t=1hour=60X60=3600 seconds

Q= ?

Q=It

Q =0.5X3600

Q =1800 C

56. Write the properties of Magnetic lines of forces?

1. fields lines emerge from north pole and merge at the south pole.

2.insde the magnet the direction of field linesis from its south pole to its north pole

3.no two field lines are found to cross each other

4.the magnetic field lines are closed curves.

57. Explain right hand thumb rule.

If you are holding a current carrying conductor in right hand such that the thumb points towards the direction of current. Then your fingers will wrap around the conductor in the direction of the field lines of magnetic field.

58. Differentiate between electric motor and generator.

Difference Between Electric Motor & Electric Generator

Electric motor	Electric generator
1. Electric motor converts electrical energy into mechanical energy.	1. Electric generator converts mechanical energy into electrical energy.
2. It uses electricity.	2. It generates electricity.
3. It is based on the principle that current carrying conductor placed in a magnetic field experiences a force.	3. It is based on the principle of electromagnetic induction.

59. What is earthing , write their advantages?

Earth wire is connected to a metal plate deep in the earth used as a safety measure.

Advantages of earth wire are,

1. which provides a low resistance conducting path for the current.
2. It ensures that any leakage of current to the metallic body of the appliance keeps its potential to that of earth.

60. On what factors does the e.m.f of the coil depends?

factors on which the e.m.f of the coil depends are

1.number of turns in the coil

2.current in the coil

61. Write the uses of solenoid?

Solenoid is used to magnetise a piece magnetic material

62. Why do we prefer a convex mirror as a rear view mirror in vehicles.

we prefer a convex mirror as a rear view mirror in vehicles because they always produce erect and diminished image. They have awider field of view as they are curved outwards. Hence the driver enable to view much larger area than would be possible with a plane mirror.

63. A concave mirror produces three times magnified real image of an object placed at 10cm in front of it. Where is the image located?

m=-3

U=-10cm

V= ?

$m=-{}^{v}/_{u}$

$-3=-{}^{v}/_{-10}$

v=-30cm

64.Refractive index of water is 1.33. What is the meaning of this statement.

Refractive index of water is 1.33 meaning of this statement is the ratio speed of light in air to the speed of light in water is equal to 1.33

65. Light enter from air to glass having refractive index 1.50. What is the speed of light in the glass.

n=1.5

v= ?

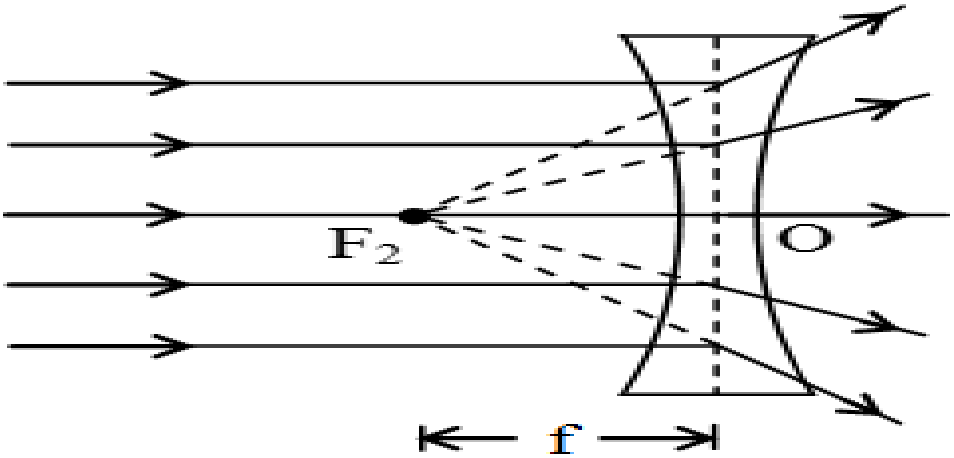
c=3X10^8 m/s

$$n=\frac{c}{v}$$

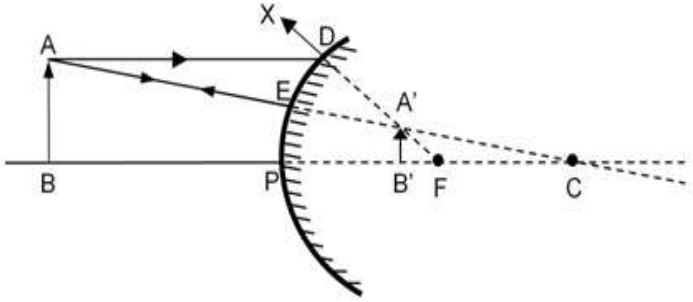
$$v=\frac{c}{n}=\frac{3X10^8}{1.5}$$

v=2X10^8 m/s

66. Draw the ray diagram to show principle focus in concave lens.



67. Draw the ray diagram to show the formation of image in convex mirror when object is placed in between infinity and pole



68.What are the uses of concave mirror

1.used in torches,search lights and vehicles and vehicles headlighs.
2.usedas shaving mirrors
3.dentists use to see large images of teeth
4.used in solar furnaces

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

P=-2.0D

f=?

f= 1/p

f=1/-2.0

f=-0.5 m

Concave lens / diverging lens

70. Why do stars twinkle?

Twinkle of stars is due to atmospheric refraction of star light.

The atmospheric refraction occurs in a medium of gradually changing refractive index. Since the atmosphere bends the starlight towards the normal.the apperent position of the star is slightly different from its actual position when viewd near the horizon. This apperent position of the star is not ststionery keeps on changing because physical conditions of the earth are not stationery. From the point sized stars the path rays of light varying slightly, the apperent position of the star fluctuates and the amount of starlight entering the eye flickers – the star sometimes appear brighter and some other time fainter. Which is the twinkling effect.

71. Why does the sun appear reddish early in the morning?

the sun appear reddish early in the morning because near the horizon most of the blue light and shorter wavelengths are scattered away by the particles. Therefore the light that reaches our eyes is of longer wavelengths this gives rise to the reddish appearance of the sun.

72.Planets do not twinkle. Why?

If we consider a planet as a collection of large number of point sized sources of light ,the total variation in the amount of light entering our eye from all the individual point sized sources will average out of zero, there by nullifying the twinkling effect.

73. Why is the colour of the clear sky is blue?

The colour of the clear sky is blue because of scattering of light.

When the sunlight passes through the atmosphere, the fine particles in the air scatter the blue light more strongly than the red. The scattered blue light enters our eyes.

74. A person can't see distant object clearly. Why?

When a person can't see the distant objects clearly he is suffering fro myopia.

This is due to

i)excessive curvature of the eye lens

ii)elongation of the eye ball.

75. Doctor advised to use bifocal lens spectacle. Why?

When a person is suffering from both myopia and hypermetropia doctor advises to use bi-focal lenses.

76. Hydrogen has been used as a rocket fuel, would you consider it a cleaner fuel than CNG? Why or why not?

Hydrogen has a high calorific value do not leave any residue.

CNG emits pollutants on burning and its calorific value is less than hydrogen

Hence we can consider it a cleaner fuel than CNG

77. If you would use any sources of energy for heating your food which would you use and why?

We use LPG as a source of energy for heating our food

LPG produces very good amount heat on burning.

78.How can you consider the given sources of energy is a ideal one?

An ideal source of energy is one which would do a large amount of work per uni volume.

79. What are the qualities of an ideal fuel.

I) a good source of energy is one which would do a large amount of work per uni volume,

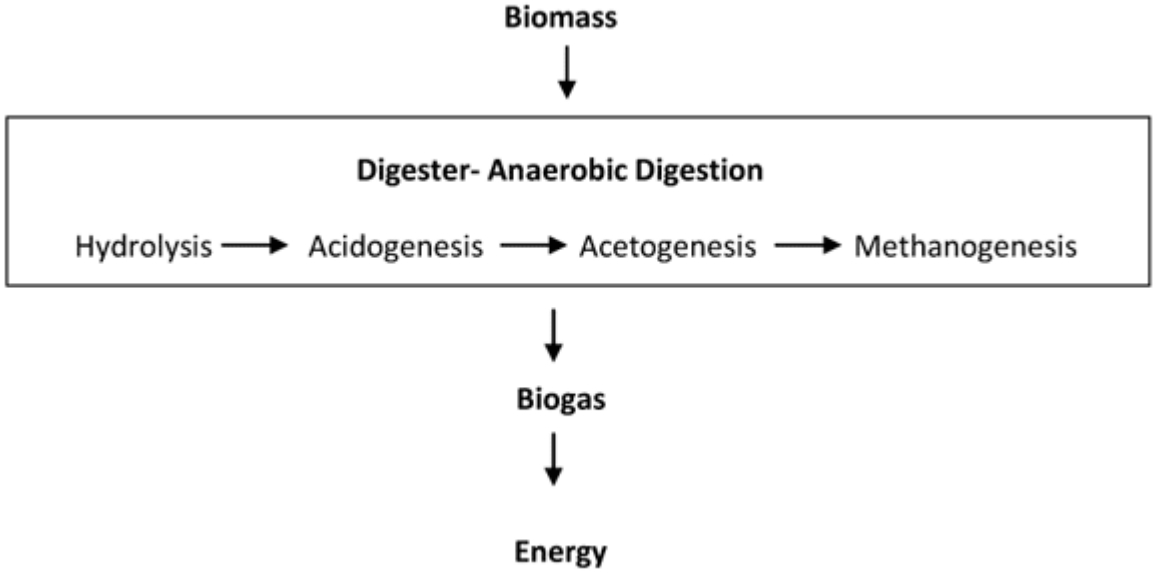
ii) be easily accessible,

iii)easy to store and transport,

iv) be economical

80. Which reaction takes place in the biogas plant?

The reaction takes place in the biogas plant is anaerobic fermentation



81. What kind of mirror would be best suited for use in a solar cooker? Why?

Concave mirror would be best suited for use in a solar cooker. Concave mirrors concentrate sun light to produce the heat in solar furnaces

82.Write the advantages of nuclear energy?

The advantages of nuclear energy are

1. do not cause air pollution
2. stable base load of energy
3. high energy dencity
4.

83. Write the limitation of Geo thermal energy?

The limitation of Geo thermal energy are

1.there are very few commercially viable sites where energy can be exploited.

2.

III. Answer the folowing:(3 Marks)

1. **Define chemical combination with an example.**

   The reaction in which two or more reactants combine to form a single product

$SO_3(g) + H_2O(l) \longrightarrow H_2SO_4(l)$

$Fe(s) + S(s) \longrightarrow FeS(s)$

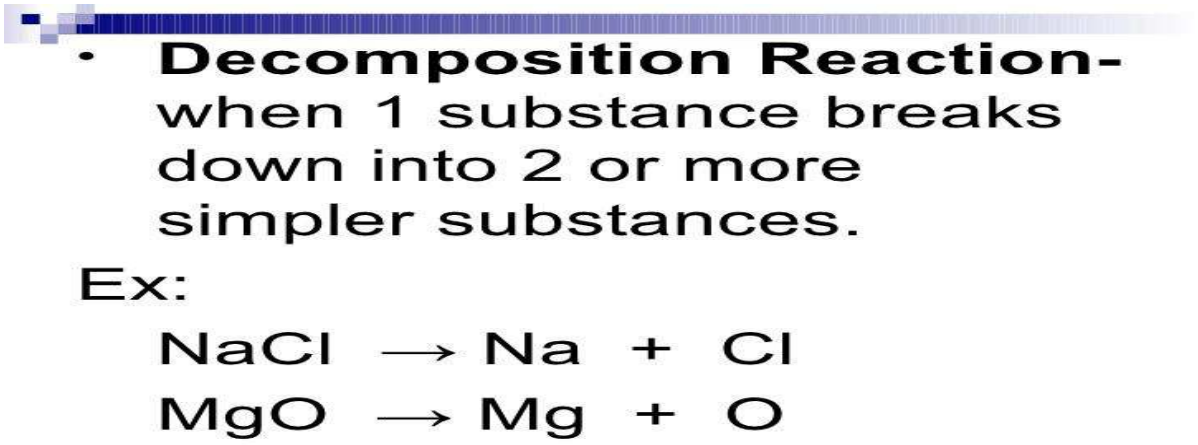
$N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$

$NH_3(g) + HCl(g) \longrightarrow NH_4Cl(s)$

$2H_2(g) + O_2(g) \longrightarrow 2H_2O(l)$

2. **Define chemical decomposition with an example**
   The reaction in which a single reactant split into two or more simple products

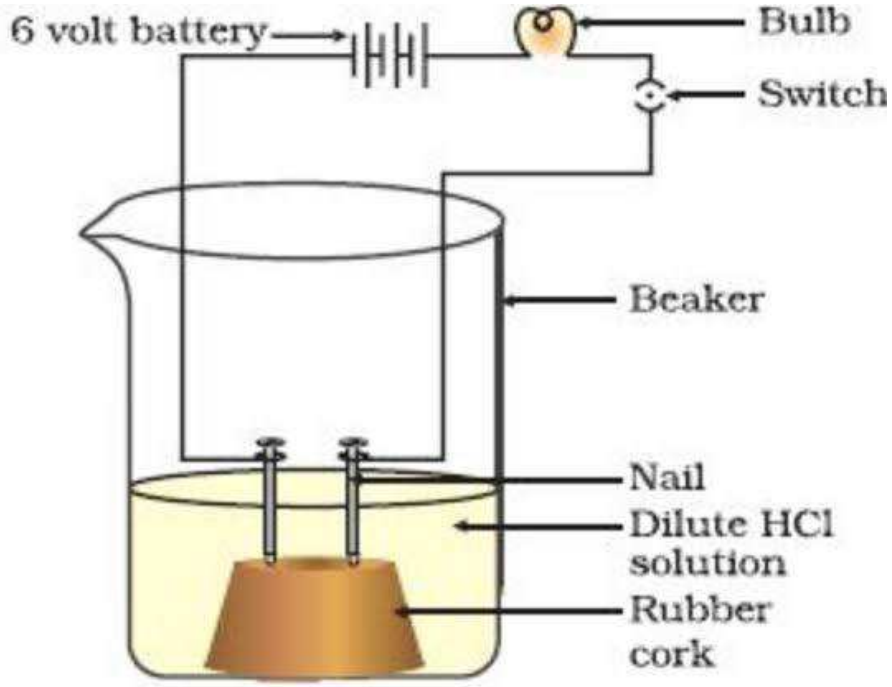
Fe



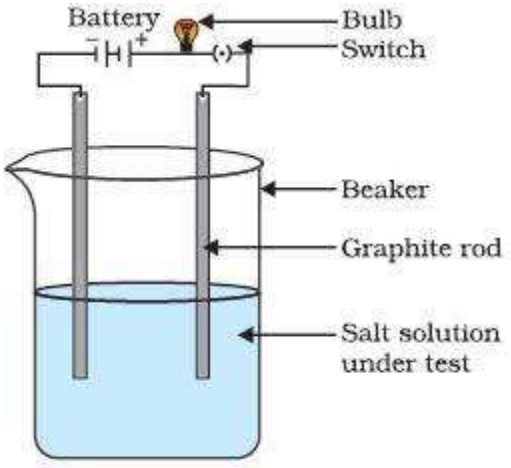
3. **Define chemical Displacement with an example.**
   The reaction in which more reactive element displaces less reactive element
   When Iron reacts with coppersulphate solution Iron displaces copper from coppersulphate solution.
   $Fe + CuSO_4$ ----------> $FeSO_4 + Cu$

4. **Define Double Displacement with an example.**
   The reaction in which there is an exchange of ions between the reactants is called double displacement reaction
   $Na_2SO_4 + BaCl_2$ ----------> $BaSO_4 + 2NaCl$
5. **What is a redox reaction? Give an example**
   The reaction in which one reactant get oxidized while the other gets reduced.
   $CuO + H_2$----------> $Cu + H_2O$

6. **What will happen if a solution of sodium hydrogencarbonate is heated? Give the equation of the reaction involved**
   When a solution of sodium hydrogencarbonate is heated sodium corbonate and water is formed with the liberation of carbondioxide
7. **Draw a neat diagram showing Acid solution in water conducts electricity**



8. Draw a neat diagram showing the – Testing the conducting of a salt solution



9. Write equations for the reactions of

a) iron with steam b) calcium and potassium with water

a) iron with steam: when Iron reacts with steam iron oxide is formed with the liberation of hydrogen

$2Fe + 3H_2O$----------→ $Fe_2O_3 + 3H_2$

b) calcium and potassium with water: Calcium reacts with water to form Calcium hydroxide with the liberation of hydrogen.

$Ca + 2H_2O$ ----------> $Ca(OH)_2 + H_2$

Magnesium reacts with water to form Magnesium hydroxide with the liberation of hydrogen.

$Mg + 2H_2O$ ----------> $Mg(OH)_2 + H_2$

10. Which gas is produced when dilute hydrochloric acid is added to a reactive metal? Write the chemical reaction when iron reacts with dilute H_2So_4

Hydrogen gas is produced when dilute hydrochloric acid is added to a reactive metal.

When iron reacts with dilute H_2So_4

Ferrous sulphate is formed with the liberation of hydrogen.

$Fe + H_2So_4$ ----------> $FeSO_4 + H_2$

11. What would you observe when zinc is added to a solution of iron (II) sulphate? write the chemical reaction that takes place

when zinc is added to a solution of iron (II) sulphate Zinc displaces Iron from reaction that takes place iron (II) sulphate solution

$Zn + FeSO_4$----------> $ZnSO_4 + Fe$

12. Give examles for a single, double and triple bonds in carbon compounds.

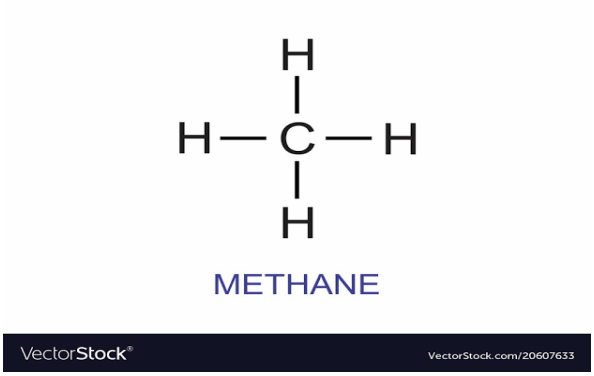
Single bond : Ethane, Propane….

double bond : Ethene , propene…

triple bond : Ethyne , propyn…

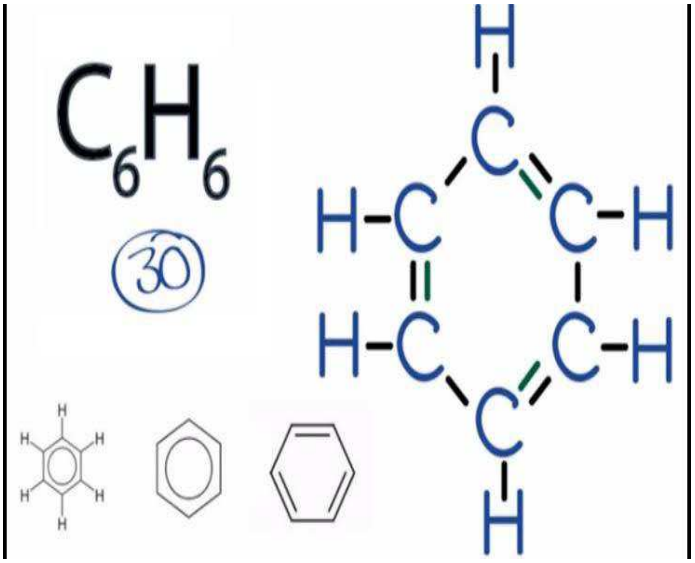
13. Name the simplest hydrocarbon, and write its structural formula.

The simplest hydrocarbon is Methane,



structural formula of Methane:

14. Write the molecular formula and structural formula of Benzene.



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

Addition of hydrogen to the unsaturated carbon compounds is called hydrogenation

When hydrogen is passed over vegetable oils in the presence of finely devided nickel as catalyst to convert into saturated fats.

16. What are metalloids? Give examples

Elements with properties intermediate between metals and nonmetals.

Boron, silicon, germanium, arsenic, antimony, tellurium, and polonium are **metalloids**. ... **Metalloids** tend to be semiconductors; silicon is the best known **example** of a semiconductor.

17. What is electronegativity. What happens to electro negativity across a period and down a group?

electro negativity across a period increases anddecreases down a group

18. How does the electronic configuration of an atom relate to its position in the modern periodic table?

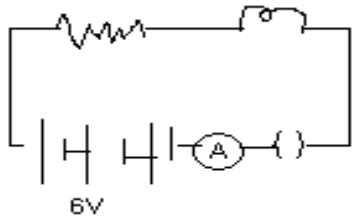
In the modern periodic table elements are arranged in the increasing order of their atomi number. The number of shells increases as we go down the groups and the number of shells are same in a period.

19. An electric lamp, whose resistance is 20Ω and a conductor of 4Ω resistance are connected to a 6V battery calculate.

a)Total resistance of the circuit

b) Current through the circuit

c) Potential difference across the electricla lamp & conductor.



a)Total resistance of the circuit = $R_1 + R_2 = 20 + 4 = 24\Omega$

b) Current through the circuit : $I=V/R = 6/24 = 0.25A$

c) Potential difference across the electric lamp & conductor.

20. How can two resistors of resistances 2 Ω, 3 Ω & 6 Ω be connected to give total resistance of

a) 4 Ω **b) 1 Ω**

Two resistors of resistances 3 Ω & 6 Ω be connected in parallel with 2 Ω resistor to give total resistance of 4 Ω

Three resistors of resistances 2 Ω, 3 Ω & 6 Ω be connected in parallel to give total resistance of 1V

21. An electric iron consumes energy at a rate of 840w when heating is at the maximum rate and 360w when the heating is at the minimum. The voltage is 220V what are the current and the resistance in each case.

22. A write sign convention for spherical mirror.

Rules for sign convention :

1. All distances should be measured from the pole.
2. The distances measured in the direction of incident light, to be taken positive and measured in the opposite direction of incident light to be taken negative.
3. Height of object and height of image are positive if measured upward from the axis and negative if measured downward.
4. For a concave mirror 'f and 'R' are negative and for a convex mirror these are positive.

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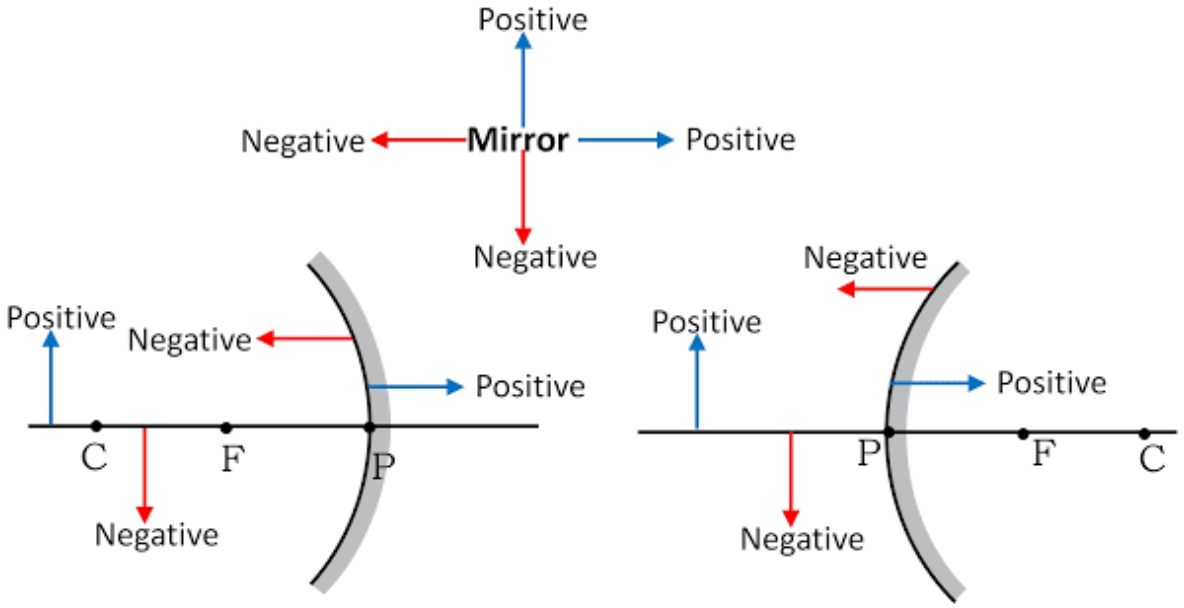
Sign convention for Mirrors



Concave Mirror

*Focal length of concave mirror is always **Negative***

Convex Mirror

*Focal length of convex mirror is always **Positive***

23. The image formed by a convex mirror of focal length 20cm is a quarter to the objects. What is the distance of the object from the mirror.

24. A concave mirror produces three times magnified real image of an object placed at 10cms in front of it. Where is the image located.

m=-V/U

-3=-V/10

V=30 cm

25. What are the changes in the eye the person can't see the object faraway.

I) excessive curvature of eye lens

ii) elongation of the eye ball

26. What are the changes in the eye the person can't see the near by object

I) the focal length of eye lens is too long,

ii) the eye ball has become too small.

27. Environmentalist always oppose the establishment of nuclear power reactor why?

Environmentalist always oppose the establishment of nuclear power reactor because

i)environmental leakage leads to radioactive pollution causes mutation in the DNA of living organisms

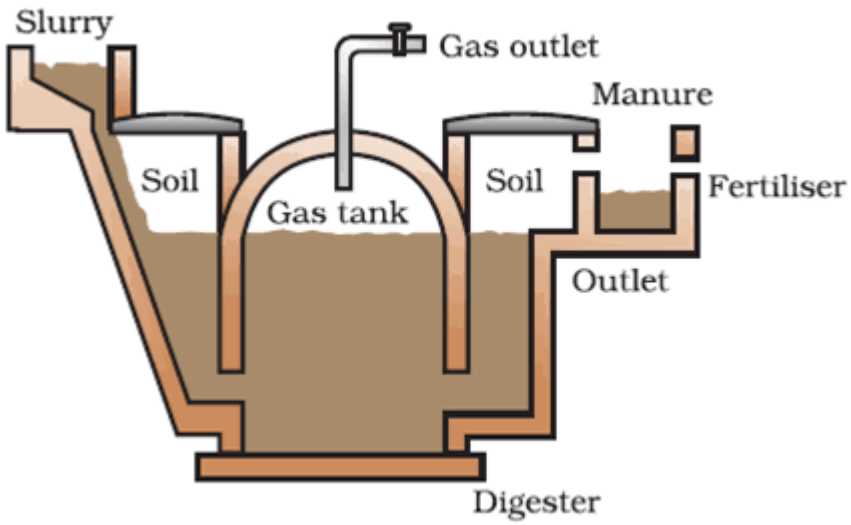
ii) improper nuclear waste storage and disposal result in environmental contamination.

28. How has the traditional use of wind and water energy been modified for our convenience?

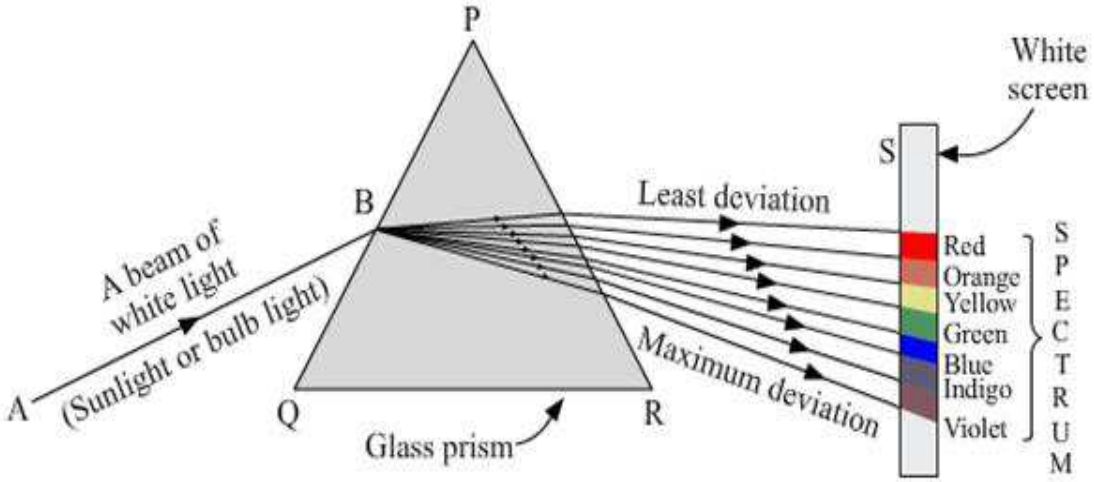
The potential energy of water is used to convet into electricity.

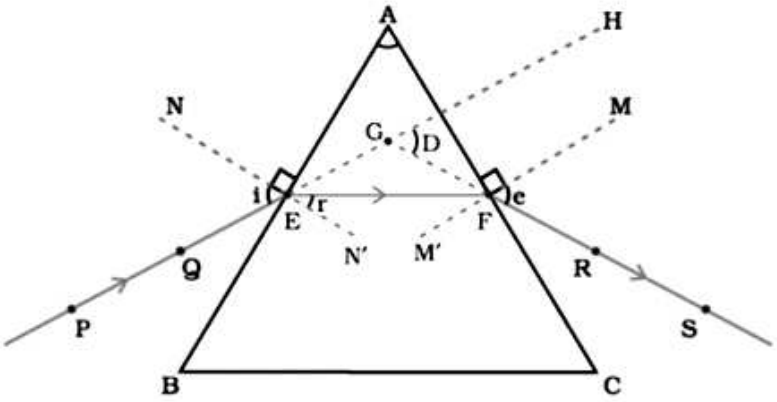
The kinetic energy of the wind is converted into electricity.Windmills are used to generate electricity.

29. draw a neat diagram of Biogas plant.

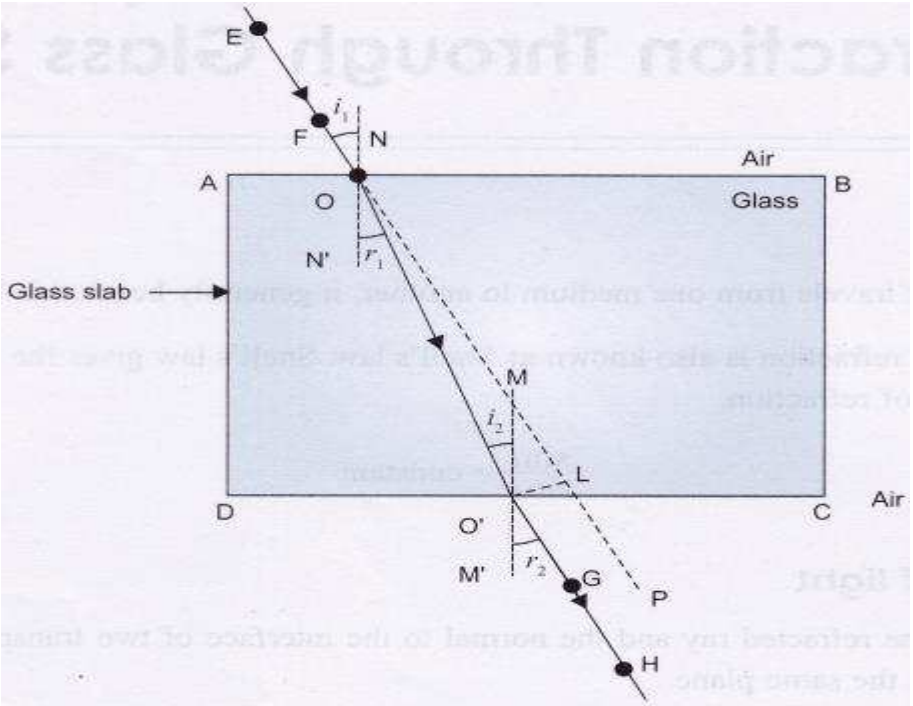


30. Refraction of light through a triangular glass prism / glass slab





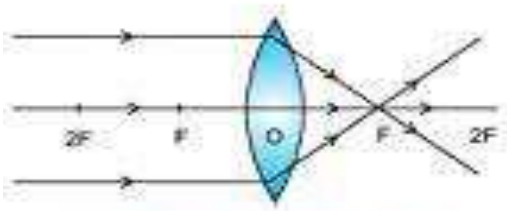
PE – Incident ray
EF – Refracted ray
FS – Emergent ray
∠A – Angle of the prism
∠i – Angle of incidence
∠r – Angle of refraction
∠e – Angle of emergence
∠D – Angle of deviation



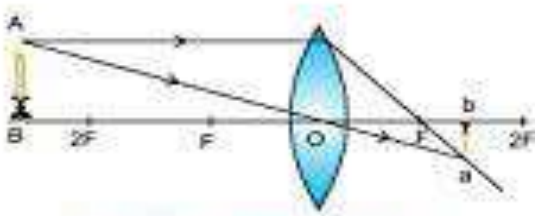
Refraction of light through a rectangular glass slab

31. The position size and the nature of the image formed by a convex lens for various position of the object.

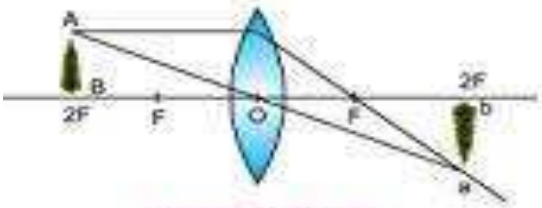
IMAGES FORMED BY LENSES



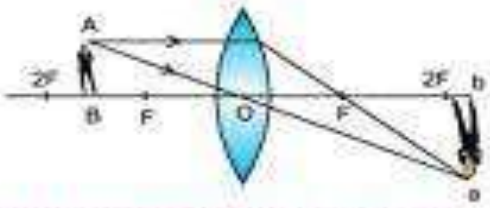
OBJECT AT INFINITY



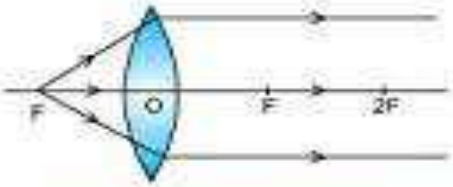
OBJECT BEYOND '2F'



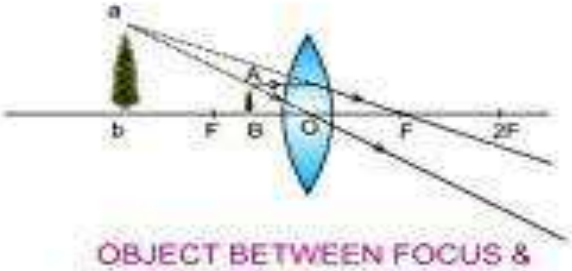
OBJECT AT '2F'



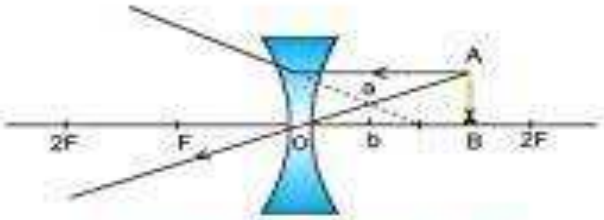
OBJECT BETWEEN 'F' AND '2F'



OBJECT AT PRINCIPAL AXIS



OBJECT BETWEEN FOCUS & THE OPTICAL CENTRE



AB - OBJECT
ab - IMAGE

DOUBLE CONCAVE LENS

32. The position size and the nature of the image formed by a concave lens for various position of the object.

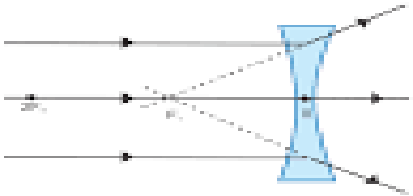
LC9105

Images formed by Concave Lens

1) When object is placed at infinity

Image is :

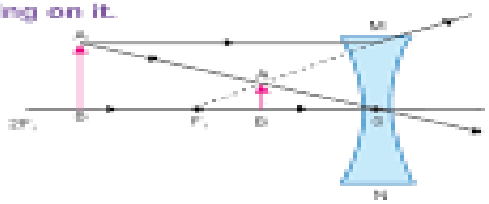
- formed at F,
- virtual and erect
- highly diminished



2) A concave lens diverges all rays falling on it.

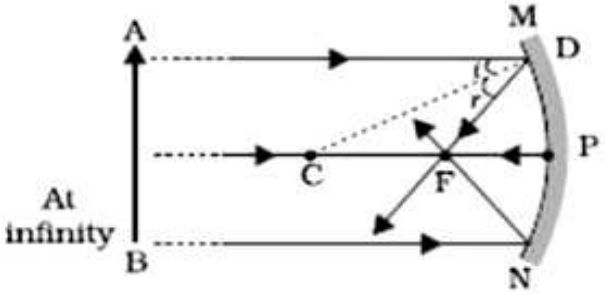
Therefore for all positions, image is :

- on the same side of object
- virtual and erect
- diminished



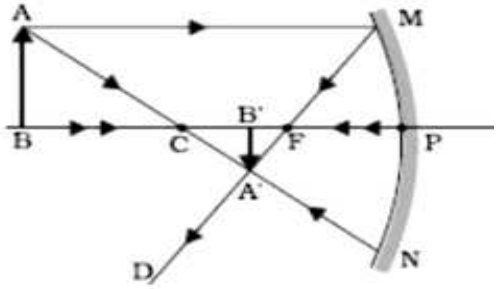
33. Ray diagram for the image formation by a concave mirror / convex mirror

(i) When the object is at infinity:



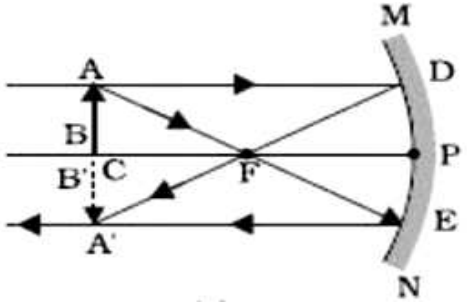
- Image is formed at focus.
- It is real, inverted and highly diminished.

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



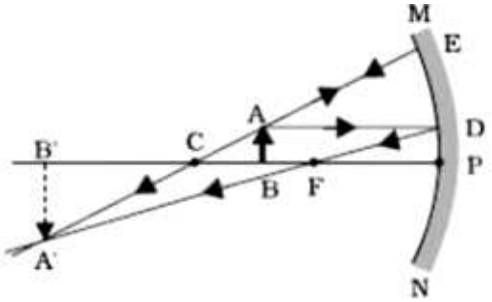
- Image is formed between F and C.
- It is real, inverted and smaller in size than that of the object.

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



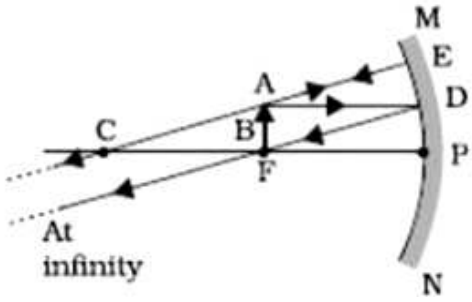
- Image is formed at C
- It is real, inverted and of same size.

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



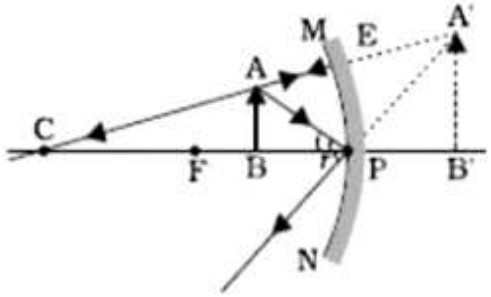
- Image is formed beyond C.
- It is enlarged, real and inverted

(v) When the object is at focus:



- Image is formed at infinity.
- It is real, inverted and highly enlarged.

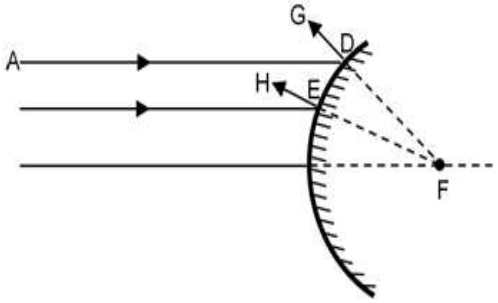
(vi) When the object is between pole and focus:



- Image is formed behind the mirror.
- It is enlarged, virtual and erect.

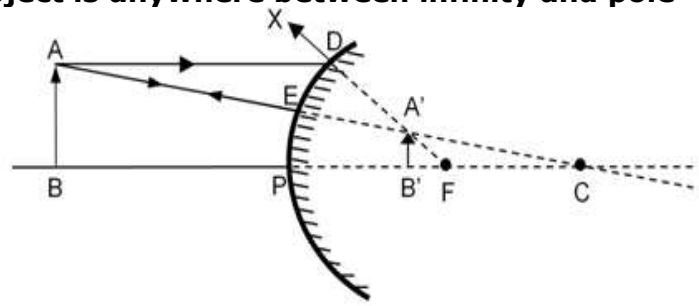
13. Image formation by convex mirror

(i) When the object is at infinity:



- Image is formed at focus, behind the mirror
- It is virtual, erect and diminished.

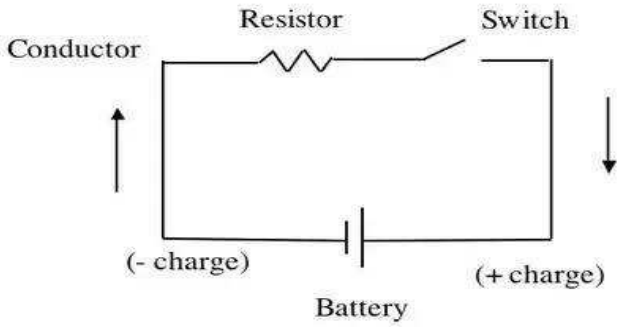
(ii) When the object is anywhere between infinity and pole



- Image is formed between pole and focus.
- It is erect, virtual and diminished.

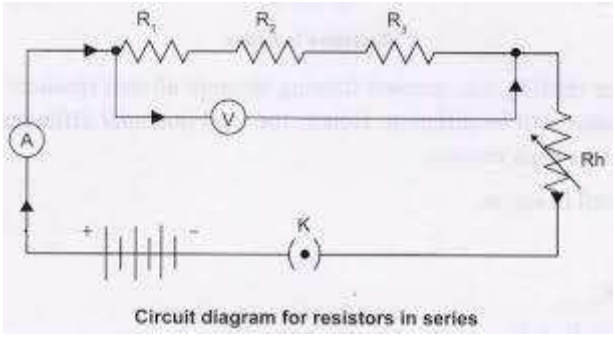
34. Circuit diagram

Basic Electrical Circuit (Diagram)



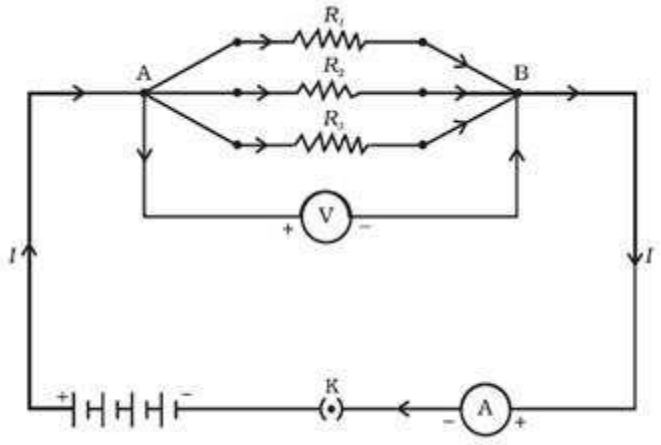
35. Resistors in series / parallel

Resistors in series

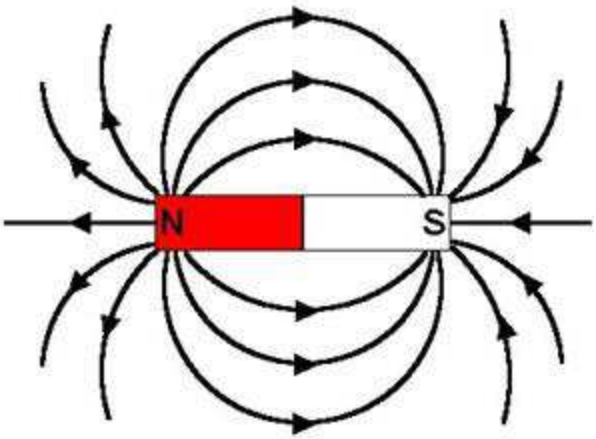


Circuit diagram for resistors in series

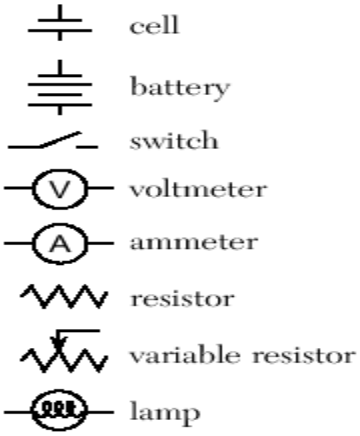
Resistors in parallel



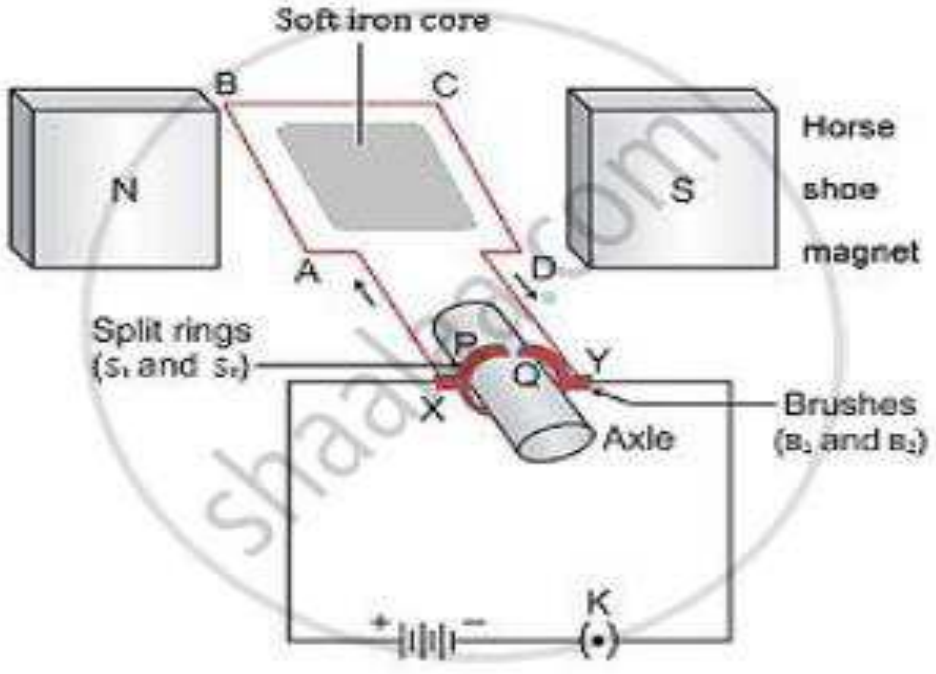
36. Magnetic field lines around the bar magnet



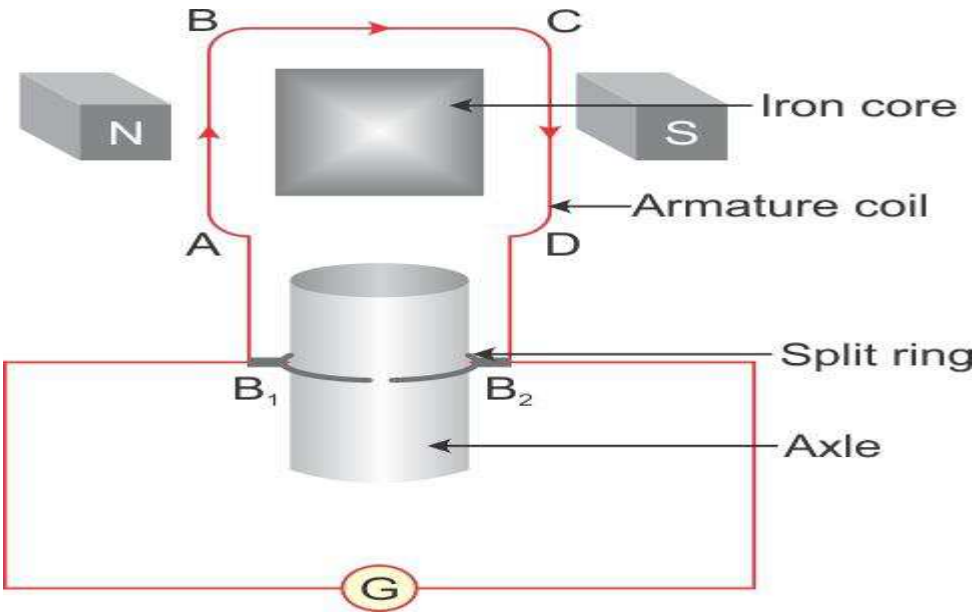
37. Symbols in circuit diagrams



38. Electric Motor

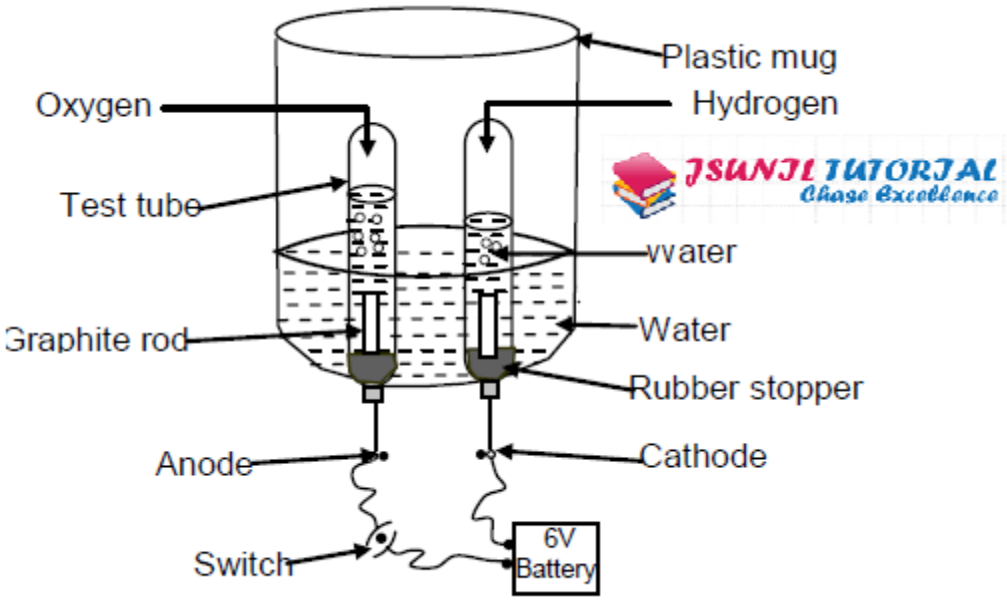


39. Electric generator



IV. Answer the following:(4 Marks)

1. Draw a neat diagram of the electrolysis of water and label the parts



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

a) Hydrogen + Chlorine → Hydrogen chloride

b) Zinc + Hydrochloric Acid → Zinc chloride + Hydrogen Gas

c) Magnesium + Chlorine → Magnesium chloride

d) Sodium + water → Sodium Hydroxide + Hydrogen

a) Hydrogen + Chlorine Hydrogen chloride

$H_2 + Cl_2$ ----------→ $2HCl$

b) Zinc + Hydrochloric Acid ----------→ Zinc chloride + Hydrogen Gas

$Zn + 2HCl$ ----------→ $ZnCl_2 + H_2$

c) Magnesium + Chlorine → Magnesium chloride

$Mg + Cl_2$ ----------→ $MgCl_2$

d) Sodium + water → Sodium Hydroxide + Hydrogen

$Na + H_2O$ ----------→ $Na(OH)_2 + H_2$

3. Draw a neat diagram showing the reaction of zinc grumbles with dilute sulphuric acid and testing hydrogen gas by burning .

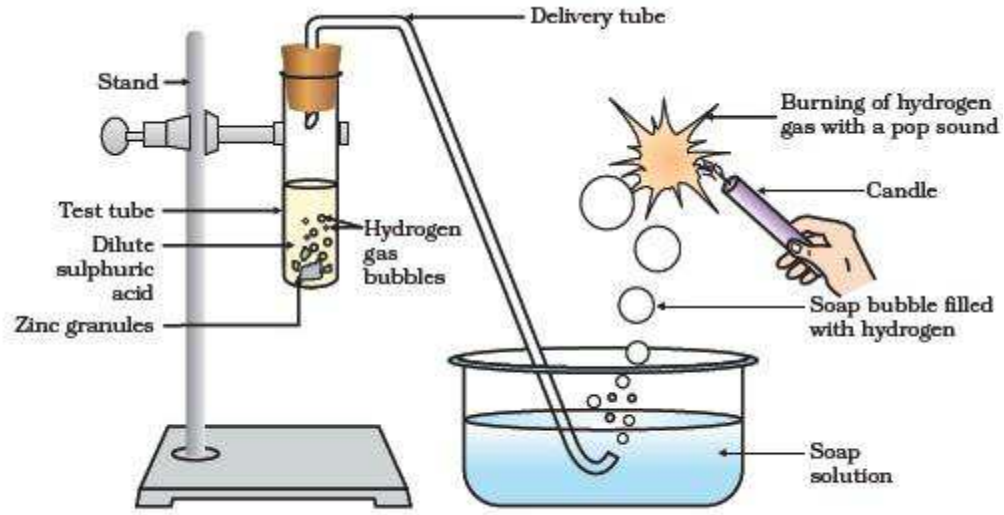
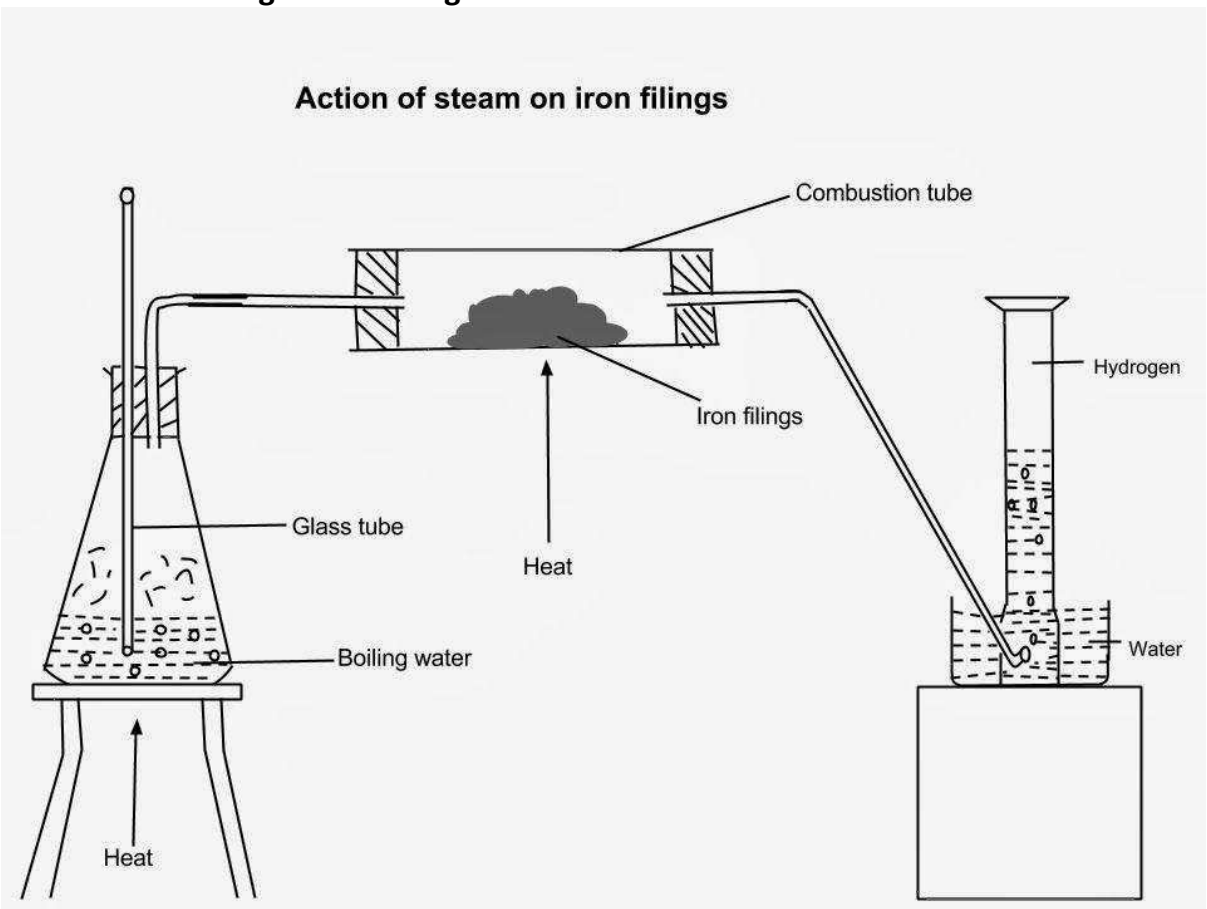
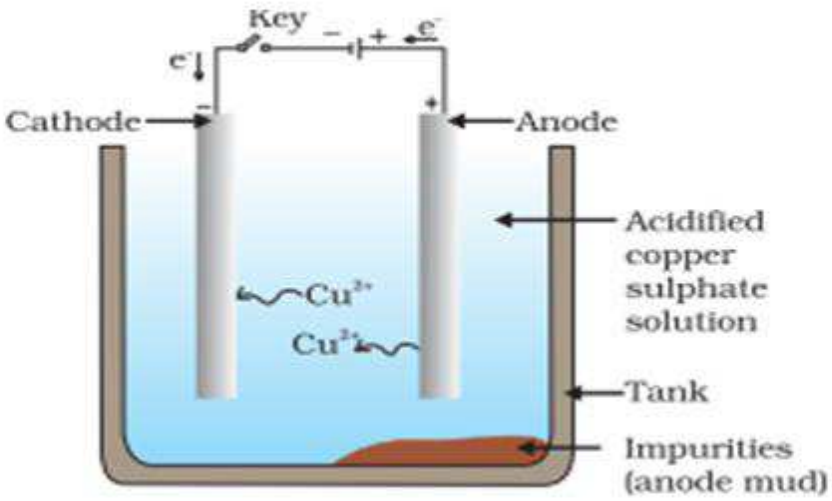


Fig. 2.3

4. Draw a neat diagram showing the Action of steam on a metal ?



5. Draw a neat diagram showing the Electrolytic refining of copper



6. Give an example of a metal which

a) is liquid at room temperature

b) can be easily cut with a knife

c) is the best conductor of heat

d) is a poor conductor of heat

a) Metal which is liquid at room temperature is mercury.

b) Metals which can be easily cut with a knife sodium ,potassium and lithum.

c) Metals which are the best conductor of heat are silver and copper.

d) Metals which are a poor conductor of heat are lead and mercury.

7. Plaster of Paris should be stored in a moisture proof containers .explain why?

Plaster of Paris on mixing with water it changes to gypsum a hard solid therefore plaster of paris should be stored in a moisture proof containers.

8. How many structural isomers can you draw from pentane?

3 structural isomers can you draw from pentane.

9. Draw the structure for the following compound

a) Ethanoic acid b) Bromopentane c) Butanone d) Hexanal

a) Ethanoic acid – CH_3COOH

b) Bromopentane -$C_5H_{11}Br$

c) Butanone – C_4H_8O

d) Hexanal –$C_6H_{12}O$

10. a) A doctor has prescribed a corrective lens of power +1.5D. Find the focal length of the lens is the prescribed lens is diverging or converging.

P=1/f

f=1/P

f=1/1.5

f=0.666m

The prescribed lens is converging lens

b) Name the type of mirror used in the following

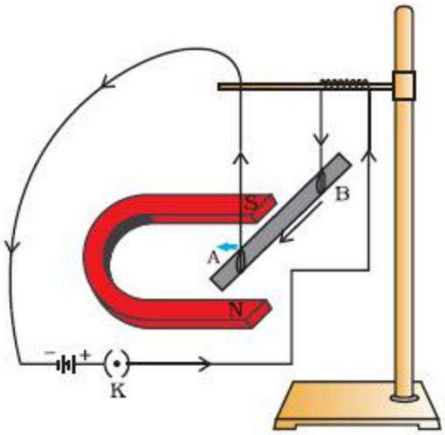
i) Head lights of a car and Solar furnace

ii) Rear view mirror of a vehicle.

Head lights of a car and Solar furnace – concave mirror

Rear view mirror of a vehicle – convex mirror

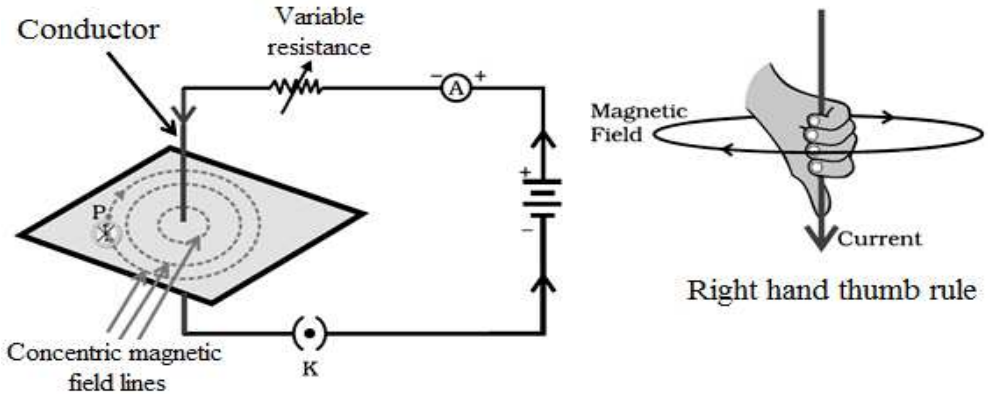
11. A current carrying rod experiences mechanical force. Explain with experiment.



Arrange the apparatus as shown in the figure. When current is passed through the aluminium rod fro end B to end A. now the rod is displaced towards the left. Reverse the direction of the current flowing through the rod, now it is towards the right. Now change the direction of the field to vertically downwards by interchanging the two poles of the magnet. It is once again observed that the of the force acting on the current carrying rod gets reversed.

It shows that the direction of the force on the conductor depends upon the direction of current and the direction of the magnetic field.

12. Describe the simple experiment to show magnetic lines in a straight conductor.



Arrange the apparatus as shown in the figure. Insert the thick wire through the centre, normal to the plane of a rectangular card board. Sprinkle some iron fillings uniformly on the cardboard. Close the key so that the current flows through the wire. Gently tap the cardboard a few times. The iron fillings align in apattern of concentric circles around the copper wire. Place the compass needle over a circle. The direction of the north pole of the compass needle would give the direction of the field lines. When the current in the conductor is reversed the direction of magnetic field lines get reversed.

V. Answer the following

1. Which of the following is a plant hormone?

a) Insulin b) Thyroxin c) Estrogen d) Auxin

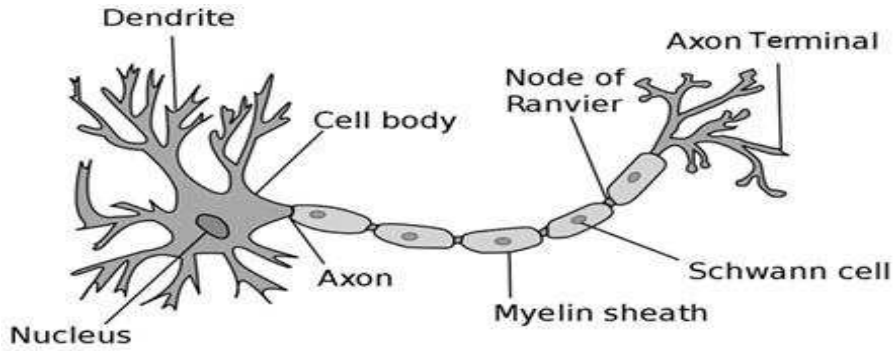
ANS- **d) Auxin**

2. The brain is responsible for

a) thinking b) regulating the heart beat c) balancing the body d) all of the above.

ANS- **d) all of the above.**

3. The correct order of flow of information through the neuron



a) ADFBCGE b) ABCDEFG c) ABFGDCE d) EGBFDAC

4. The plant harmone which is shade loving

a) Auxin b) Gibberlin c) cytokinin d) Absicisic acid

ANS-a) Auxin

5. The harone which regulates Metabolism

a) Adrenaline b) estrogen c) thyroxin d) pituitary

ANS - c)thyroxin

6.What is the significance of reflex action.

Reflex actions are helpful in control and coordinating the body.

7.A **young green plant receive sunlight from one direction only. What will happen to its roots and shoots**?

When a young green plant receive sunlight from one direction only, then its roots grow towards shade and shoots towards sunlight.

8. Mention the part of the body where gustatory and olfactory receptors are located?

The gustatory receptors are located in the tounge and olfactory receptors are located in the inner lining of the nose.

9. Name the hormone that helps in regulating level of sugar in our blood. Name the gland that seretel it .

The hormone that helps in regulating level of sugar in our blood insulin.The gland that seretel it is pancreas.

10. Why adrenaline hormone called as emergency hormone.

Adrenaline prepares the body to face the emergency situations. Hence adrenaline hormone called as emergency hormone

11. Why hormones are called as chemical messengers

Hormones are called as chemical messengers because they are chemical substances which are used for transmitting messages from one part the body to the other.

12. How are valuntary actions and reflex actions difference from each other?

Voluntary actions are controlled by the brain where as reflex actions are controlled by spinal cord

Voluntary action are under control of ones will, whereas reflex action are spontaneous involuntary, nerve-mediated activity produced at the unconscious level by stimulating specific receptors. The voluntary action is under control of brain,

whereas in the latter spinal cord is involved. In the voluntary action, only motor nerve and effector organs are involved, whereas reflex action involves both sensory and motor nerves and sensory and effector organs.

Involuntary actions	Reflex actions
Involuntary actions takes place without the conscious choice of an organism.	Reflex actions are those actions takes place along with stimuli.
These actions are controlled by the medulla oblongata or the mid brain.	These actions are controlled by spinal cord.
The speed is relatively slower.	The speed is very quick.
Ex : Heart beating	Ex :Blinking of eyes.

13. Why is it advised to use iodized salt in our diet.

It is advised to use iodized salt in our diet because it is necessary for the thyroid gland to make thyroxin harmone.

14. How nervous impulses travel in the neuron.

The transmission of a nerve **impulse** along a **neuron** from one end to the other occurs as a result of electrical impulses.

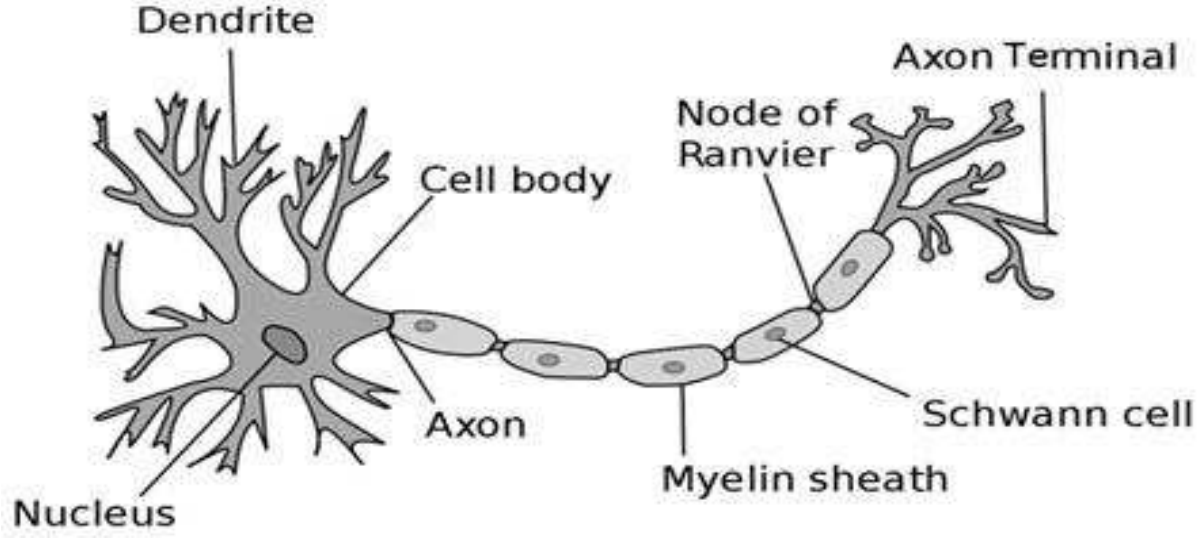
The electrical impulse sets off the relese of some chemicals. These chemicals cross the gap and start a similar chemical impulse in a dendrite of a next neuron.A similar synapse finally allows delivery of such impulses from neuron to other cells

15. Which is the largest part of the brain? What are its functions.

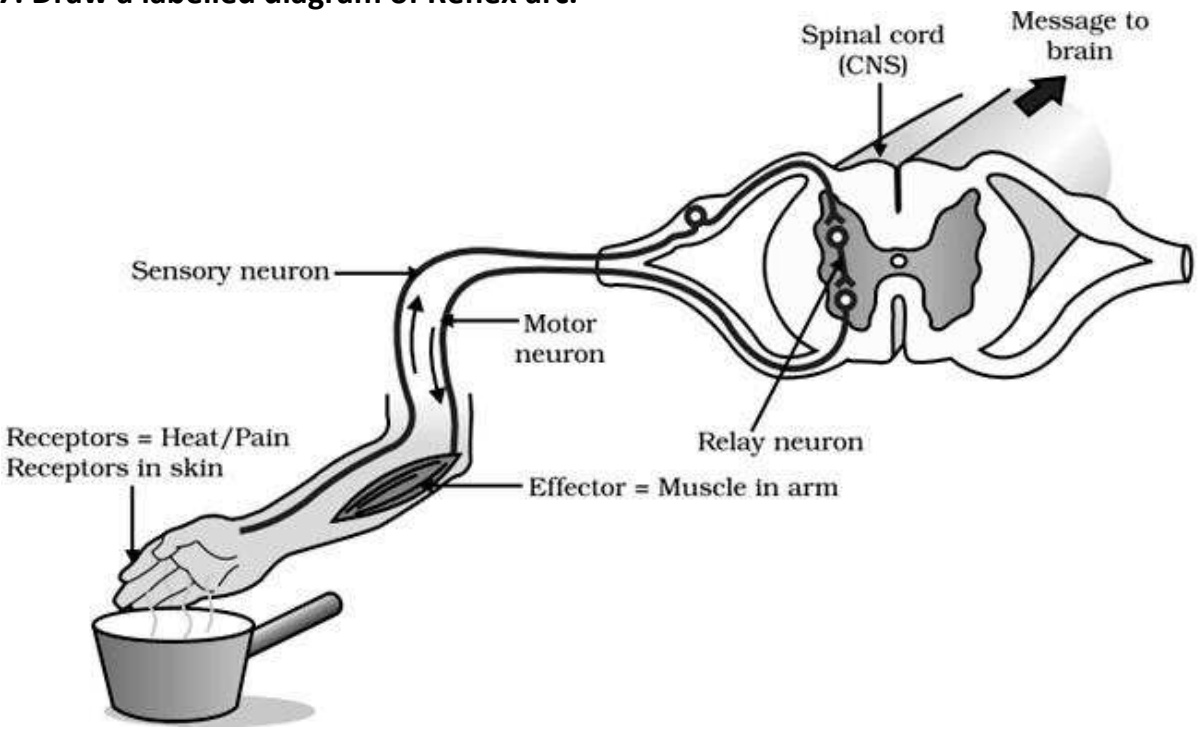
The largest part of the brain is cerebrum.

Control the movement of voluntary musceles. It is the main thinking part of the brain

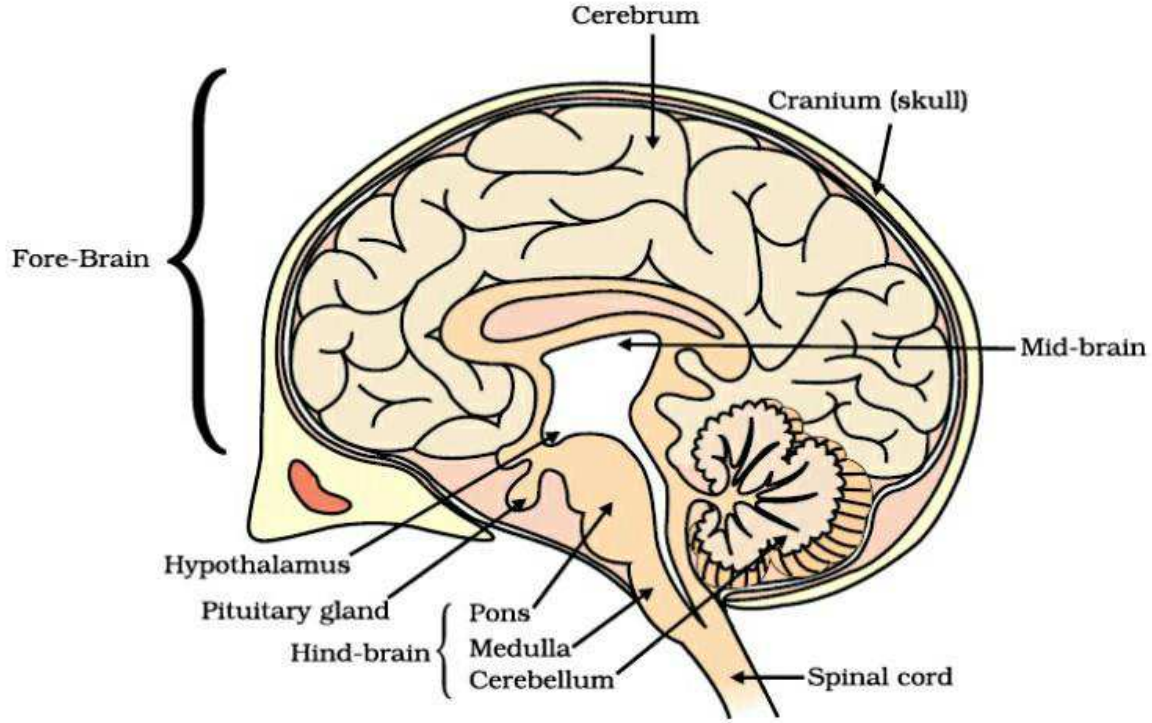
16. Draw a labelled diagram of a basic unit which carry impulse.



7. Draw a labelled diagram of Reflex arc.



18. Draw a labelled diagram of Human brain



19. a) Which plant hormone is present in greater concentration in the areas of rapid cell division?

Auxins

b) Give one example of a plant growth promoters and a plant growth inhibitor.

plant growth promoter: Cytokinins

plant growth inhibitor: Abscisic acid

c) How auxins help in bending of plant stem towards light.

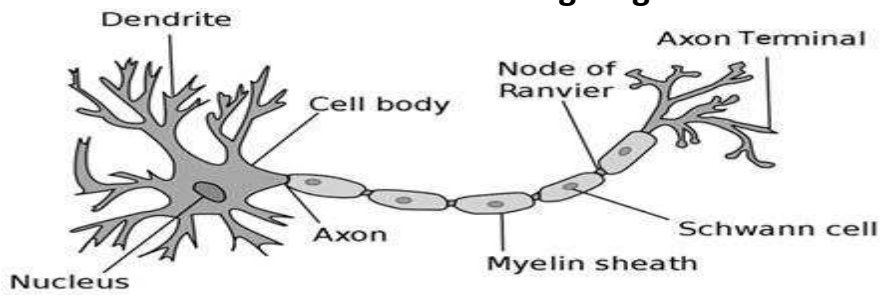
Auxins diffuses towards the shady side of the shoot stimulates the cells to grow longer on the side of the shoot which is away from the light. Thus the plant appears to bend towards light.

20. Which gland is master gland? What does it release. Write its function.

Pituitary gland is called master gland.

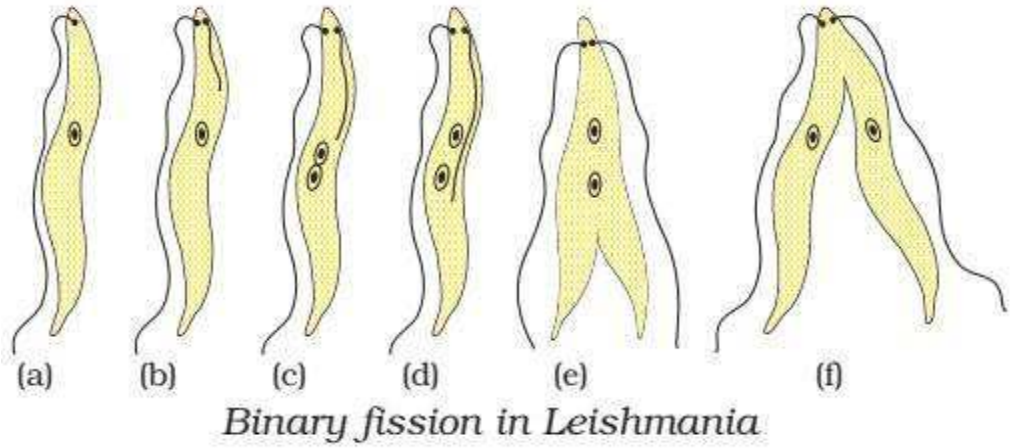
Pituitary gland is called master gland because it produces harmones that control other glands and many body functions including growth.

21. The correct order of the following diagram



a) ABCD b) DBCA c) BCDA d) DCBA

22. The correct order of binary fission in Leishmania is



Binary fission in Leishmania

a) abcdef b)fedcba c) bcadfe d) cbadef

23. The correct order of the following diagram

a) ABCD b) ADBC c) ACBD d) DCBA

24. Reproduction in planaria

a) Budding b) fission c) regeneration d) fragmentation

ANS - c) regeneration

25. The hormone secrested in puberty stage of male

a) Adrenalin b) insulin c) Testosterone d) estrogen

ANS - c) Testosterone

VI. Answer the following

1. The breakdown of pyruvate to give carbondioxide, water and energy takes place

a) Cytoplasm b) Mitochondria c) Chloroplast d) Nucleus

ANS - b) Mitochondria

2. The organisme which breakdown the food materials outside the body and then absorbs it

a) bread mould b) yeast c) mushroom d) above all

ANS - d) above all

3. when guard cell swell so

a) water flows into the cell

b) Stomata opens

c) water flows out of the cell

d) stomata close

a) A and B b) C and D c) B and D d) A and D

ANS - **a) A and B**

4. When we breathe in, we lift our ribs out and diagphragm becomes

a) swells b) flattens c) shrink d) enlarged

ANS - b) flattens

5. Nitrogenous wastes formed in animals

a) urea b) uric acid c) Ammonia d) all the above

ANS - d) all the above

6. What are the two end products of anaerobic respiration?

The two end products of anaerobic respiration are ethanol and Carbon dioxide.

7. **What are the enzymes secreted by the stomach?**

The enzymes secreted by the stomach are pepsin

8. Why plant respiration is slower than animal respiration?

Plant respiration is slower than animal respiration because animals need much more energy for their activities such as movement,metabolic process and to maintain the body temperature.activities. plants do not require energy for these activities.

9. What will happen to the plants if its xylem is removed?

If xylem is removed upward conduction of waterwill stop leading to wilting of leaves and ultimately causes the death of a plant

10.**Which pancreatic enzymes is effective in digesting proteins?**

Trypsin is the pancreatic enzyme which is effective in digesting proteins.

11. Pancreas is called as both endocrine and exocrine gland why?

Pancreas is called as both exocrine gland as it has a duct to store pancreatic juice secreted by the pancreas and Pancreas is called endocrine gland because it does not have a duct to store the harmones insulin and glucagon which are directly released to blood stream.

12. Guard cells help the stomata in opening and closing. How?

The guard cells swell when water flows into them causing the stomatal pore to open. Similarly the pore closes if the guard cells shrinks when water flows out of them.

13. Why does water enter continuously into the root xylem?

At the roots cells in contact with soil actively take up ions. This creats a difference in the concentration of these ions between the root and the soil. There fore water moves into the root from the soil to eliminatw this difference. Hence water enter continuously into the root xylem.

14. What is role of saliva in the digestion of food?

Saliva contains the enzyme called salivary amylase that breaks down starch which is acomplex molecule into simple sugar.

15. What is the difference between aerobic and anaerobic respiration?

aerobic respiration	**anaerobic respiration**

Break down of glucose using Oxygen to give carbondioxide, water and energy is called aerobic respiration	Break down of glucose jn the absence of Oxygen to give Ethanol, carbondioxide, and energy is called anaerobic respiration

16. What advantage over an aquatic organisms does a terrestrial organism have with regard to obtaining oxygen for respiration?

Terrestrial organisms obtain oxygen for respiration from the atmosphere where oxygen content is high where as aquatic organisms obtain oxygen dissolved in water which is very low when compared to the amount in atmosphere. Aquatic animals breath faster to obtain as much oxygen as possible. On other hand terrestrial animals does not have to breath faster and spends less energy than aquatic organisms.

17. Write the function of each of the following

a) blood vessels b) blood platelets c) lymph d) RBC

a) blood vessels : Arteries are the vessels which carry blood away from the heart to various organs of the body.

Veins collect the blood from different organs and bring it back to heart .

The smallest vessels have walls which are one cell thick and are called called capillaries.

The capillaries then join together to form veins that convey the blood away from the organs or tissue.

b) blood platelets :

platelets help to clot the blood at the points of injury and plug the leaks

c) lymph : Lymph carries digested and absorbed fat from intestine and drains excess fluid from extra cellular space back into the blood.

d) RBC : Oxygen is carried by the red blood corpusceles to all the cells of the body.

18. Herbivores need longer small intestine give reason.

Herbivores need longer small intestine to allow the cellulose to be digested.

19. warm blooded animals require oxygenated blood for circulation. give reason

Warm blooded animals require oxygenated blood for circulation because these animals constantly use energy to maintain their body temperature. Oxygenated blood circulation allows a highly efficient supply of oxygen to the body.

20. What is translocation? Which tissue takes part in this process.

The transport of the soluble products of the photosynthesis is called translocation. Phloem tissue takes part in this process.

21. Explain the process of glycolysis in

a) presence of oxygen b) in the absence of oxygen c) when the lack of oxygen

a) presence of oxygen : The break down of glucose, a six carbon molecule into a three carbon molecule called pyruvate. This process takes place in cytoplasm. Break down of pyruvate to CO_2, water and release of energy.

b) in the absence of oxygen : The break down of glucose, a six carbon molecule into a three carbon molecule called pyruvate. This process takes place in cytoplasm. Break down of pyruvate to ethanol, CO_2 and release of energy.

c) when the lack of oxygen : The break down of glucose, a six carbon molecule into a three carbon molecule called pyruvate. This process takes place in cytoplasm. Pyruvate is converted into lactic acid which is also a three carbon molecule. This builds up lactic acid in our musceles during sudden activity causes

cramps.

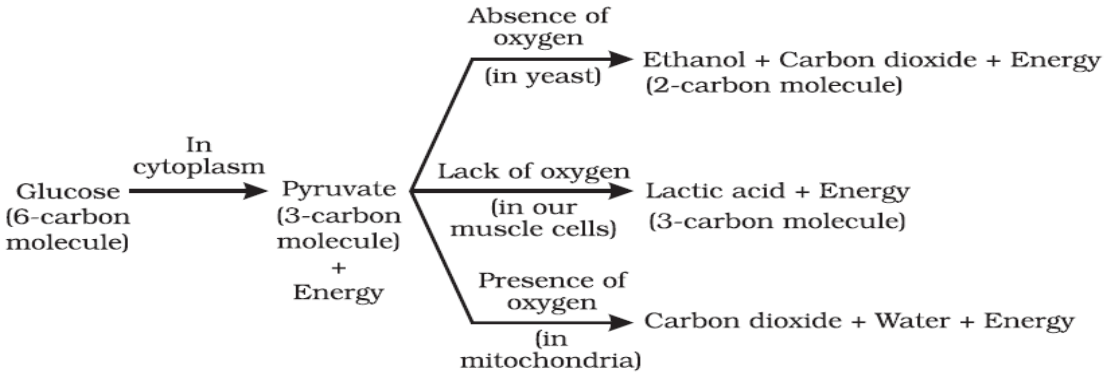
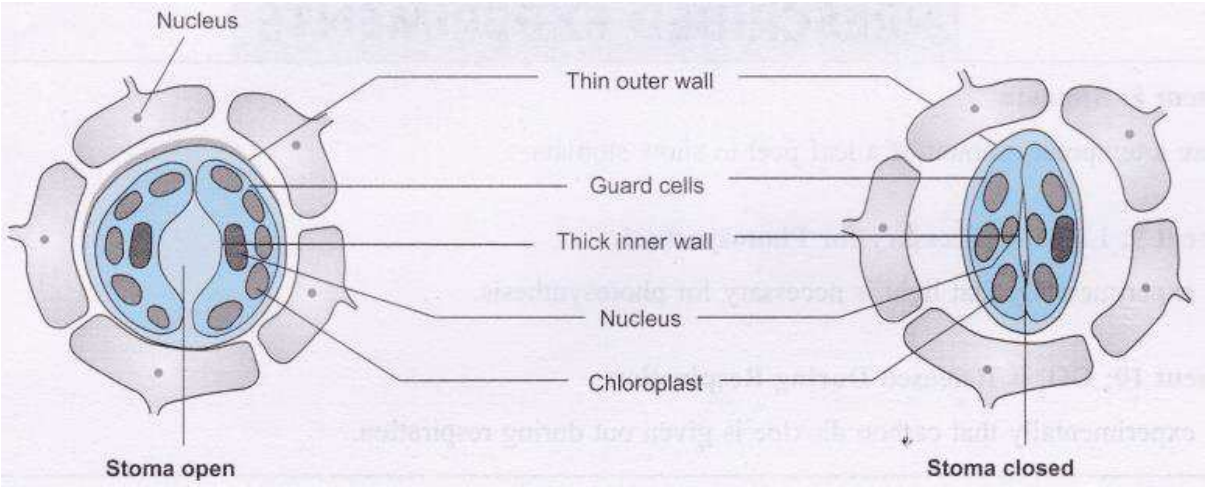


Figure 6.8 *Break-down of glucose by various pathways*

22. What is stomata? Draw a labeled diagram of opening and closed stomata

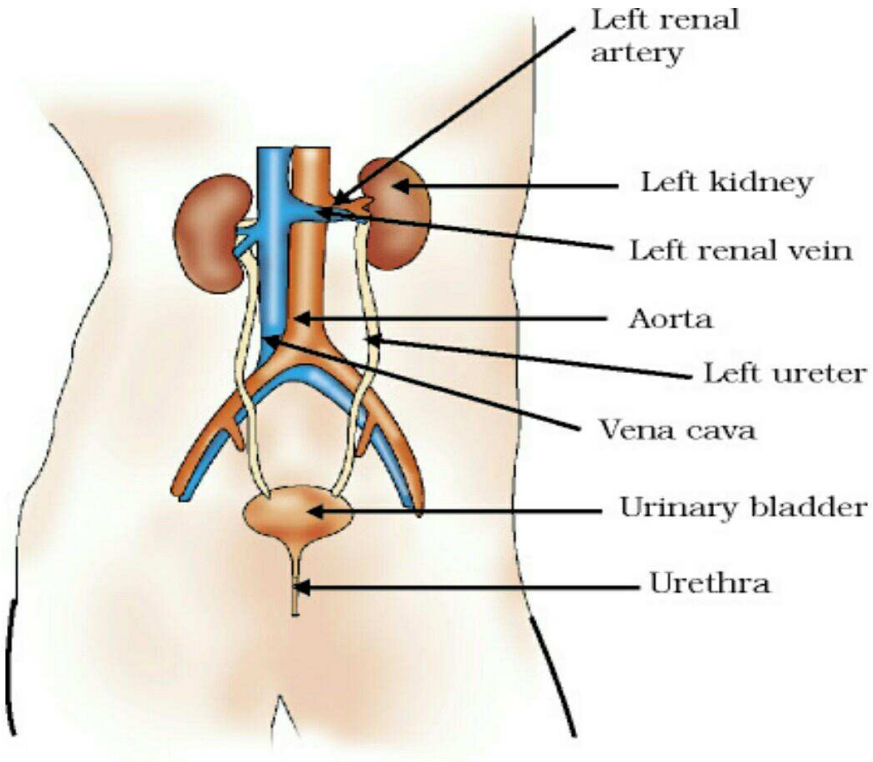


(draw a Neat labeled diagram of the plant structure which exchange the gasses)

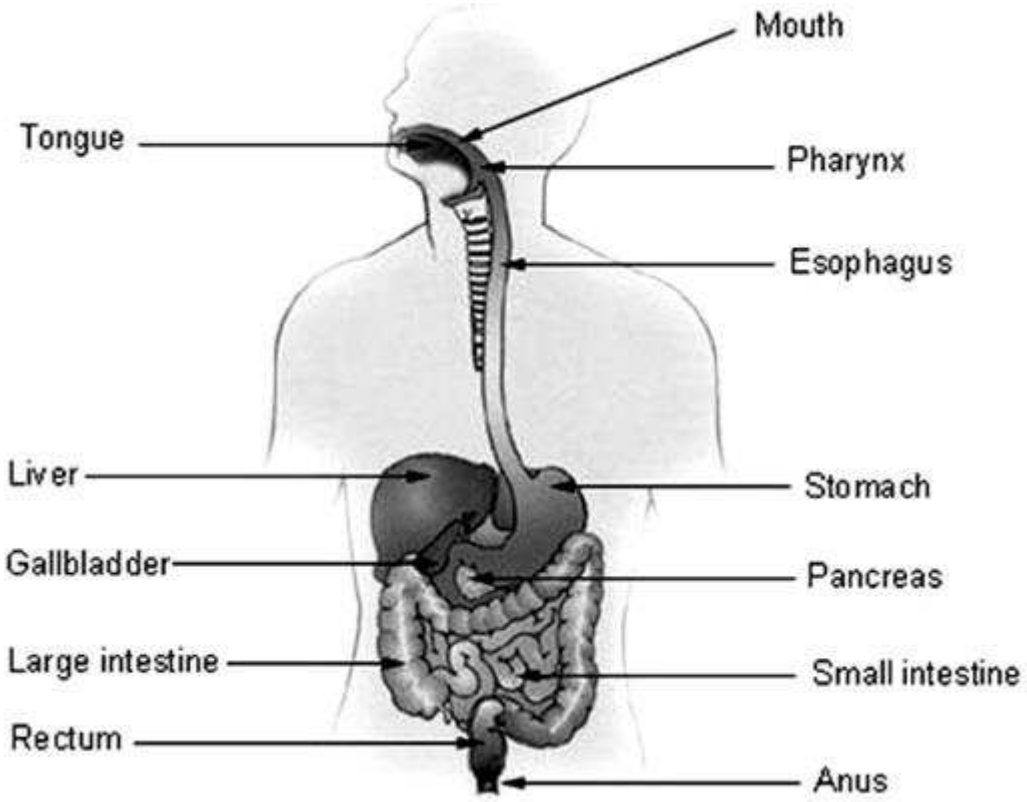
23. State the difference between autotrophic nutrition and heterotrophic nutrition.

Autotrophic nutrition	Heterotrophic nutrition
1.food is prepared from CO_2,water and sunlight	1.Food is Obtained from other organisms.
2.Chlorophyll is required	2.Chlorophyll is not required
3.All green plants and some bacteria have this type of nutrition	3.All animals and fungi bacteria have this type of nutrition
4.Food is generally prepared in day time	4.Food can be obtained at all time.

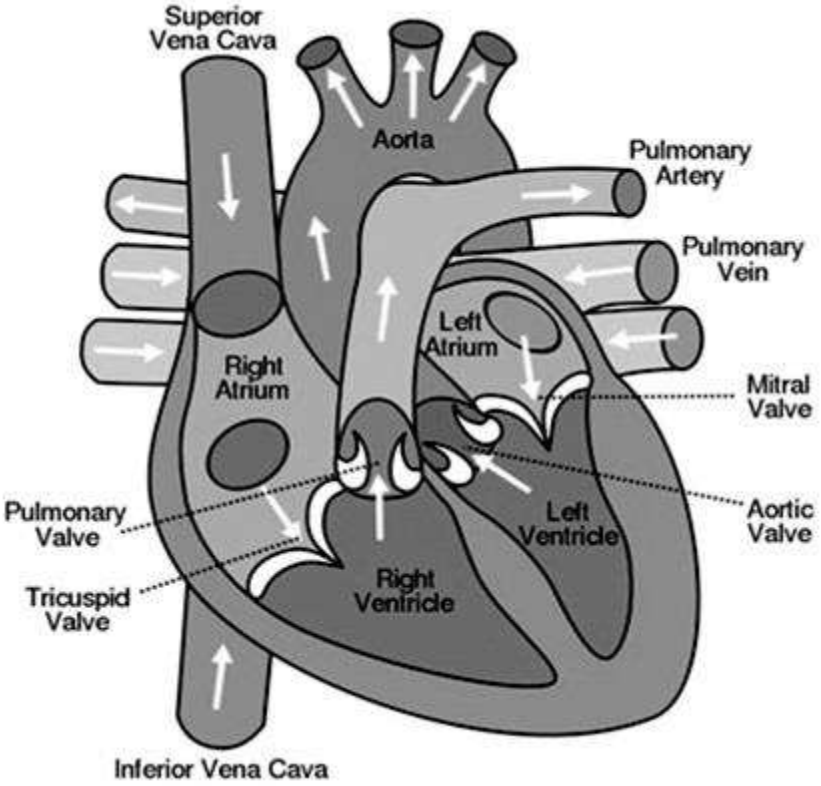
24. Draw a neat diagram of human organ system which removes nitrogenous wasters from the blood



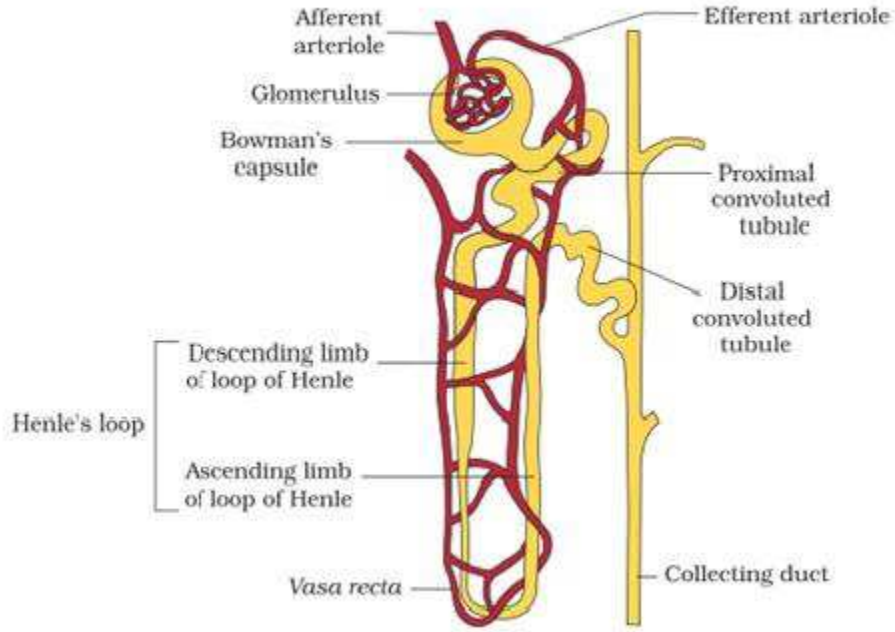
25. Draw a neat diagram of human alimentary canal label the part which secreter pepsin lipase.



26. Draw a neat labeled diagram of schematic sectional view of the human pumping organ



27. Draw a neat diagram of Nephron label the part where selective reabsorption of salts & water takes place



28. How has the method of artificial selection by humans helped in the evolution of different vegetables ? explain in brief giving an examples.

29. One of the example of two analogous organs can be the wings of parrot and

a) Flipper of whale
b) Foreleg of Horse
c) Front leg of Frog
d) Wings of Housefly
ANS - d) Wings of Housefly

30. An example of homologous organs is

a) our arm and a dogs fore leg

b) our teeth and an elephants tusks

c) potato and runners of gran

d) all of the above

ANS - d) all of the above

31. What is monohybrid cross?

The cross between single contrasting charector

32. Who is Father of genetics?

Mendal

33. Why is the progeny always tall when a tall pea plant is crossed with short pea plant?

The progeny always tall when a tall pea plant is crossed with short pea plant because only dominant charactorstics are expressed in F_1 generation.

34. What is Dihybrid cross?

The cross between two contrasting charectors is called dihybrid cross.

35. What is speciation?

The formation of new and distinct species in the cource of evolution.

36. What are fossils ?

The dead remains of plants and animals buried under the soil

37. What will be the sex of a child who inherits Y chromosome from his/her father?

Male

38. Define variation in relation to a species. Why is variation beneficial to the species?

A change or slight difference between parents and offsprings

Variation beneficial to the species

39. Why did mendal select pea plant for experimentation?

- **Mendel selected pea plant bcoz,**
- Pure variety are available.
- Pea plants are easy to cultivate.
- Life cycle of plants are only few months. So that result can be got early.
- Contrasting trait are observed.
- Flowers are bisexual and normally self pollinated.
- Flowers can be cross pollinated only manually.
- Hybrids are fertile.

40. What are chromosomes? Where are they located in the cell?

Chromosomes are thread-like structures located inside the nucleus of animal and plant cells.

Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA). Passed from parents to offspring

41. Differenceate acquired haite and inherited trails

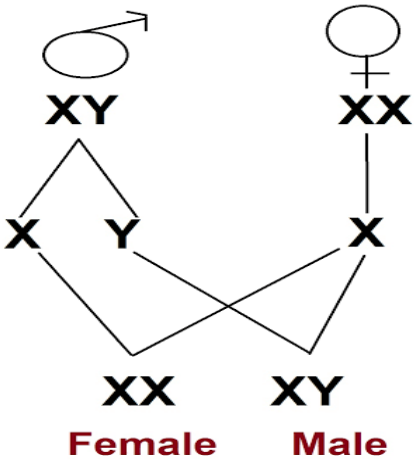
Acquired traits	Inherited Traits
Acquired traits are traits that cannot be passed to the future generations	Inherited traits are traits that are passed down from the parents
These traits develop throughout the lifetime of an individual, and the with death of that individual.	They are naturally inherited from parents.
Example- When we learn new skills, we acquiring these traits like dance or music	Example: Naturally inherited traits like attached or free earlobe and curly hair.

42. What are homologous organs? Give eg

The organs which are same origin, same structure but modified to perform different functions.

Ex: fore limbs of humans and fore limbs of birds

43. Explain the process of sex determination in human beings.



Sex Determination in Humans

- Chromosomal sex is determined at fertilization
- Sexual differences begin in the 7th week
- Sex is influenced by genetic and environmental factors
- Females (generally XX) do not have a Y chromosome
- Males (generally XY) have a Y chromosome

44. How is the equal genetic contribution of male and female parents ensured in the progeny.

There are 23 pairs of chromosomes All human chromosomes are not paired. Out of these 23 pairs, the first 22 pairs are known as autosomes and the remaining one pair is known as sex chromosomes represented as X and Y. Females have a perfect pair of two X sex chromosomes and males have a mismatched pair of one X and one Y sex chromosome.

During the course of reproduction, as fertilization process takes place, the male gamete (haploid) fuses with the female gamete (haploid) resulting in formation of the diploid zygote. The zygote in the progeny receives an equal contribution of genetic material from the parents. Out of 23 pairs of chromosomes in progeny, male parent contributes 22 autosomes and one X or Y chromosome and female parent contributes 22 autosomes and one X chromosome.

45. Explain the importance of fossies in deciding evolutionary relationships?

Studies of organ structure of the extinct species can be done to decide the evolutionary relationships by the help of fosssils.

1) The organisms that lived long ago in the past.

2) Connecting links between two groups. for example, the feather in some dinosaurs means that birds are very closely related to reptiles.

3)The development of any particular species by evaluation.

4) The time period of the organisms.

5) Simple to complex body design journey.

46. What is speciation? List four causes for speciation.

The formation of new and distinct species in the cource of evolution.

Four causes for speciation are,

1.Geographical isolation

2.Genetic drift

3.Natural selection

4.Change in DNA

5.Reduction in Gene flow.

6.Reproductive isolation

47. Briefly explain the evolution of wild cabbage.

The evolution of wild cabbage is of artificial selection rather than natural selrction.

Formers have wanted to select for very short distances between leaves.and have bred the cabbage we eat. Some have wanted to select for arrested flower development and have bred broccoli or some sterile flowers and have made the cauliflower. Some have wanted to select for swollen parts and come up with kohlrabi. Some simply looked for slightly larger leaves and come up with the leafy vegetable called kale.

48. Give two examples which undergo regeneration processes.

Hydra and Planaria

49. What is Fission? Give eg.

The process in which an organism split into two equall halves during cell division

Ex; Amoeba, Leishmania.

50. What is Fragmentation? Give Ex

Some multi cellular organisms simply breaks up into smaller pieces upon maturation and fragments grow into new individuals.

Ex: Spirogyra

51. What is Regeneration? Give Ex.

Some multi cellular organisms somehow cut or broken up into many smaller pieces, many of these pieces grow into new individuals.

Ex: Hydra and Planaria

52. What is vegetative propagation?

Parts of the plants like the root, stem and leaves develop into new plants is called vegetative propagation.

53. What is pollination?

The transfer of pollen from stamen of the flower to stigma is called pollination.

54. How variations are useful in animals?

Variation is helpful for the survival of the species over time

55. Define budding? Where does it occur?

A bud develops as an outgrowth due to repeated cell division at one specific site and whenfully mature these buds develop into tiny individuals

56. What is cross pollination? What are its advantages?

The transfer of pollen from one flower to another is called cross pollination.

cross pollination leads i) speciation

ii) The offspring are healthier.

iii) The seeds are produced in larger number and are more viable.

iV) The seeds develop and germinate properly and grow into better plants.

V) Results in new varieties because cross-pollination can be carried out between two different varieties of the same species or even two species.

57. What is (a) menstruation b) Gestation period

(a) menstruation : If the egg is not fertilized the innerlining of the uterus slowly breaks and comes out through the vagina as blood and mucus.

b) Gestation period : Fetal development **period** from the time of conception until birth. OR The development of the child inside the mothers body.

58. What are the different methods of contraception

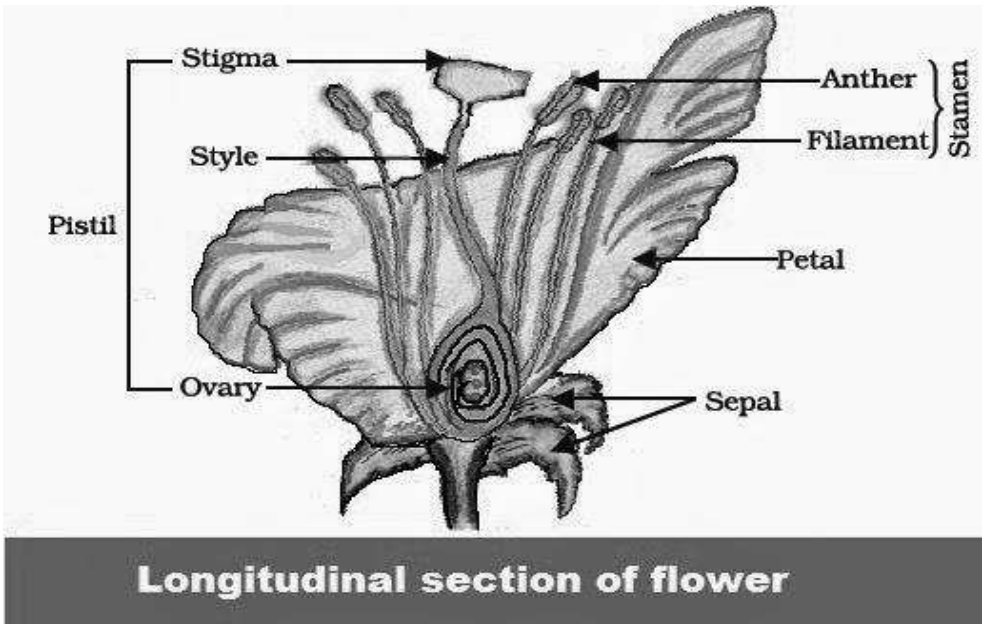
The different methods of contraception are

i) Use of condomes
ii) consuming oral pills
iii) use of copper-T
iv) surgical methods (vasectomy and tubectomy)

OR

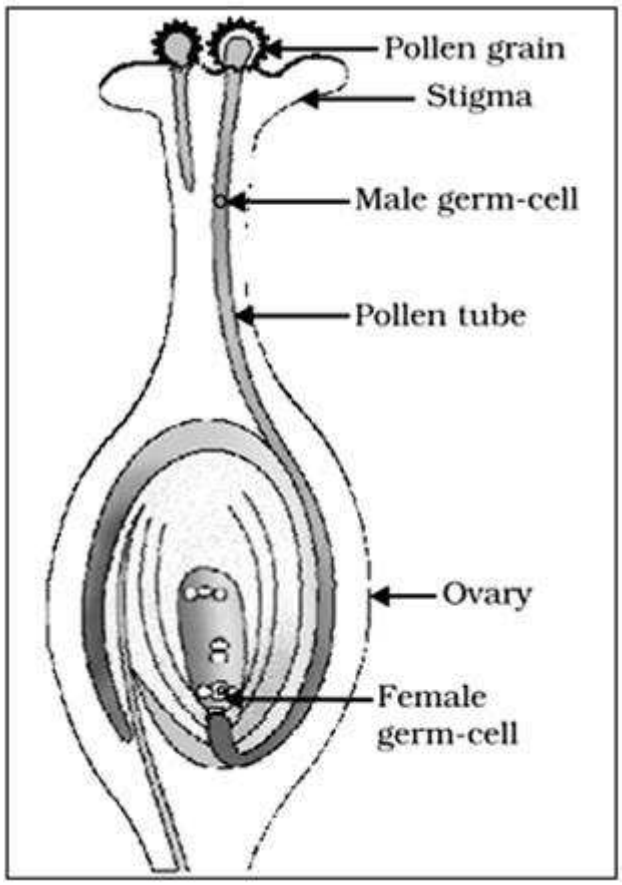
- long-acting reversible contraception, such as the implant or **intra uterine device** (IUD)
- hormonal contraception, such the pill or the Depo Provera injection.
- barrier methods, such as condoms.
- emergency contraception.
- fertility awareness.
- permanent contraception, such as vasectomy and tubal ligation.

59. Draw a labelled diagram of sexual reproductive in plants.



Longitudinal section of flower

60. Draw a labelld diagram of germination of pollen on stigma

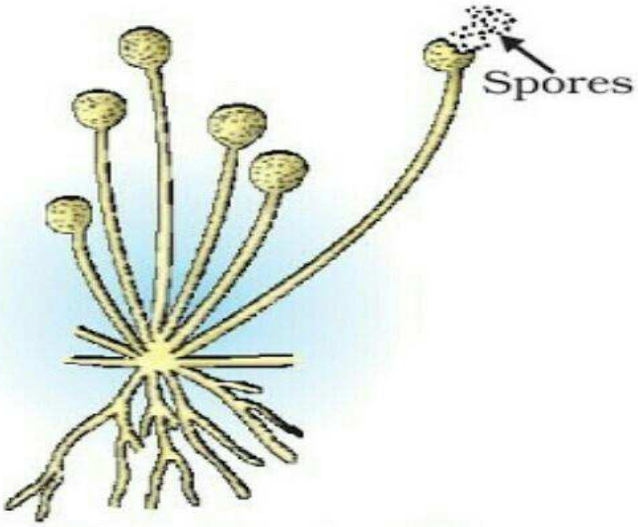


61. Illustrate the following with the help of suitable diagrams

a) Spore formation in Rhizopus

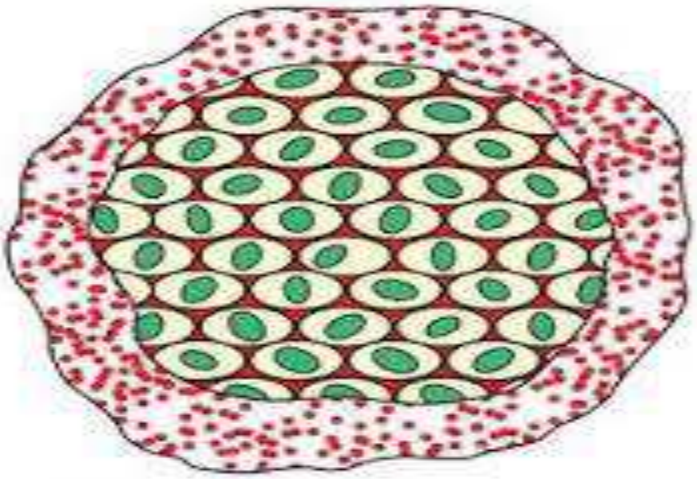
b) Multiple fission in plasmodium

a) **Spore formation in Rhizopus**



Spore formation in Rhizopus

b) Multiple fission in plasmodium



Multiple fission in Plasmodium