SUBJECT: GENERAL SCIENCE

MODEL QUESTION PAPER 19-20

SET– 1

Marks: 80

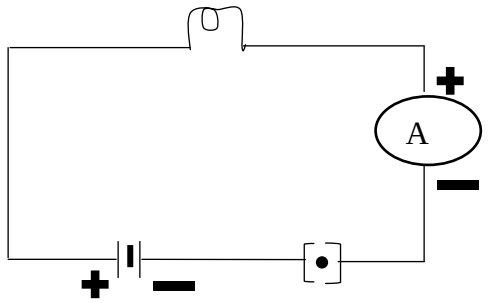
Four alternatives are provided for each question. Choose the most appropriate alternative and write it with its alphabet.

1x8=8

1. Transport of food from leaves to other parts of a plant is.
   A. **Translocation** B. Transpiration
   C. Osmosis D. Diffusion

   A. Translocation

2. In the figure, the device labelled as 'A' is _____.



   A. bulb B. Key
   C. Ammeter D. Battery**.**

   C. Ammeter

3. The human eye forms the image of an object at its _____.
   A. Cornea B. Iris
   C. Pupil **D. Retina**

   D. Retina

4. Butanone is a four carbon compound with the functional group
   A. Carboxylic acid B. Aldehyde

C. Ketone D. Alcohol

C. Ketone

5. Part of plant that shows positively geotropic movement.

A. Leaf B. Root

C. Stem D. Flower

B. Root

6. A balanced chemical equation always obeys.

A. Law of conservation of mass B. Law of conservation of Energy

C. Law of conversation of Thermal Equilibrium D. All the above

7. Components of Brass

A. Cu + Zn B. Cu + Sn

C. Zn + Sn D. Pb +Sn

A. Cu + Zn

8. The major pollutant from vehicles is

A. Carbon dioxide B. Carbon monoxide

C. Sulphur dioxide D. Hydrogen sulphide

B. Carbon monoxide

Answer the following questions.

1x8=8

9. What happens when a current carrying conductor is placed in a magnetic field?

when a current carrying conductor is placed in a magnetic field it experiences a mechanical force.

10. What are Homologous Series ?

A series of compounds in which the same function al group substitutes for hydrogen in a carbon chain.

11. Write the lens formula and give the meaning of the symbols used.

The lens formula : 1/f=1/v-1/u

f= focal length of the lens

v=image distance

u= object distance.

12. **What are fossil fuels**?

Fossils are the dead remains of plants and animals buried under the soil.

13. **The flow of energy in a food chain is unidirectional. Why**?

The energy captured by the autotrophs does not revert back to the solar input and the energy passes to the herbivores does not come back to the autotrophs.

It moves progressively thorough various trophic levels. It is no longer available to the previous level . Hence the flow of energy in a food chain is unidirectional.

14. Write the products obtained when magnesium reacts with dilute hydrochloric acid.

when magnesium reacts with dilute hydrochloric acid magnesium chloride is formed with the liberation of hydrogen.

$Mg + HCl \text{ ----------} > MgCl + H_2$

15. Can copper displace iron from sulphate? Justify your answer.

Copper can not displace iron from sulphate solution.

Copper is less reactive than iron therefore, copper can not displace iron from sulphate solution.

16. What is the function of bile in the digestion of food?

Bile juice make the food alkaline for the pancreatic enzymes to act.

Answer the following

2x8=16

17. What is Isomerism. Give An example.

Compounds having same molecular formula but different structural arrangements are called isomers. This phenomenon is called isomerism.

[OR]

What are Saturated Hydrocarbons Give an Example.

Hydrocarbons which are having single bond between carbon atoms are called Saturated Hydrocarbons.

Ex : methane, ethane, propane,...

18. **What potential difference must be applied across a 10Ω wire in order that a current of 2.5A flows through it**.

R=10Ω

I=2.5 A

V= ?

V=IR

V=2.5 x 10

V=25 v

[OR]

Calculate the amount of charge that flows through a conductor when a current of 5A flows through it for 2 minutes.

Q= ?

I=5A

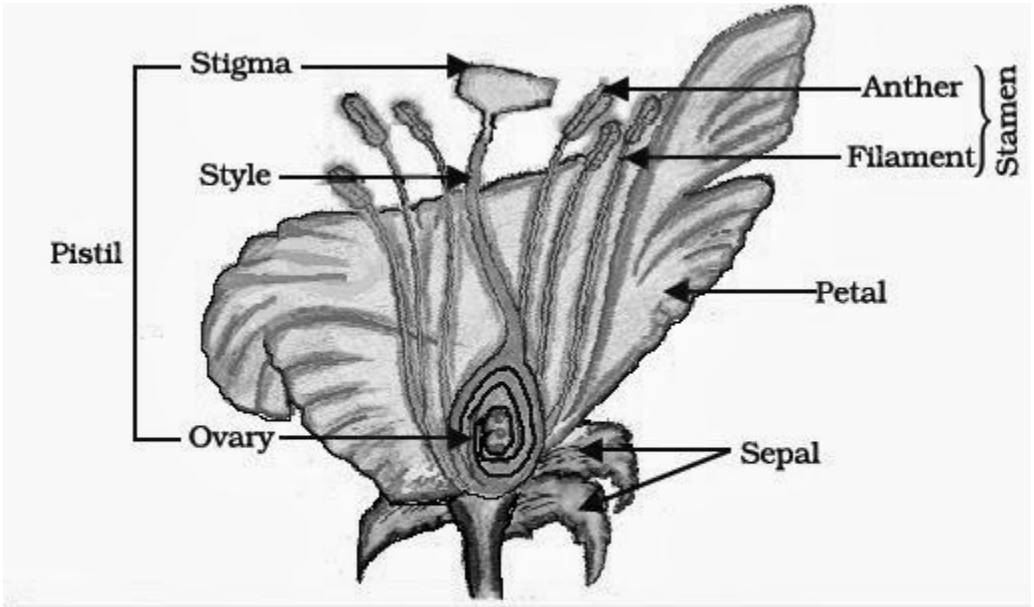
t=2 min =2x60=120 sec

Q= It

Q=5x120

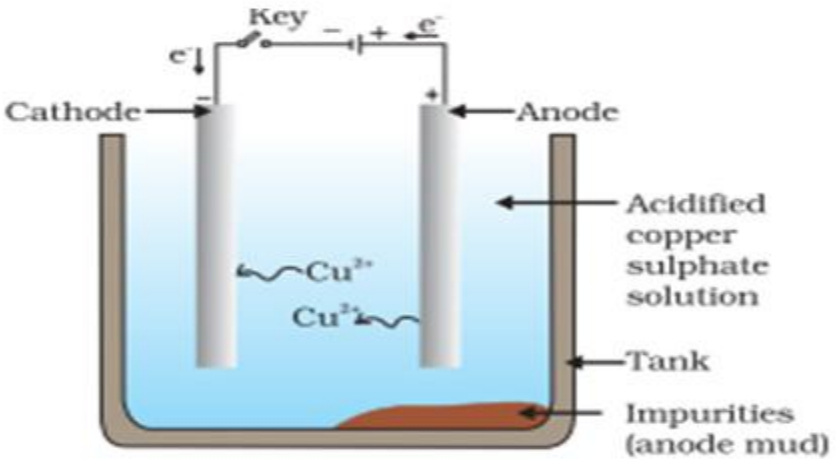
Q=600C

19. **Draw the diagram of a flower.Label the female reproductive parts of it.**



Longitudinal section of flower

20. Draw and label the diagram showing “Electrolyte refining of copper”



21. Explain the process of photosynthesis in plants.

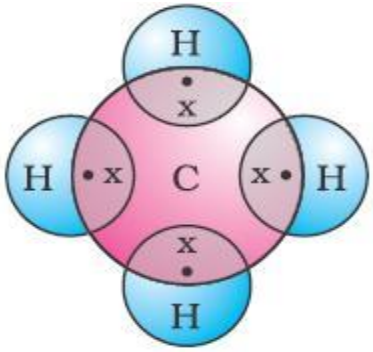
1. Absorption of light energy by chlorophyll.
2. Conversion of light energy into chemical energy.
3. Splitting of water molecule into hydrogen and oxygen.
4. Reduction of carbon dioxide into carbohydrates.

22. **What is presbyopia? How can it be corrected**?

With ageing the near point gradually receeds away. They find to difficult to see nearby objects comfortably and distinctly without corrective eye-glasses.

23. **Explain the formation of covalent bond taking example of methane and write the electron dot formula**.

Hydrogen has a valancy 1and carbon is tetravalent. Carbon shares these electrons with four atoms of hydrogen. Since electrons are shared between atoms and this kind of bonding is called covalent bonds.



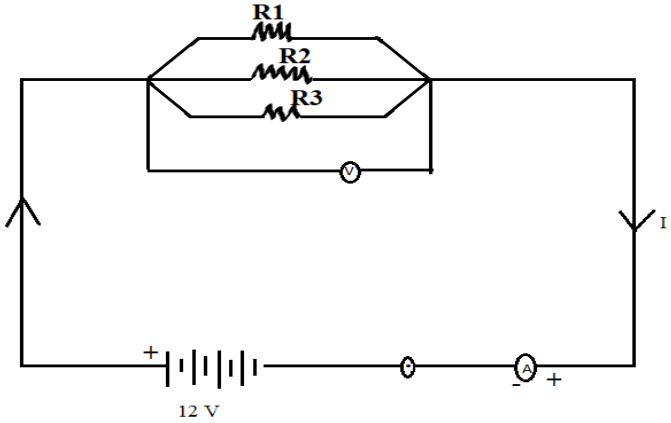
24. **Write the properties of biogas that make it a good fuel**.

1. Biogas is a clean fuel which do not leave any residue on burning.
2. Biogas do a large amount of work per unit mass.
3. Biogas do not produce any smoke.
4. It is to easy to produce using cowdung.

these properties of biogas that make it is a good fuel

Answer the following **3x9=27**

25. In the circuit diagram given below suppose the resistors R_1, R_2 and R_3 have values 5Ω 10Ω and 30Ω respectively, which are connected to a battery of 12V. Calculate (a) the current through each resistor and also the total current in the circuit



a) The current through each resistor

R_1= 5Ω , R_2 = 10Ω , R_3 =30Ω, v=12v,

I_1= V/ R_1

=12/5=2.4 A

I_2= V/ R_2

12/10=1.2A

I_3= V/ R_3

12/30=0.4A

I =I1+I2+I3

I=2.4+1.2+0.3

I=3.9 A

[OR]

Four Resistors 5Ω, 6Ω, 4Ω and 8Ω are connected in parallel. Find the resistance of the circuit.

1/R=1/R_1+1/R_2+1/R3

=1/5+1/6+1/4+1/8

$\frac{24+20+30+15}{120}$

$\frac{89}{120}$

R= 120/89

26. **Sour substances are effective in cleansing tarnished sour substances**.

Sour substances are effective in cleansing tarnished sour substances because they contain acids, they react with the oxide layer on tarnished metal and remove it.

27. Based on the usage Of Oxygen differentiate between Aerobic and Anaerobic respiration.

Organisms use oxygen to breakdown glucose into carbondioxide,water and energy is called aerobic respiration.

Organisms breakdown glucose in absence of oxygen into ethanol, carbondioxide and energy is called anaerobic respiration.

[OR]

Compare the functioning of Alveoli in the Lungs And Nephrons in the kidney with respect to their Structure and functioning

Alveoli are balloon like structures in the lungs. The alveoli provide provide a surface for the exchange of gasses. The walls of the alveoli contain an extensive network of bllod vessels.

The blood brings carbon dioxide from rest of the body for release into the alveoli and oxygen in the alvelor air is taken up by the blood in the alveolar blood vessels.

The basic filtration units in the kidney are called nephrons. They packed close together. Nephron is a cluster of very thin walled blood capillaries. Each capillary cluster in the kidney is associated with the cup shaped end of a coiled tube called bowman's capsulethat collects the filtrate.

The substances such as glucose, amino acids, salts and major amount of water selectively reabsorbed as the urine flows along the tube.

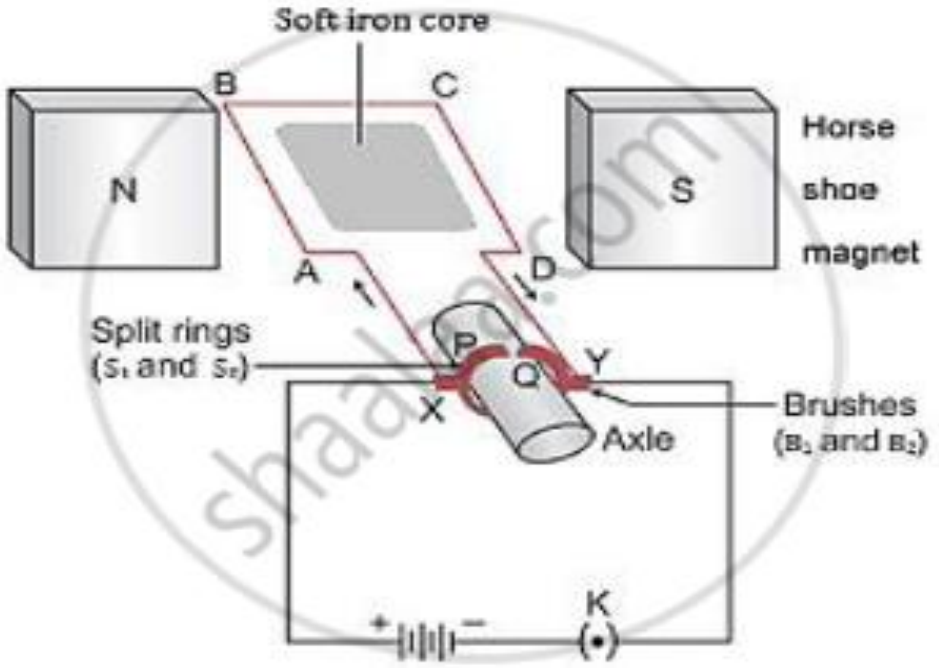
28. Aqueous solutions of sodium sulphate is mixed with aqueous solution of barium chloride. Identify the type of chemical change and write the balanced chemical equation.

When aqueous solutions of sodium sulphate is mixed with aqueous solution of barium chloride react to form sodium chloride and barium sulphate.

It is a double displacement reaction

$Na_2SO_4 + BaCl_2$ ----------> $2NaCl + BaSO_4$

29. **Draw a labelled diagram of an electric motor. Explain its principle and working**.



Principle of motar : When a current carrying conductor placed in a magnetic field it experiences a force causing the conductor to move.

Working of motar: Current in the arm AB of the coil flows from A to B, in the arm CD it flows from C to D that is opposite to the direction of current through arm AB. On applying Fleming left hand rule for the direction of force on current carrying conductor in a magnetic field. We find the force acting on the arm AB pushes downwards . while the arm CD pushes upwards. At half rotation Q makes contact with the

brush X and P with the brush Y. Therefore the current in the coil gets reversed and flows along the path DCBA. Now the arm AB is pushed up while CD pushed downwards. The reversing of the current is repeated at each half rotation giving rise to a continuous rotation of the coil and to the axle.

30. The atomic number of an element is 18. Write its electronic configuration to which period, group and block does it belong. Mention its chemical nature.

The element is argon,

$18=1s^2 2s^2 2p^6 3s^2 3p^6$

It belongs to 3^{rd} period

It belongs to 18^{th} group

It belongs to p block.

Outer most orbit is completly filled hence it is a noble gas.

[OR]

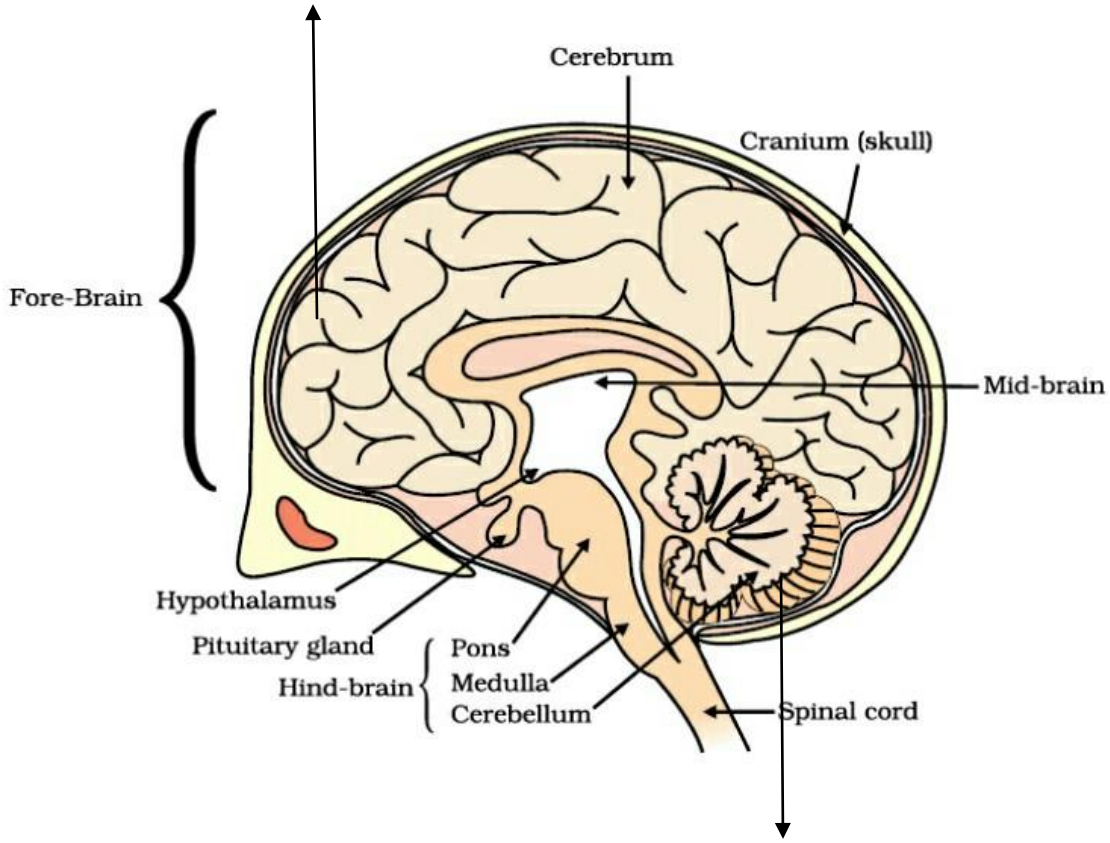
Germanium and silicon are called as metalloids. Give reason. Where do you find these elements in the modern periodic table.

Germanium and silicon are called as metalloids because they exhibit both the properties of metals and non-metals. These elements are placed between metals and non-metals in a zig-zag line.

31. Draw the longitudinal section of brain.

a) label the part involved in maintaining equilibrium of the body.
b) label the part which is the seat of memory, thinking.

label the part which is the seat of memory, thinking.



label the part involved in maintaining equilibrium of the body.

32. **What is magnetic field? Write the properties of magnetic field lines**.

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.

33**. Suggest some changes in your home in order to be eco-friendly**.

1.Switch off unnecessary lights and fans when.
2. use less water
3.grow plants in front of the home.
4. do not waste the food
5. do not carry single use plastic to home.

[OR]

Explain about the 5 R you have learnt in your daily life to save environment.

Refuse: I refuce the plastic bag offered by the shopkeeper.

Reduce: I switch off unnecessary lights and fans

Reuse: I use the things such as bottles and plastic bags again again instead of throwing or recycling.

Repurpose: I use the cracked cups and buckets to grow plants.

Recycle: I collect the plastic, glass and metal items for recycle.

Answer the following **4x4=16**

34. **How do Mendel's experiments show that traits are inherited independently?**

Mendel observed that, when peas with more than one trait were crossed, the progeny did not always match the parents. This is because different traits are inherited independently

Mendal crossed between tall and short plants. In F1 generation all are tall, but in F_2generation one quarter of them are short..This indicates that both the tallness and shortness traits are inherited in the

F_1 plants .So Mendal concluded that traits are inherited independently.

♀ \ ♂	T	T
t	Tt	Tt
t	Tt	Tt

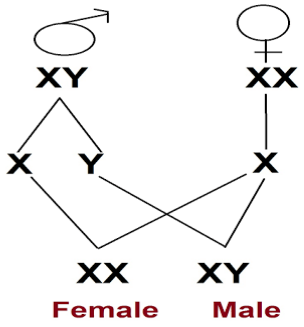
OR

Explain how the sex of the Child is determined in Human beings ?

Females have a perfect pair of two X sex chromosomes and males have a mismatched pair of one X and one Y sex chromosome.

A child who inherits an X chromosome from father will be a girl and one who inherit Y chromosome from father will be a boy

The sex of the child is determined by what they inherit from their father.



35. **A substance 'X' is used in the kitchen for making tasty crispy fries. It is also an ingredient of antacid. Name the substance 'X'. How does it help to make cakes and bread soft and spongy? What is the P^Hvalue of 'X'?**

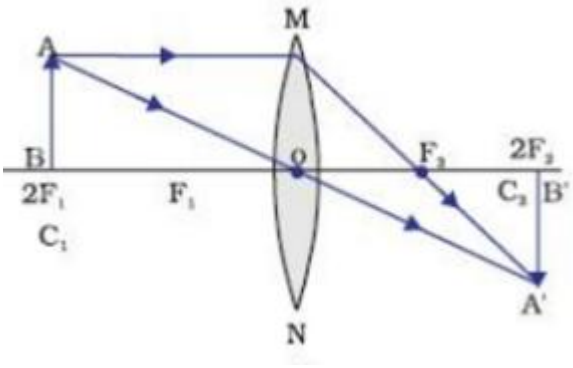
The substance X is sodiumbicarbonate / baking soda.

Sodiumbicarbonate / baking soda is mixed with a mild edible acid such as tartaric acid is called baking powder.

When baking powder is heated or mixed in water carbon dioxide is produced this cause bread or cake to rise making them soft and spongy.

The pH value of sodiumbicarbonate / baking soda is 9

36**. Draw ray diagram to show the image formation by convex lens when the object is placed at 2F and describe the nature, position and relative size of the image formed.**



- Image is formed at $2F_2$
- It is real, inverted and of same size.

37**. Why does the sun appear reddish early in the morning and appear white during mid-day?**

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.

Light from the sun over head travel relatively shorter distance, only a little of the blue and violet colours are scattered. Therefore the sun appear white during mid-day

Answer the following

1x5=5

38. How does the reproduction help in providing stability to population of species.

Reproduction is the only means to ensure the continuity of a species. By reproduction, organisms produce large number of new individuals out of which several get perished and only some survive. These surviving organisms replace the naturally dying members of the, population.It helps in providing stability in the ecosystem by producing new individuals, thereby, balancing the one's that are perished. It replaces the older population with the new population and thus maintains a balance, thereby, ensuring the survival of the species. Reproduction helps in creating variations among genome and populations. It thus maintains a balance in the universe. It is the only means to enhance the continuity of species.

SUBJECT: GENERAL SCIENCE
MODEL QUESTION PAPER-19-20
SET– 2

Marks: 80

Four alternatives are provided for each question. Choose the most appropriate alternative and write it with its alphabet. 1x8=8

1. The part of the plant which helps in osmo-regulation
   A. Stem B. Root
   C. Leaves D. All the above.

   D. All the above.

2. The equation form of ohm's law is
   A. $V=\frac{I}{R}$ B. R=VI
   C. V=RI D. $I=VR^2$
   C. V=RI
3. Red coloured light is used in traffic signals to indicate the vehicles to stop, because compared to other colours red light.
   A. has high frequency B. Scatters more
   C. has less wave length D. Scatters less
   D. Scatters less
4. A red brown gas is released on heating lead nitrate. It is an example of
   A. Combination reaction B. Oxidation reaction
   C. Decomposition reaction D. Reduction reaction
   C. Decomposition reaction
5. Plant that responds to touch
   A. Sunflower B. Grass
   C. Lotus D. Mimosa

   D. Mimosa

6. A metal is obtained from its oxide.
   A. Calcination **B. Reduction**
   C. Roasting D. Oxidation

B. Reduction

7. Ethanoic acid is also known as

   A. Acetic acid B. Formic acid

   C. Citric acid D. Nitric acid

   A. Acetic acid

8. Best way to get rid of non-biodegradable wastes is by.

   A. Burying B. Burning

   C. Recycling D. Dumping

   C. Recycling

Answer the following questions. **1x8=8**

9. **State the laws of reflection of light.**
   1. The angle of incidence is equal to the angle of reflection.
   2. The incident ray, the normal to the mirror at the point of incidence and the reflected ray all in the same plane.
10. **What is hydrogenation?**

    Addition of hydrogen to the unsaturated hydrocarbons is called hydrogenation.
11. **What is the function of a split ring in an electric motor?**

    Split ring in an electric motor works as commutator.
12. **What is biomass energy**

    The energy obtained by the plant animal waste is called biomass energy.
13. **Dumping of Non-biodegradable wastes reduce crop yield. Why?**

    Dumping of Non-biodegradable wastes reduce crop yield because it pollutes soil and decreases the soil fertility
14. **Write the products obtained when zinc reacts with dil.sulphuric acid**.

    When zinc reacts with dil.sulphuric acid zincsulphate is formed with the liberation of hydrogen.
15. **Can rusting of iron taken place in distilled water?**

    Distilled water does not contain dissolved oxygen therefore rusting of iron do not take place in distilled water.
16. **What is the role of acid in our stomach?**
    1. Acid in our stomach creates acidic medium which facilitates the action of the enzyme pepsin.

2. Acid in our stomach kills any harmful bacteria present in the food.

Answer the following.

2x8=16

17. **Explain the mechanism of the cleansing action 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.

[OR]

A hydrocarbon contains 4 hydrogen atoms. Give the molecular formulas if it is an a) Alkane b) Alkene c) Alkyne

A hydrocarbon contains 4 hydrogen atoms is methane.

Its molecular formula is CH_4.

It is alkane.

18. **An object is placed at a distance of 10cm from a convex mirror of focal length 15cm. Find the position and nature of the image.**

u= -10cm
f=15cm
v= ?
1/f=1/v+1/u
1/15=1/v-1/10
1/v=1/15+1/10
1/v=5/30
1/v=1/6
V=6 cm
m= -v/u
=-6/-10

=0.6

Virtual image, diminished image.

[OR]

An object 4.0cm in size is placed at 25.0cm in front of a concave mirror of focal length 15.0cm. At what distance from the mirror should a screen to be placed in order to obtain a sharp image?

h=4 cm

u= -25 cm

f= -15 cm

v= ?

1/f=1/v+1/u

-1/15=1/v-1/25

1/v=1/25-1/15

1/v=-2/75

1/v=-1/37.5

V=-37.5 cm

m=-v/u

m=-(-37.5)/-25

m=-1.5

$m=h^i/h$

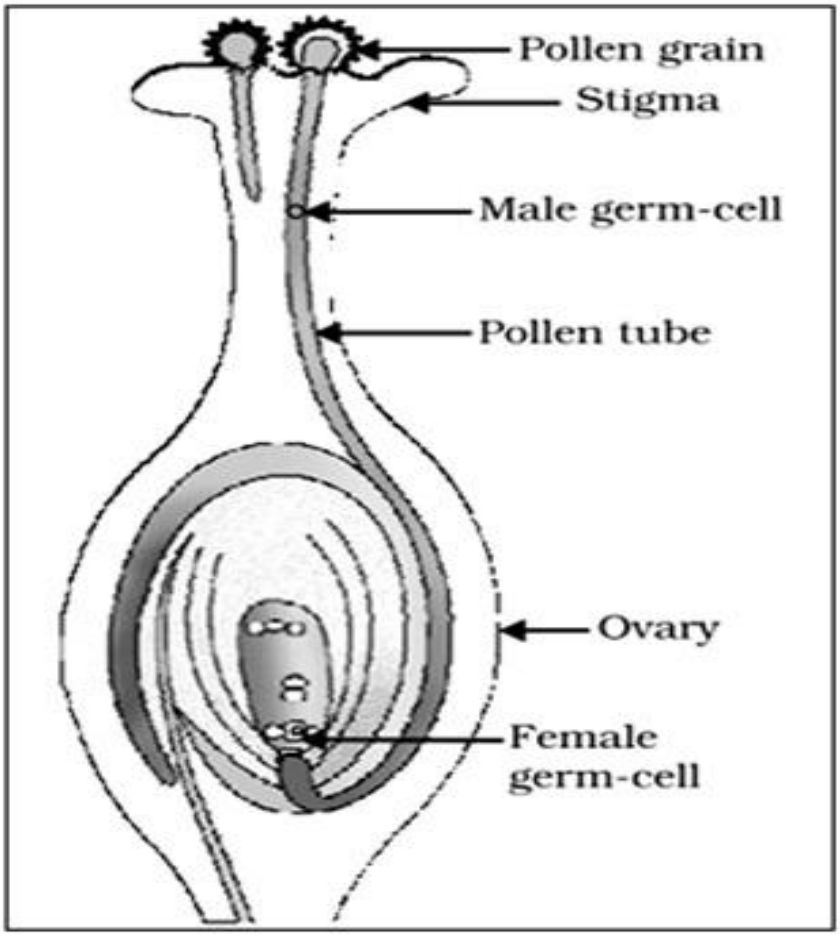
$-1.5=h^i/4$

h^i= -6 cm

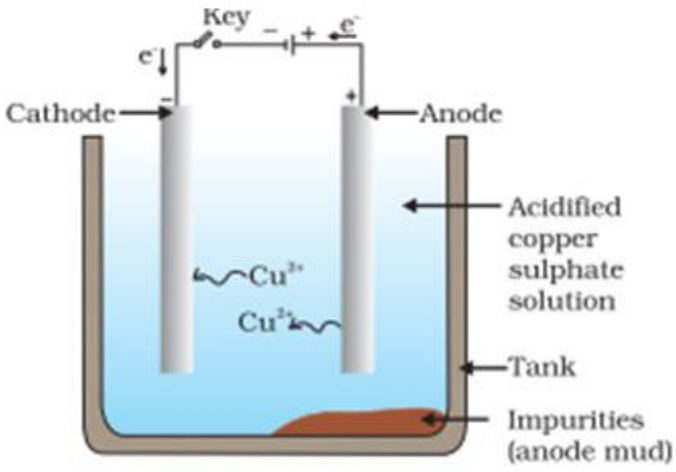
Nature : Real, inverted, enlarged image.

Position : Beyond 'C'

19. **Draw the diagram showing germination of pollen on stigma. Label the part that carries the male germ cell.**



20.**Draw and label the diagram showing "Electrolyte refining of copper"**



21. **Green plants are capable of preparing their own food. How?.**

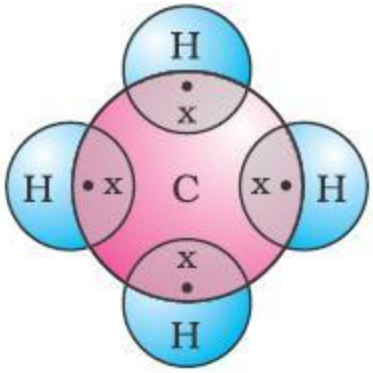
Green plants have chlorophyll, in presence of sunlight chlorophyll convert light energy into chemical energy. Water is split into hydrogen and oxygen. Finally carbon dioxide is reduced to carbohydrates.

22. **Some people in old age develop both myopia and hypermetropia. How can this problem be corrected?**

The power of accommodation of the eye usually decreases with ageing due to the gradual weakening of cilliary muscles and diminishing flexibility of the eye lens.

23. **Explain the formation of covalent bond taking example of methane and write the electron dot formula.**

Hydrogen has a valancy 1and carbon is tetravalent. Carbon shares these electrons with four atoms of hydrogen. Since electrons are shared between atoms and this kind of bonding is called covalent bonds.



24. **What is the role of a concave mirror and a glass covering in a solar cooker**?

Concave mirror concentrate the sunlight to produce heat in solar cooker.

Glass covering in a solar cooker to retain the heat generated in the solar cooker.

Answerthe following **3x9=27**

25. **Explain with the help of a neat, labelled diagram, the construction and working of a simple AC Generator .**

Construction:

An electric generator consist of a rotating coil ABCD placed between two poles of permanent magnet. The two ends of the coil are connected to the two rings R_1 and R_2. The inner side of these rings are insulated. The two conducting stationery brushes $B_1$and B_2 are kept pressed separately on the rings R_1 and R_2 respectively. The two rings R_1 and R_2 are internally attached to an axle. Axle may be rotated from out sde to rotate the coil inside the magnetic field. The outer ends of the two brushes are connected to the galvanometer.

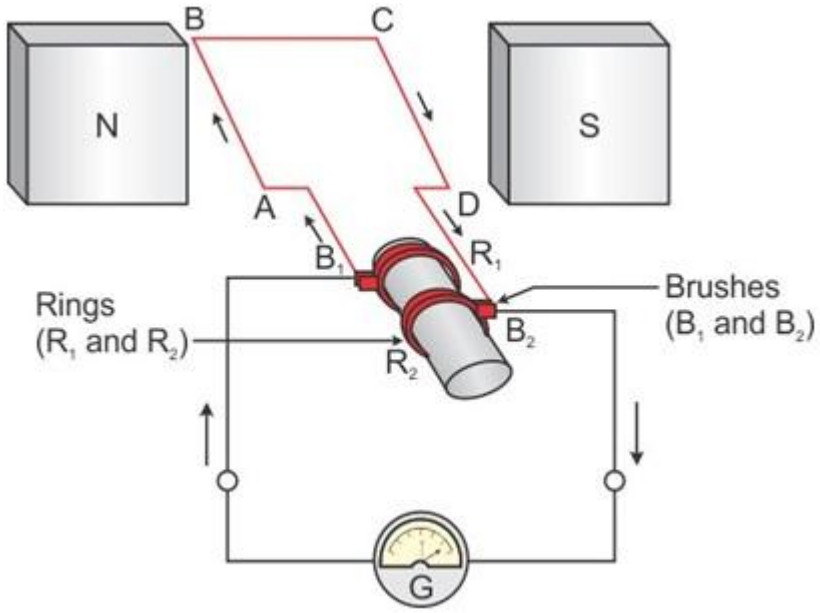
Working :

When the axle attached to the two rings is rotated such that the arm AB moves up and arm CD moves down. Let us say the coil is rotated clockwise. By applying Flemings right hand rule the induced currents are set up along the directions AB

and CD. Thus the induced current flows in the direction ABCD. This means the current in the external circuit flows from B_2 to B_1.

After half rotation arm CD starts moving up and AB moving down. As a result the directions of the induced currents in both the arms change. This means the current in the external circuit flows from B_1 to B_2.

Such a current which changes direction after equal intervals of time is called an alternating current. The device is called AC generator.



26. **Aqueous solution of sodium chloride is mixed with the aqueous solution of silver nitrate. Identify the type of chemical change. Write balanced chemical equation**.

When aqueous solution of sodium chloride is mixed with the aqueous solution of silver nitrate sodium nitrate and silver chloride is formed.

It is a double displacement reaction.

Balanced chemical equation,

$NaCl + AgNO_3$ ----------> $NaNO_3 + AgCl$

27. **How is carbon dioxide and oxygen transported in human beings?**

The blood brings carbondioxide from the rest of the body for release into the alveoli and the oxygen in the alveolar air is taken up by the blood. This carbondioxide is released to the atmosphere. The oxygenated blood is transported to all cells in the body.

[OR]

What are the different way in which glucose is oxidised to provide energy in various organisms?

a) In 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 there is 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.

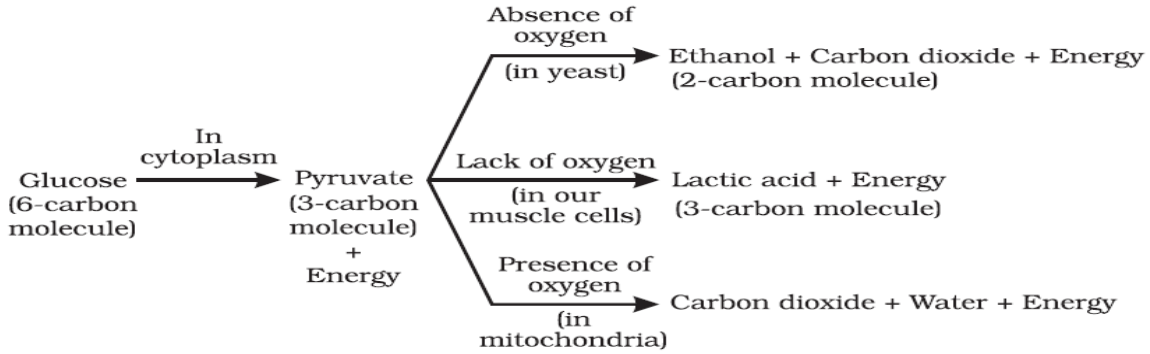


Figure 6.8 *Break-down of glucose by various pathways*

28. **An element with atomic number 11 and another atomic number 17, react with each other and form a compound. Assign the elements to its**

respective group, period and block in the modern periodic table by writing its electronic configuration.

Atomic number-11 -$1s^2$ $2s^2$ $2p^6$ $3s^1$

Group- 1^{st}

Period- 3^{rd}

Block- s block

Atomic number-17 - $1s^2$ $2s^2$ $2p^6$ $3s^2$ $3p^5$

Group- 17^{th}

Period- 3^{rd}

Block- p block

[OR]

Write the difference between $_6C^{12}$ and $_6C^{13}$. How are they placed in modern period table? Justify your answer.

$_6C^{12}$ and $_6C^{13}$ are isotopes. They have same atomic number but different mass number. They are isotopes of carbon.

Modern periodic table is constructed on the basis of atomic number. Hence they are not placed separately.

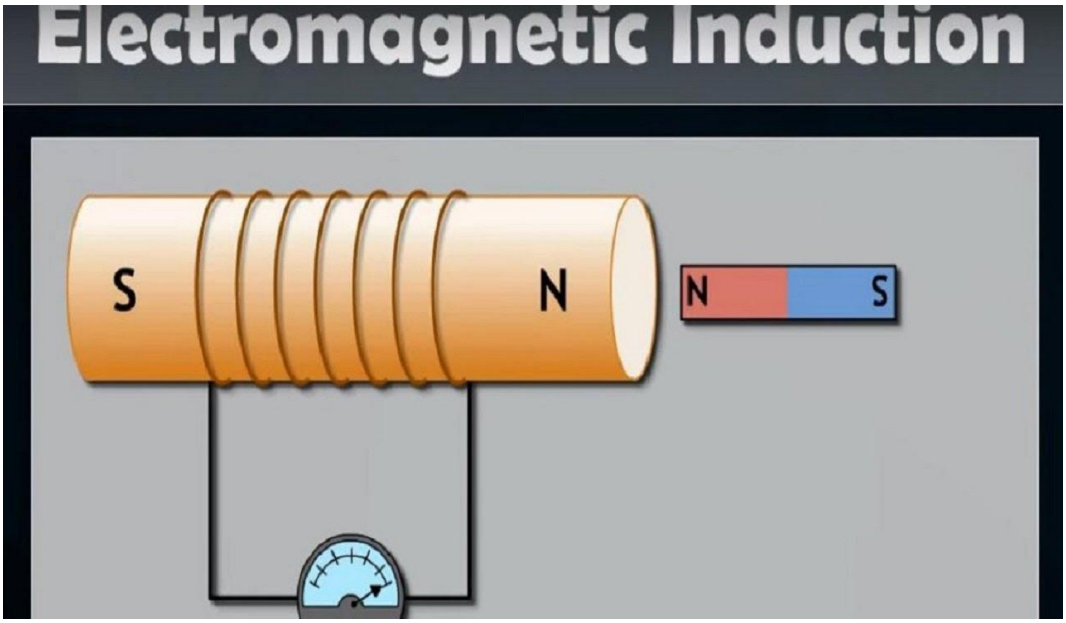
29. **Explain Faradays experiment to illustrate the phenomenon of electromagnetic induction.**

Take a coil of wire of large turns connect the ends to a galvanometer.

Take a strong bar magnet move its north pole into the coil. The galvanometer shows deflection.This indicates the presence of current in the coil.

Withdraw the north pole of the magnet away from the coil. The alvanometer shows deflection This indicates the current is set up in the coil but opposite to the first.

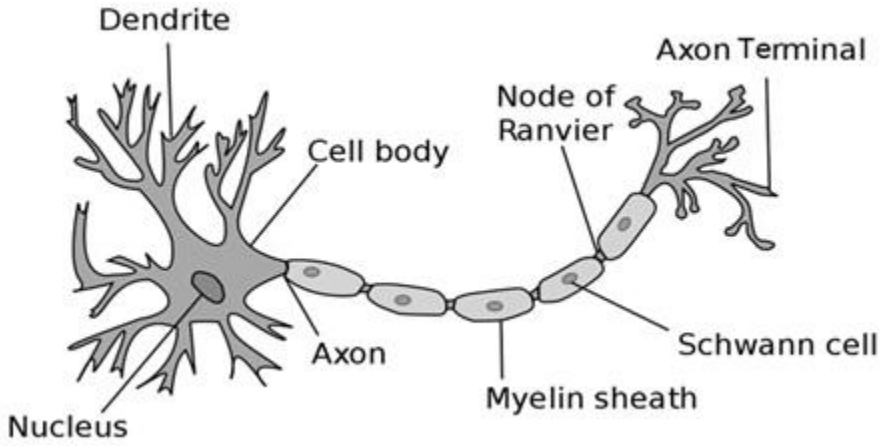
When the coil is kept stationary with respect to magnet the deflection of the galvanometer drops to zero. This indicates that no current is set up in the coil.



30. **Copper is used to make hot water tanks and not steel. Why?**

Copper is used to make hot water tanks because copper do not react with cold water, hot water and steam where as iron in the steel react with steam to form ferric oxide due to which the body of the tank spoil

31. Draw the structure of a Neuron. Explain the function of
    a) dendrite b) axon

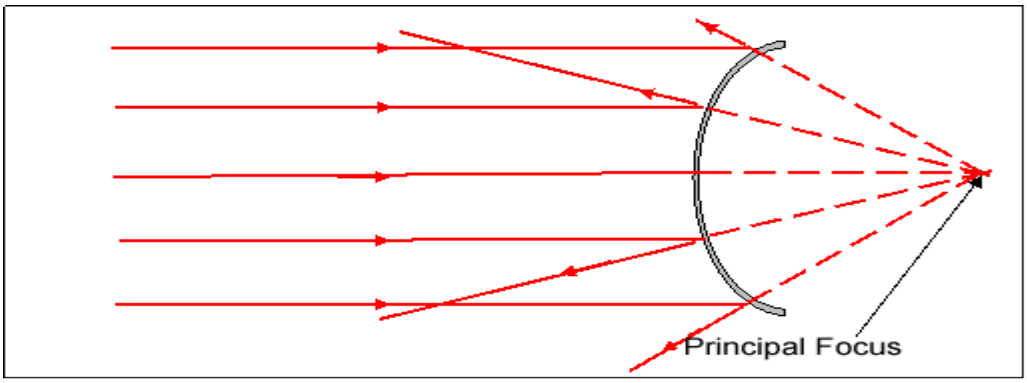


Dendrite : the information acquired at the end of the dendritic tip of a nerve cell sets off a chemical reaction that creates an electrical impulse.

Axon : the electrical impulse travel along the axon, at the end of the axon electrical impulse sets off the release of some chemicals.

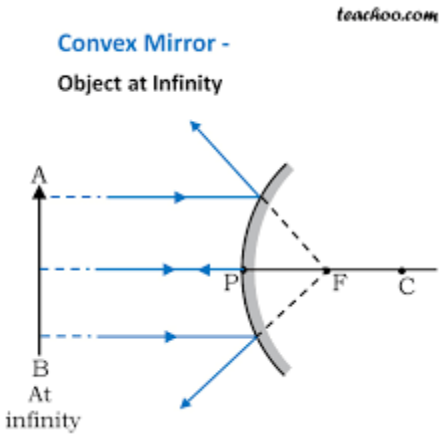
32. **What is meant by principal focus of a convex mirror? Show by a diagram.**

The rays parallel to the principal axis after reflection the reflected rays appear to come from a point on the principal axis. This point is called principal focus of a convex mirror.



[OR]

Draw ray diagram to show the image formation in a convex mirror when the object is placed at infinity and describe the nature and position of the image formed.



Nature : highly diminished, erect and virtual

Position : at principal focus

33. **How can you as an individual do to reduce your consumption of the various natural resources.**
    1. Reduce use of plastic things
    2. Reduce the use of own vehicle and use public transport
    3. Repair the leaking taps.
    4. Switch off unnecessary fans and lights.

[OR]

Suggest some changes in your school which would make it environment friendly.

1. Avoid use of plastic in the school premises.
2. Plant more and more plants in the school premises.
3. Use stairs instead of lift.
4. Use of less water and reuse of waste water for plants.

Answer the following **4x4=16**

34. **How do Mendel's experiments show that traits may be dominant or recessive?**

Mendel demonstrated that traits can be either dominant or recessive through his monohybrid cross. He crossed true-breeding tall (TT) and dwarf (tt) pea plants. The seeds formed after fertilisation were grown and the plants that were formed represent the first filial or F1 generation. All the F1 plants obtained were tall. Then, Mendel self-pollinated the F1 plants and observed that all plants obtained in the F2 generation were not tall. Instead, one-fourth of the F2 plants were short. From this experiment, Mendel concluded that the F1 tall plants were not true breeding; they were carrying traits of both short height and tall height. They appeared tall only because the tall trait was dominant over the dwarf trait. This shows that traits may be dominant or recessive.

35. **What will be the action of the following substances on litmus paper.**

A. **Dry HCL gas**
B. **Moistened ammonium gas**
C. **Lemon Juice**
D. **Soap solution**

A. Litmus paper do not change colour on dry HCL gas.
B. Moistened ammonium gas turns red litmus to blue.
C. Lemon Juice turn blue litmus to red.
D. Soap solution turn red litmus to blue.

36. Several electric bulbs designed to be used on a 220V electric supply line, are rated 10W. How many lamps can be connected in parallel with each others across the two wires of 220V line if the maximum available current is 5A?

V=220v

P= 10w

Number of bulbs = x

R=V/I

R=220/5

R=44 **Ω**

$P=v^2/R$

$R= v^2/P$

$R=(220)^2/10$

$R=220 \times 22$

$R= 4840\ \Omega$

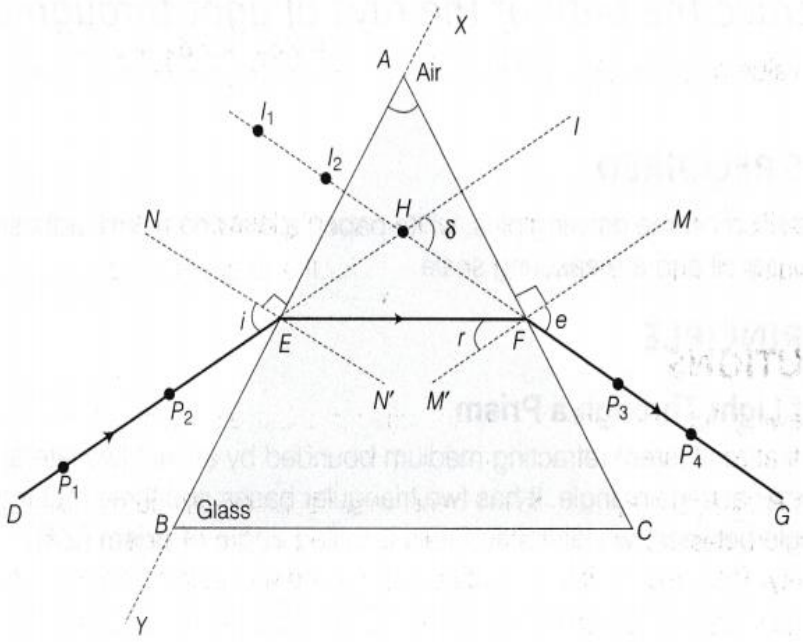
$1/R=1/R_1 +1/R_2 +1/R_3 + ...+1/R_n$

$1/44 =x/4840$

$x=110$

37. Describe the refraction of light through prism. Draw the diagram and explain.

DE is the incident ray, EF is the refracted ray and FG is the emergent ray. The light ray entering from air to glass at the surface AB. The light ray on refraction has bent towards the normal. At the surface AC the light ray has entered from glass to air. Hence it has bent away from the normal. The angle of incidence and angle of refraction at each refracting surface of the prism are equal.



Answer the following **1x5=5**

38. What are the different methods of contraception?

There are four main types of contraception,

1.Hormonal balance methods

a).Contraceptive pill.

2. Mechanical barrier methods

a) condoms.

b)Copper-T

3. Surgical methods

a) Vasectomy

b) Tubectomy

4. natural methods.

****

SUBJECT: GENERAL SCIENCE

MODEL QUESTION PAPER 19-20

SET – 3

Marks: 80

Four alternatives are given for the following question. Choose the appropriate alternative and write it with its alphabet. 1x8=8

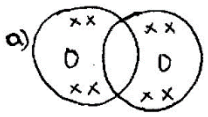
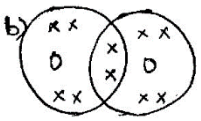
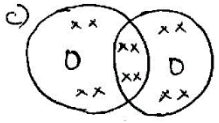
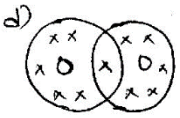
1. **What happens when dilute hydrochloric acid is added to iron fillings?**
   A. Hydrogen gas and iron chloride are produced
   B. Chlorine and iron hydroxide are produced
   C. No reaction takes place
   D. No reaction takes place

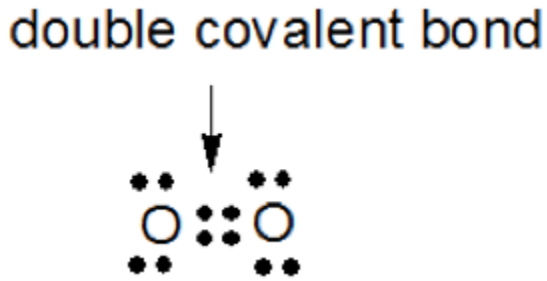
   A. Hydrogen gas and iron chloride are produced

2. A positively charged particle projected towards west is deflected towards north by a magnetic field. The direction of magnetic field is.
   A. Towards South B. Towards East
   C. Downward D. Upward

   D. Upward

3. The electron dot structure of O_2 molecule is

   a) 
   b) 
   c) 
   d) 

   B. 

4. The energy not derived from sun's energy.
   A. Geothermal energy B. Wind energy
   C. Nuclear energy D. Biomass

   C. Nuclear energy

5. The xylem in plants are responsible for
   A. transport of water B. transport of food
   C. transport of amino acids D. transport of oxygen

   A. transport of water

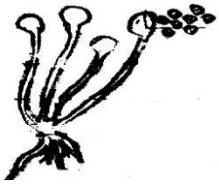
6. An element with electronic configuration of 2, 8 is placed in modern periodic in
   A. Group 8 B. Group 18
   C. Group 2 D. Group 10

   B. Group 18

7. Bandharas and tals are the ancient water harvesting methods in
   A. Madhya Pradesh B. Maharashtra
   C. Karnataka D. Kerala

   B. Maharashtra

8. The below figure of an example of

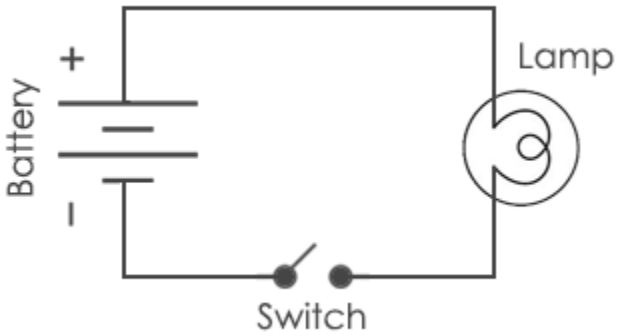


A. Budding B. Spore formation
C. Fission D. Fragmentation

B. Spore formation

Answer the following in a sentences 1x8=8

9. **Oil and fat containing food items are flushed with nitrogen. Why?**
Oil and fat containing food items are flushed with nitrogen to avoid rancidity.
10. **Draw the neat diagram of electric circuit?**



11. **What are antacids?**
Substances which are used to neutralise the excess acid in the stomach to get rid pain and irritation are called antacids.
12. **State Fleming right hand thumb rule**.

Stretch the thumb, forefinger and middle finger of the left hand mutually perpendicular to each other. The forefinger gives the direction of magnetic field, the middle finger gives the direction of current and thumb will point in the direction of motion.

13. **What is monohybrid cross ?**

The cross between two plants with one contrasting charector.

14. **Define Gangue.**

Ores are usually contaminated with large amounts of impurities such as soil, sand, etc are called gangue.

15. **A current of 0.5A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of electric charge that flows through the circuit**.

I=0.5A

t=10min=10 x 60=600sec

Q=It

Q=0.5 x 600

Q=300c

16. **Why are forests called 'bio-diversity hotspots**'?

A range of different life forms and species are found in forests. Therefore forests are called 'bio-diversity hotspots'

Answer the following in 2-3 sentence.
2x8=16

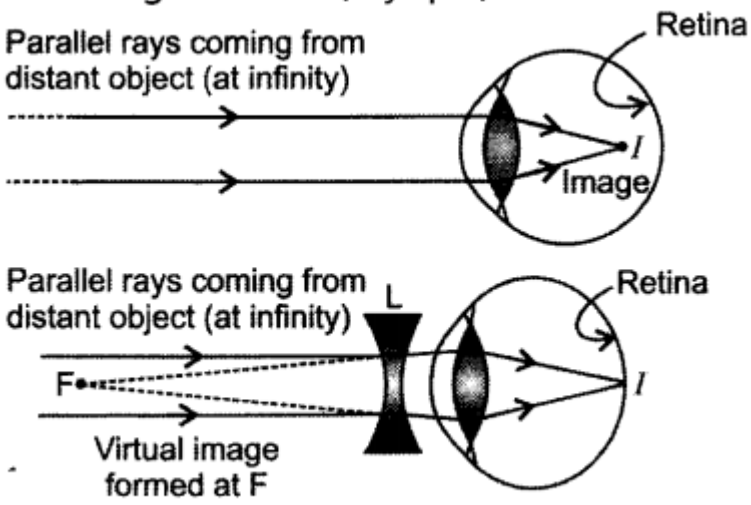
17. **Why do you think the noble gases are placed in a separate group?**

The noble gases are placed in a separate group because they do not react with other elements or compounds . they have same chemical properties, their valancy is zero. They have more vertical similarity.

18. **Draw the ray diagram showing myopic eye and correction for myopia.**

(*a*) Short-sightedness (Myopia).

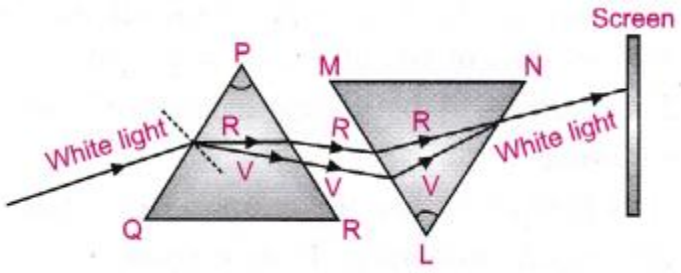
(*b*)



(*c*) Concave lens.

[OR]

Draw the ray diagram showing the recombination of the spectrum of white light.



19. **Give two important uses of washing soda and baking 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.

Two uses of baking soda are

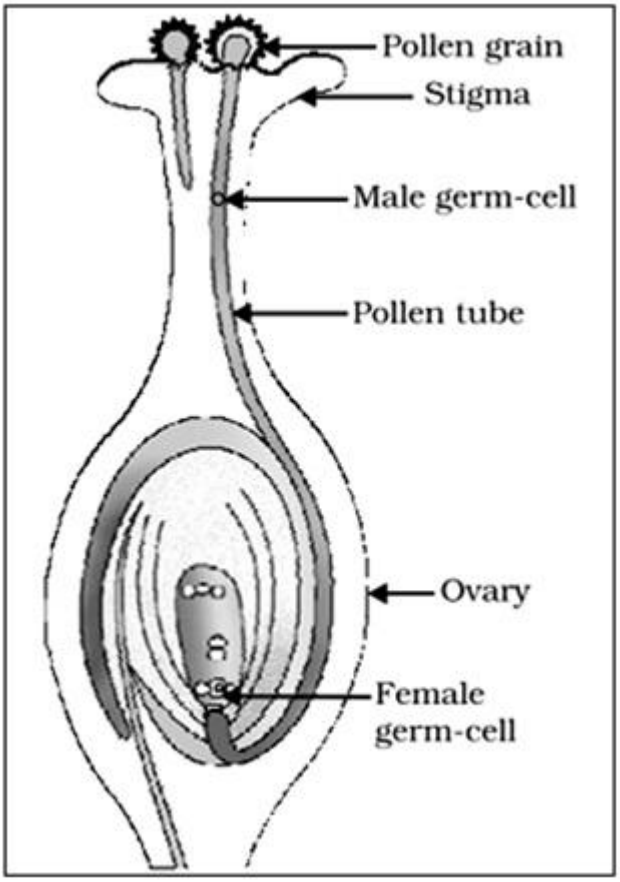
1. used in fire extinguishers.

2. Used in antacids

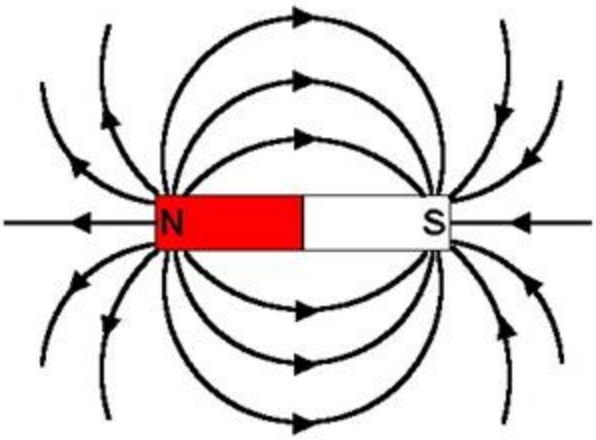
20. **State any two reasons to justify that LPG is considered as an ideal fuel.**

1. It produces good amount of heat on burning.
2. It do not produce any smoke or residue on burning.

21. **Draw a neat labelled diagram of germination of pollen on stigma.**



22. **Draw magnetic field lines around a bar magnet**.



23. **Explain homologous series with example.**

A series of compounds in which the same function al group substitutes for hydrogen in a carbon chain.

CH_4, C_2H_6, C_3H_8,

CH_3OH , C_2H_5OH, C_3H_7OH

24. **What is irritability**?

During indigestion the stomach is secreted too much acid, this causes pain and irritability.

Answer the following in 4-5 sentences.
3x9=27

25. **How does P^H affect our digestive system?**

Stomach produces hydrochloric acid helps in digestion of food withot harming the stomach. During indigestion the stomach produces too much acid and causes pain and irritation.

When pH of the mouth drops below 5.5 bacteria produce acids by degradation of sugar and food particles causing tooth decay.

26. **A concave lens has focal length of 15cm. At what distance should the object from the lens be placed so that it forms an image at 10cm from the lens? Also find the magnification produced by the lens.**

f= -15cm
u= ?
v= -10cm
m= ?

1/f=1/v-1/u
-1/15=-1/10-1/u
1/u= -1/10+1/15
1/u=-1/30
U=-30 cm
m=v/u
m=-10/-30
m=0.33

27. **Explain the advantages of Mendeleev's periodic table.**

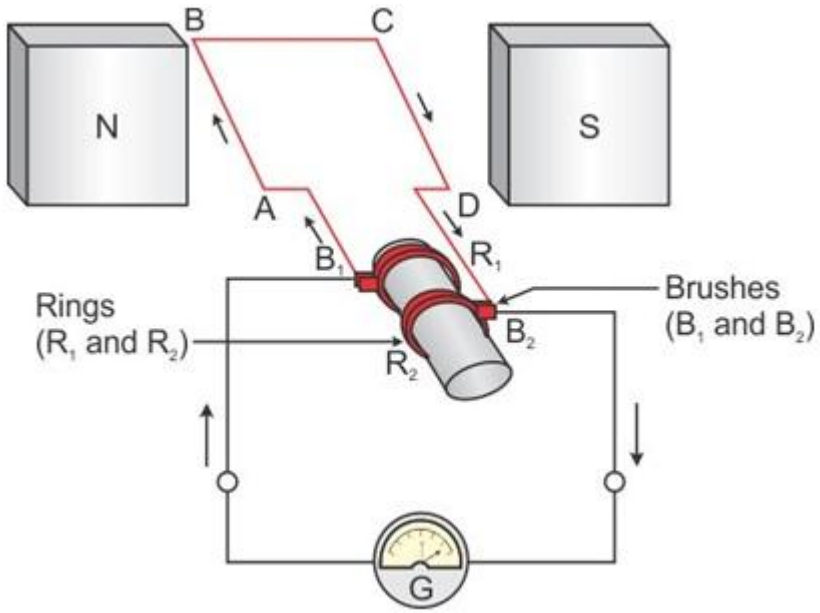
1. Mendaleev arranged the elements in increasing order of atomic mass
2. Mendaleev left some gaps in his periodic table, predicted the existence of some elements which are not discovered.
3. Noble gases discovered placed in a new group without disturbing the existing order.
4. Elements having similar properties were placed directly under one another

[OR]

Write the limitations of Mendeleev's periodic table

1. No fixed position can be given to hydrogen in the periodic table.
2. Isotopes of all elements posed a challenge to Mendeleev periodic law.
3. The atomic masses do not increase in a regular manner in going from one element to the next.
4. No distinguish positions to metals and non-metals

28. **Draw the diagram of an electric motor and label split rings.**



29. **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.

30. **State Ohm's law and write the factors on which the resistance of the conductor depend.**

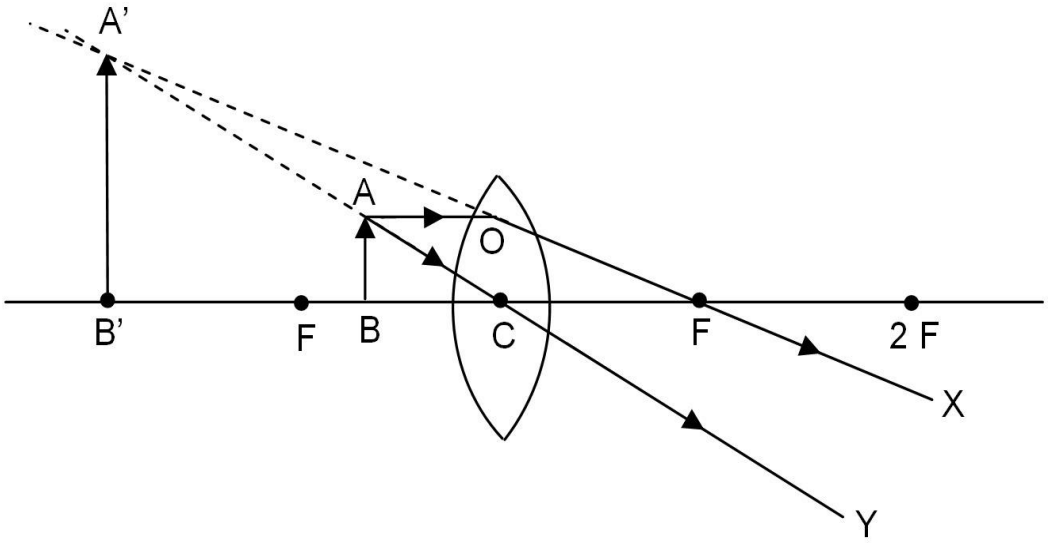
The potential difference,V across the ends of a given metallic conductor in a electric circuit is directly proportional to the current flowing through it. Provided its temperature remains same.

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

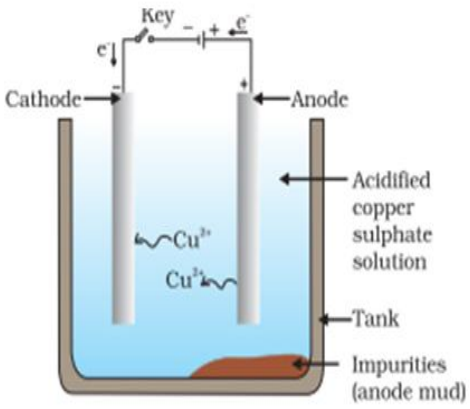
[OR]

Draw the ray diagram showing the image formation by a convex lens, when the object is kept between principal focus and optic centre. Mention the nature of the image formed.



Virtual, erect and enlarged image

31. **Draw a neat labelled diagram of electrolytic refining of copper.**

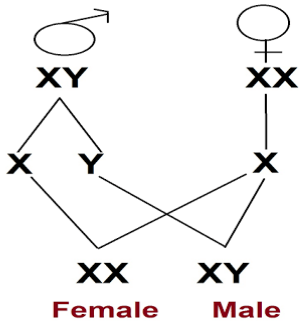


32.**How is the sex of the child determined in human beings?**

Females have a perfect pair of two X sex chromosomes and males have a mismatched pair of one X and one Y sex chromosome.

A child who inherits an X chromosome from father will be a girl and one who inherit Y chromosome from father will be a boy

The sex of the child is determined by what they inherit from their father.



33.**Write the disadvantages of building large dams.**

1. Large areas of agricultural land and human habitation are to be sacrificed.
2. Large eco-systems are destroyed when submerged under the water in dams.
3. The vegetation which is submerged rots under anaerobic conditions and gives rise to large amounts of methane, which is a green-house gas.
4. Creates the problem of satisfactory rehabilitation of displaced people.

[OR]

Sustainable management of natural resources is necessary why?

Sustainable management of natural resources is necessary for the conservation of natural resources to the future generation.

The main objectives of sustainable deveiopment is using our natural resources so as to sustain and conserve our environment

Answer the following in 5-6 sentences.

4x4=16

34.**Explain why do stars twinkle and planets do not twinkle**

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

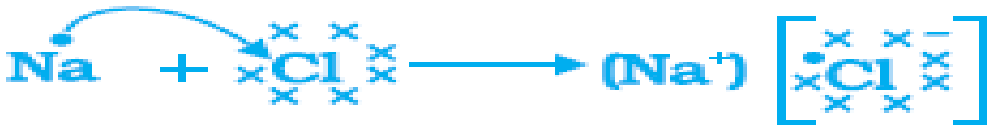
The atmospheric refraction occurs in a medium of gradually changing refractive index. Since the atmosphere bends the starlight towards the normal.the apperent position of the star is slightly different from its actual position when viewd near the horizon. This apperent position of the star is not ststionery 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.

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.

35.**Explain the Formation of Sodium Chloride.**

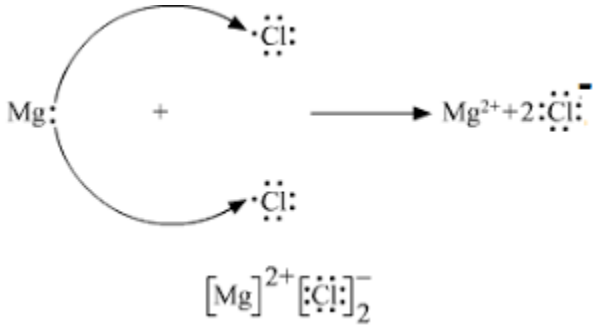
$$Na \rightarrow Na^+ + e^-$$
2,8,1 2,8
(Sodium cation)

$$Cl + e^- \rightarrow Cl^-$$
2,8,7 2,8,8
(Chloride anion)



[OR]

Explain the Formation of Magnesium Chloride.



$[Mg]^{2+}[:\ddot{Cl}:]^-_2$

36.**Lists the practical applications of heating effect of electric current.**

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.

37.**What are plant hormones? Explain phototropism.**

Harmones which are responcible for growth and development in plants are called plant harmones.

Shoots respond by bending towards light, while roots respond by bending away from it.

[OR]

What is reflex action? Name the components and write their function.

A sudden responce to the stimuli.

Reflex actions are helpful in control and coordinating the body

Receptors : receive the stimuli.

Sensory neuron : carry information to spinal cord

Spinal cord : controlling centre of reflex action

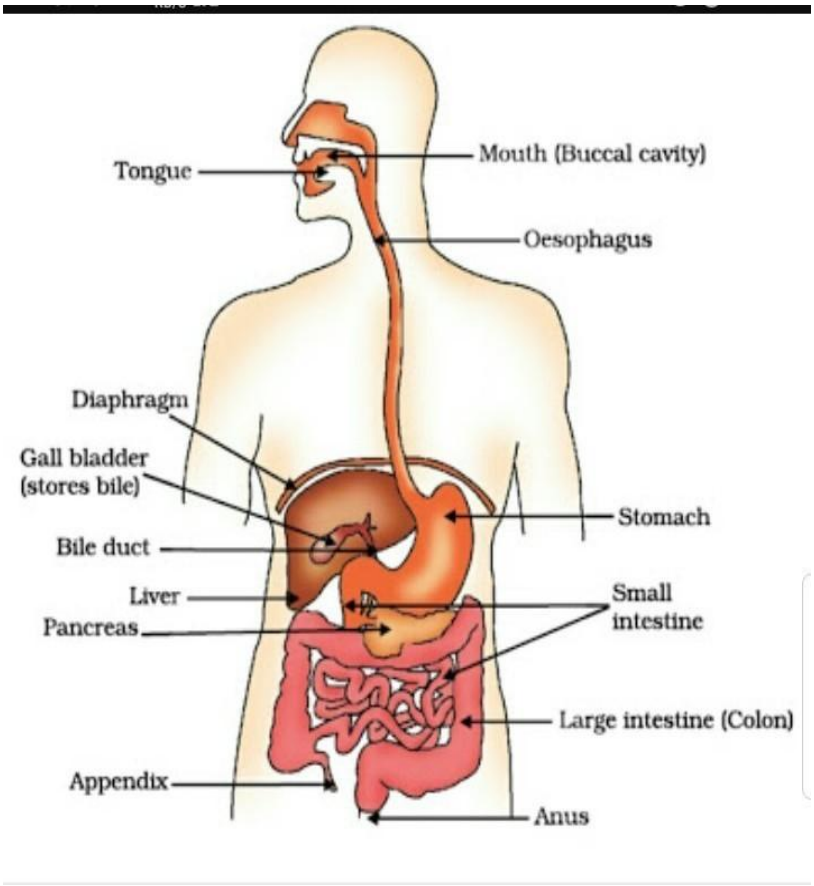
Relay neuron : Found in brain and spinal cord

Motar neuron : Found in CNS and control muscle movement.

Effector : Responding to stimulus, they are either muscle or gland.

Answer the following **1x5=5**

38. **Draw a neat labelled diagram of digestive system of man and write the enzyme secreted by stomach and write its function.**



The enzyme secreted in stomach is pepsin.

Pepsin digest the proteins.

SUBJECT: GENERAL SCIENCE

MODEL QUESTION PAPER- 19-20

SET– 4 Marks: 80

Four alternatives are provided for the following question. Choose the appropriate alternative and write with alphabets. 1x8=8

1. $Fe+CuSO_4$ ----------> $Fe\ So_4 + Cu$,
   The above reaction is an example of
   A. Combination Reaction B. Decomposition Reaction
   C. Displacement reaction D. Double displacement

   C. Displacement reaction

2. The breakdown of pyruvate to the carbon dioxide water and energy take place

A. Cytoplasm **B. Mitochondria**

C. chloroplast D. Nucleus

B. Mitochondria

3. While cooking if the bottom of the vessel is getting blackened on the outside it means

A. The food is not cooked completely **B. The fuel is not burning completely**

C. The fuel is wet D. The fuel is burning completely

B. The fuel is not burning completely

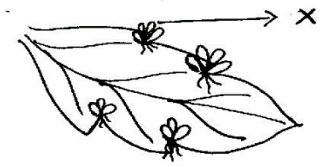
4. On crossing tall plant with dwarf plant Mendel found the ratio of dwarf plant in F_2 generation was

A. 25% B. 40%

C. 60% D. 75%

A. 25%

5. In the given figure 'x' is



A. Bud B. Spore

C. Tentacle D. Germ cell

A. Bud

6. Significant role of stomata in transportation is to

A. Create upward pressure B. Absorb carbon dioxide

C. Release oxygen D. perform transpiration continuously

A. Create upward pressure

7. Which one of the following is a conductor

A. Porcelain **B. Copper** C. Glass D. Plastic

B. Copper

8. The change in focal length of an eye lens is caused by the action of the

A. Pupil B. Retina **C. Ciliary muscles** D. Iris

C. Ciliary muscles

Answer the following in a sentences **1x8=8**

9. **Why does the colour of copper sulphate solution change when an iron nail is dipped in it**?

The colour of copper sulphate solution change when an iron nail is dipped in it because iron is more reactive than copper. Iron displaces copper from copper sulphate solution.

10. **What is neutralisation reaction**?

When acids react with bases to form salt and water is called neutralisation reaction

11. **Why are traits acquired during the lifetime of an individual not inherited?**

A trait can be only inherited when it brings a change in genes present in the gametes of an organism. Changes in non-reproductive tissues cannot be passed on to DNA of germ cells. Therefore traits acquired during lifetime of an individual are not inherited by the offspring because they are changes in somatic cells and not in germ cells.

12. **Sustainable management of natural resources is necessary why?**

Sustainable management of natural resources is necessary for the conservation of natural resources to the future generation.

The main objectives of sustainable deveiopment is using our natural resources so as to sustain and conserve our environment

13. **What is the role of acid in our stomach?**

1. Acid in our stomach creates acidic medium which facilitates the action of the enzyme pepsin.

2. Acid in our stomach kills any harmful bacteria present in the food.

14. **Define electric potential**.

Work done from bringing charge from infinity to electric field is called electric potential

15. An electric Iron of resistance 20Ω takes a current of 5A calculate the heat developed in 30S.

$H=I^2Rt$

$H=5^2 \times 20 \times 30$

$H=25 \times 600$

$H=15000$ j

16. What precaution should be taken to avoid the over loading of domestic electric circuits?

1. A live wire and neutral wire should not come into direct contact.
2. A faulty appliance should not be connected in the circuit
3. Too many appliances should not be connected to a single socket.

Answer the following in 2-3 sentence 2x8=16

17. How is the concentration of hydroxide ion (OH) affected when excess base is dissolved in a solution of sodium hydroxide?

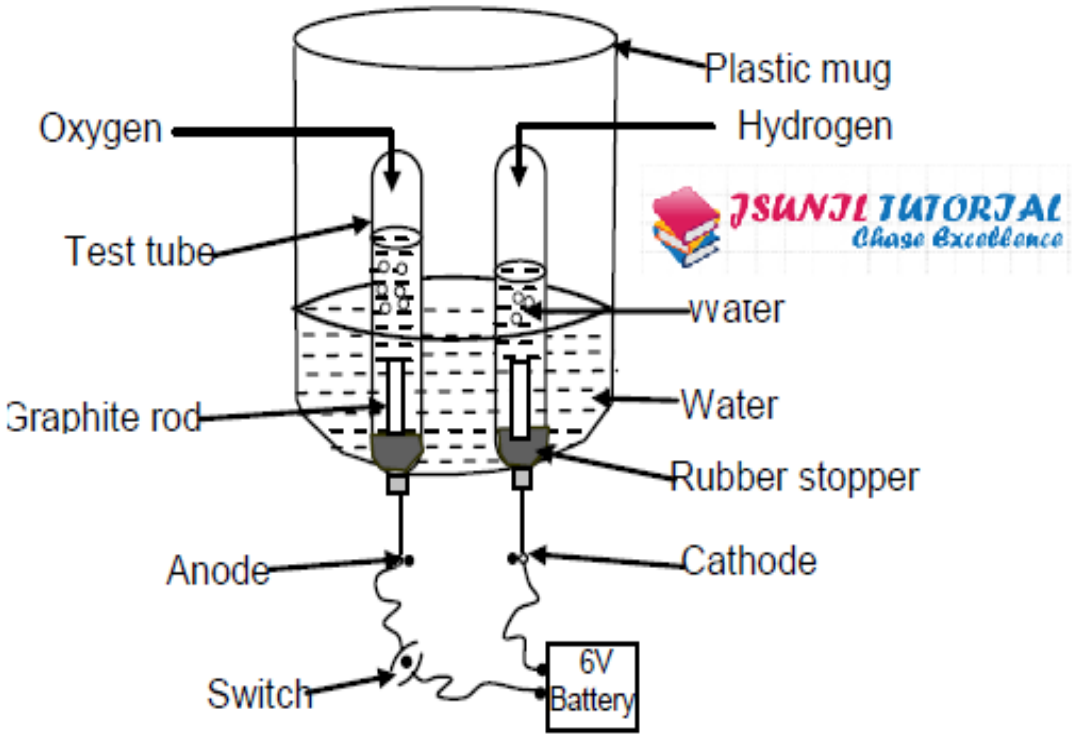
The concentration of hydroxide ion (OH) increases when excess base is dissolved in a solution of sodium hydroxide

18. **What are metalloids? Give examples of metalloids**.

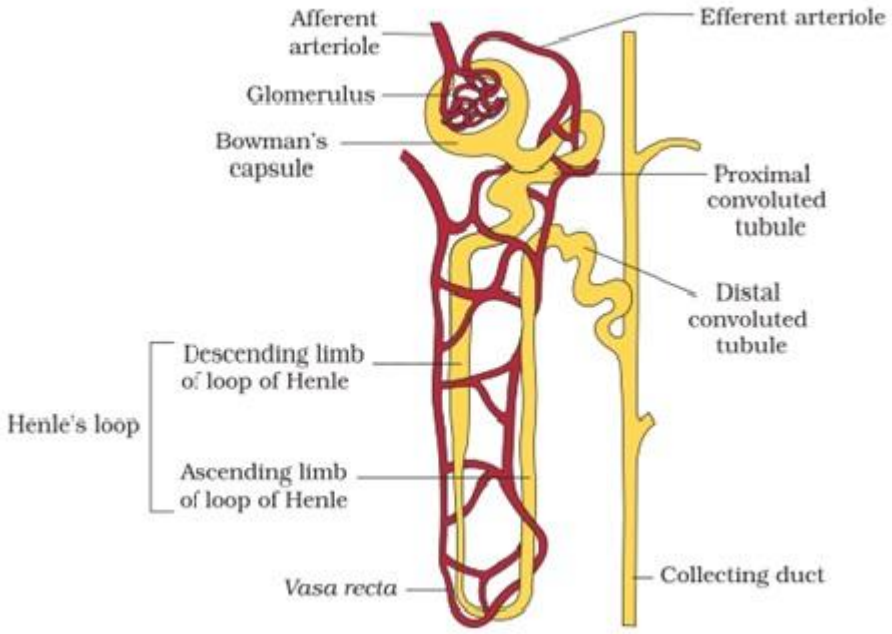
Elements which shows properties of both metals and non-metals

Ex – silicon, germanium, antimony. etc

19. Draw are neat labelled diagram of electrolysis of water.



20.Draw a neat labelled diagram of neuron.



21.What are advantages of sexual reproduction over asexual reproduction?

In sexual reproduction, more variations are produced. Thus, it ensures survival of species in a population.

The new formed individual has characteristics of both the parents.

Variations are more viable in sexual mode than in asexual one.

22.A ray of light travelling in air enters obliquely into water. Does the ray bend toward the normal or away from the normal why?

When a ray of light travelling in air enters obliquely into water the ray bend toward the normal .

Because the speed of light decreases

23.Write the Working Principal of Electric generator.

Working :

When the axle attached to the two rings is rotated such that the arm AB moves up and arm CD moves down. Let us say the coil is rotated clockwise. By applying Flemings right hand rule the induced currents are set up along the directions AB and CD. Thus the induced current flows in the direction ABCD. This means the current in the external circuit flows from B_2 to B_1.

After half rotation arm CD starts moving up and AB moving down. As a result the directions of the induced currents in both the arms change. This means the current in the external circuit flows from B_1 to B_2..

[OR]

What is the role of the split rings in an electric motor?

The split rings in an electric motor act as a commutator. They reverse the direction of the current at every half rotation.

24. **Define Ohms law. On what factors does the resistance of a conductor depend.**

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.

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

Answer the following

3x9=27

25.Compare and contract fossil fuel and the sun as direct sources of energy.

Sun is the direct source of energy, while fossil fuels are formed because of the solar energy stored in them. When green plants prepare food, they convert the solar energy into chemical energy which is stored in the form of biomass. The same biomass gets transferred to the animals. Thus, the energy in the form of biomass which is stored in fossil fuels has come from the sun.

26.Write the function of the following

a) Retina b) Pupil c) Cornea

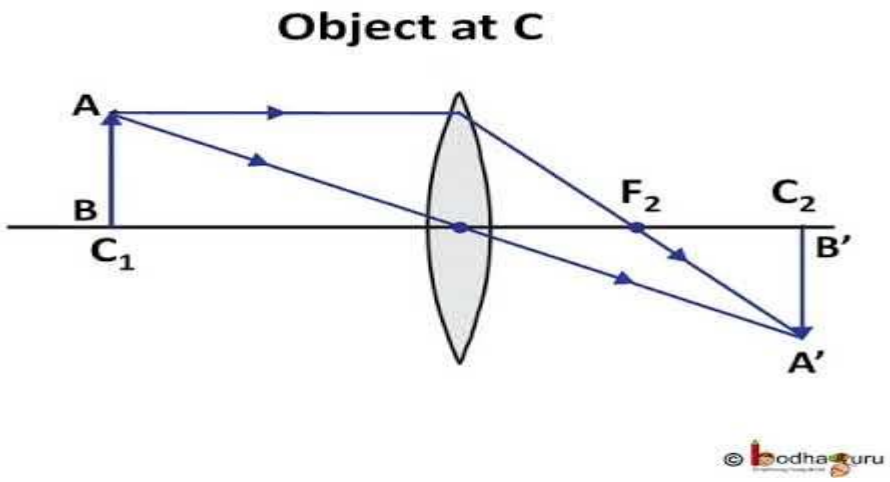
a) Retina : the image is formed on retina. The retina is a delicate membrane having a enormous number of light-sensitive cells

b) Pupil : the pupil regulates and controls the amount of light entering the eye.

c) Cornea : light enters the eye through a thin membrane called cornea. It forms the transparent bulge on front surface of the eyeball.

[OR]

Draw a ray diagram showing the image formation at a convex lens when object is placed at C, Mention the nature of image formed.



Real , inverted image, Same size of the object

27.Compare the power used in the 2Ω resistor in each of the following circuits

i) A 6V battery in series with 1Ω and 2Ω
ii) A 4V battery in parallel with 12Ω and 2Ω

i) A 6V battery in series with 1Ω and 2Ω

$R=R_1+R_2$

$R=1+2$

$R=3\ \Omega$

$I=V/R$

$I=6/3$

$I=2A$

$P=I^2 xR$

$P=2^2 x\ 2$

$P=8\ W$

ii) A 4V battery in parallel with 12Ω and 2Ω

$I=V/R$

$I=4/2$

$I=2A$

$P=v^2/R$

$P=4^2/2$

$P=16/2$

$P=8W$

28.How does P^H affect our digestive system?

Stomach produces hydrochloric acid helps in digestion of food withot harming the stomach. During indigestion the stomach produces too much acid and causes pain and irritation.

When pH of the mouth drops below 5.5 bacteria produce acids by degradation of sugar and food particles causing tooth decay.

29.Explain the advantages of Mendeleev's periodic table.

1.Mendaleev arranged the elements in increasing order of atomic mass

2.Mendaleev left some gaps in his periodic table, predicted the existence of some elements which are not discovered.

3.Noble gases discovered placed in a new group without disturbing the existing order.

4. Mendeleev place elements in groups and periods.

4.Elements having similar properties were placed directly under one another

[OR]

Write the limitations of Mendeleev's periodic table

1.No fixed position can be given to hydrogen in the periodic table.

2.Isotopes of all elements posed a challenge to Mendeleev periodic law.

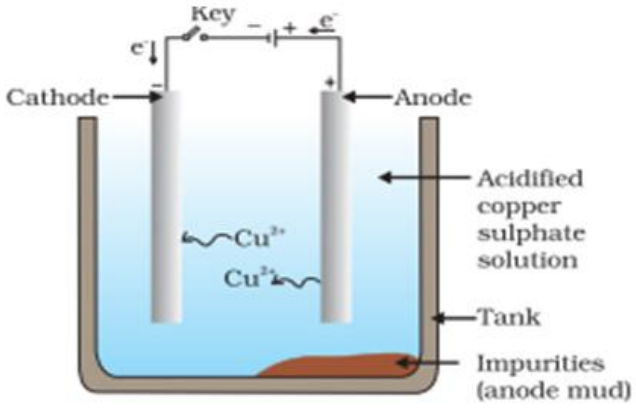
3The atomic masses do not increase in a regular manner in going from one element to the next.

4.No distinguish positions to metals and non-metals

30.What is the role of decomposers in the ecosystem?

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

31.Draw a neat labelled diagram of electric refining of copper.

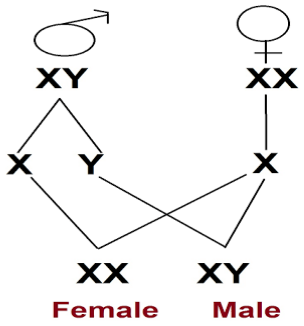


32.How is the sex of the child determined in human beings?

Females have a perfect pair of two X sex chromosomes and males have a mismatched pair of one X and one Y sex chromosome.

A child who inherits an X chromosome from father will be a girl and one who inherit Y chromosome from father will be a boy

The sex of the child is determined by what they inherit from their father.



33.Write the disadvantages of building large dams.

1.Large areas of agricultural land and human habitation are to be sacrificed.

2.Large eco-systems are destroyed when submerged under the water in dams.

3.The vegetation which is submerged rots under anaerobic conditions and gives rise to large amounts of methane, which is a green-house gas.

4.Creates the problem of satisfactory rehabilitation of displaced people.

[OR]

Sustainable management of natural resources is necessary why?.

Sustainable management of natural resources is necessary so as to sustain and conserve our environment

Answer the following

4x4=16

34.**a) List the properties of ionic compounds.**

1. Ionic compounds soluble in water.
2. Ionic compounds have high melting and boiling point.
3. Ionic compounds conducts electricity in molten state.
4. Solids at room temperature.

[OR]

a) What are amphoteric oxides? Give example.

b) What is corrosion? Give an example.Give two ways to prevent corrosion.

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.

b) What is corrosion? Give an example.Give two ways to prevent corrosion.

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.

Corrosion can be prevented by i) painting ii)greasing iii) anodizing. Iv) galvanosation.

35.**List out the plant hormones? Explain their function**.

Harmones which are responcible for growth and development in plants are called plant harmones.

Auxins : help the cells to grow longer

Cytokinins : promote cell division

Gibberlins : help in growth of the stem.

Abscisic acid : inhibits growth and wilting of leaves

Ethylene : helps in ripening fruits

[OR]

List any Four Animal hormones And explain Their Function.

Adrenaline : prepares the body to face emergency situations.

Insulin : maintain the sugar level in the blood.

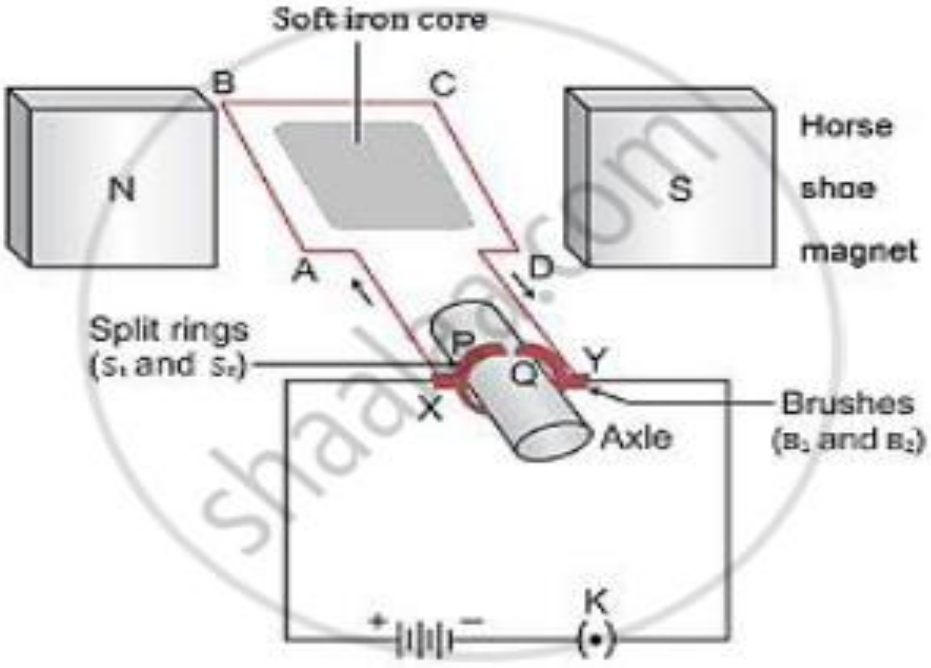
Growth harmone :stimulate growth in all organs. responcible for growth and development of the body.

Testosterone : development of sex organs in male

Estrogen : development of sex organs in female and regulates menustral cycle.

Thyroxin : regulates metabolism for body growth

36.**Describe the working of electric motor with a neat diagram**.



Principle of motar : When a current carrying conductor placed in a magnetic field it experiences a force causing the conductor to move.

Working of motar: Current in the arm AB of the coil flows from A to B, in the arm CD it flows from C to D that is opposite to the

direction of current through arm AB. On applying Fleming left hand rule for the direction of force on current carrying conductor in a magnetic field. We find the force acting on the arm AB pushes downwards . while the arm CD pushes upwards. At half rotation Q makes contact with the brush X and P with the brush Y. Therefore the current in the coil gets reversed and flows along the path DCBA. Now the arm AB is pushed up while CD pushed downwards. The reversing of the current is repeated at each half rotation giving rise to a continuous rotation of the coil and to the axle.

37. **Explain why do Stars twinkle but not planets.**

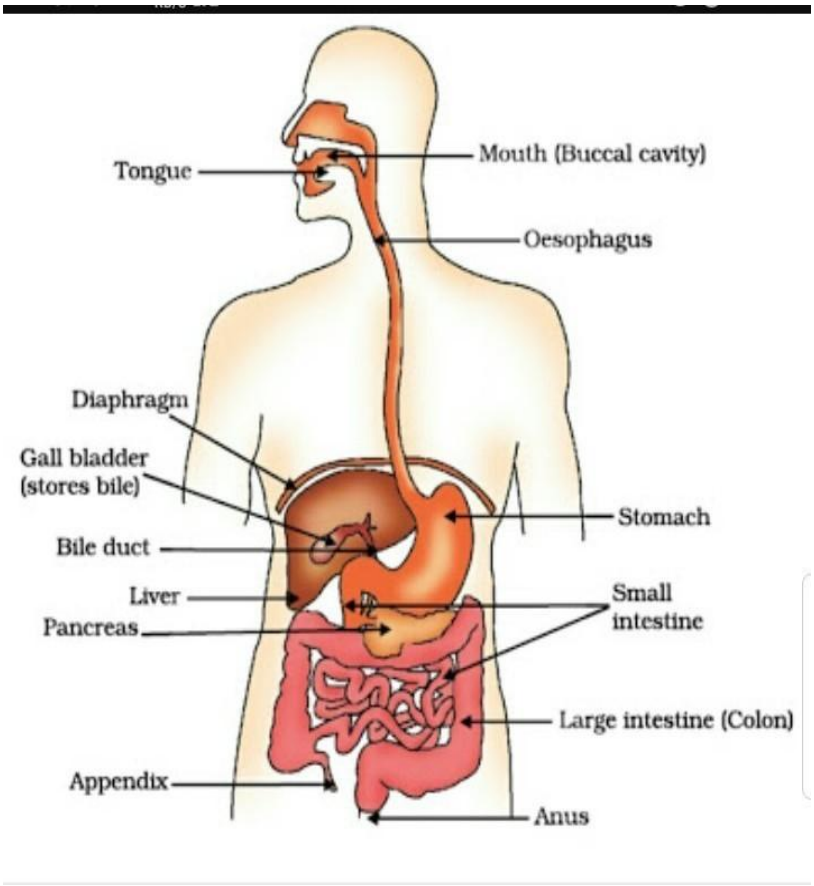
Twinkling of stars is due to atmospheric refraction of star light.

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.

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.

Answer the following **1x5=5**

38. **Draw a neat labelled diagram of digestive system of man and write the enzyme secreted by stomach and write its function.**



The enzyme secreted in stomach is pepsin.

Pepsin digest the proteins.

SUBJECT: GENERAL SCIENCE

MODEL QUESTION PAPER -19-20

SET– 5 **Marks: 80**

Four alternatives are provided for each question. Choose the most appropriate alternative and write it with its alphabet. 1x8=8

1. The function of Olfactor receptors is to_____.
   A. detect smell B. detect light
   C. detect sound D. detect taste

   A. detect smell

2. 17^{th} group elements are also called _____.
   A. Alkali metals B. Alkaline earth metals

C. Halogens D. O group elements

C. Halogens

3. Butanal is a one of carbon compound with the functional group _____.
   A. Carboxylic acid **B. Aldehyde**
   C. Ketone D. Alcohol

   B. Aldehyde

4. In spirogyra the type of a sexual reproduction takes place by _____.
   A. Regeneration **B. Fragmentation**
   C. Binary fission D. Budding

   B. Fragmentation

5. A zygote which has a 'XY' pair will always develop into a _____.
   A. Girl **B. Boy** C. Girl or Boy D. None of the above

   B. Boy

6. A rectangle coil of copper wires is rotated in a magnetic field. The direction of the induced current changes ones in each.
   A. Two revolution B. One revolution
   C. Half revolution D. One-fourth revolution

   C. Half revolution

7. Which of the following is not an example of a bio-mass energy source?
   A. Wood B. Global gas **C. Nuclear Energy** D. Coal,

   C. Nuclear Energy

8. Which is the correct order of reactivity of metals.
   A. Zn>Cu>Fe>Ag B. Ag>Cu>Zn>Fe
   C. Zn>Fe>Cu>Ag D. Fe>Zn>Cu>Ag
   C. Zn>Fe>Cu>Ag

Answer the following **1x8=8**

9. When does the pancreas secrete excess insulin?

When the sugar level in the blood rise, they are detected by the cells of the pancreas which respond by producing more insulin.

10. What are the functions of guard cell?

The opening and closing of the pore is a function of the gaurd cell.

11. **Why are alloys preferred than metals in heating devices**?

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.

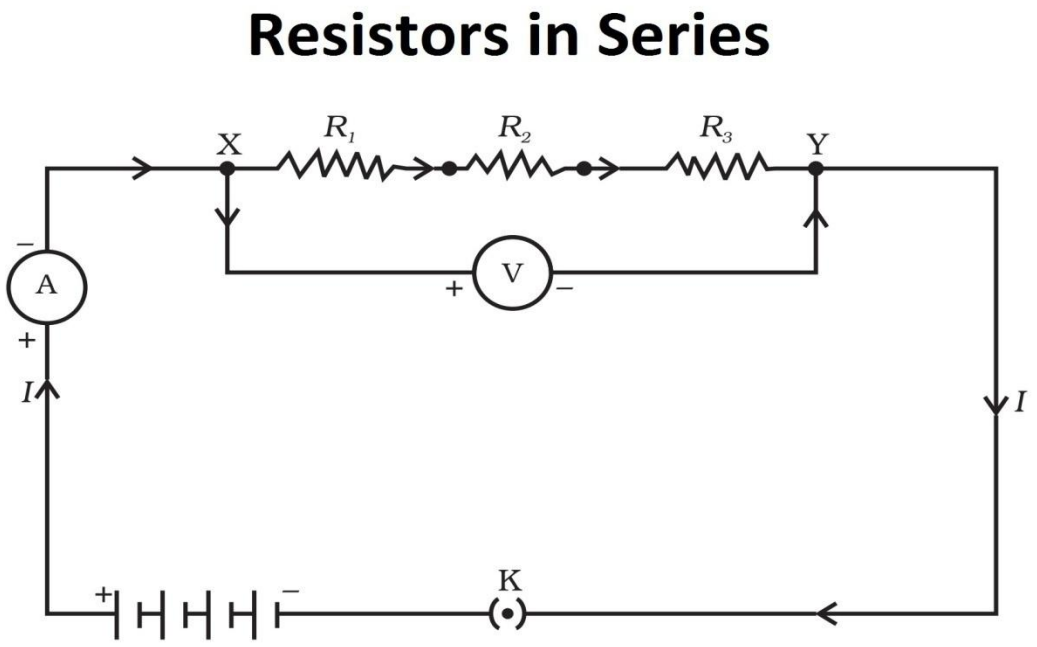
12. What happens during electrolysis of water?

Water decomposes to hydrogen and oxygen during electrolysis of water

13. Metals get transmitted on reactions with atmosphere air?

When metals are exposed to air get tarnished because they react with air, moisture etc.. to form oxide layer

14. Draw a neat diagram of resistors in series.



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

i) Fuse

ii) earthing

16. **How much work is done in moving a charge of 2C across two points having a potential difference 12V**?

W= ?

Q= 2C

V= 12v

W=VQ

W=12 x 2

W= 24J

Answer the following questions **2x8=16**

17.a) What will be the PH of milk when it is added with Baking soda or Sodium bicarbonate?

when Baking soda or Sodium bicarbonate is added to the milk its pH is slightly increases

b) Antacids are acidic basic neutral.

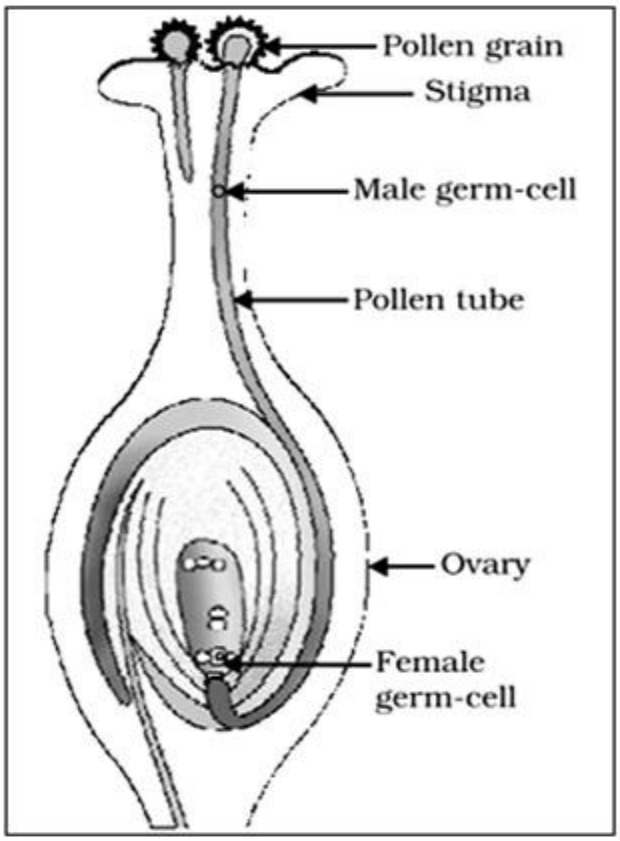
Antacids are basic in nature.

18.**Write the difference between calcination and roasting.**

Calcination	Roasting
1. Heating the ore strongly in presence of excess air 2. Sulphide ores are converted into oxides	1. Heating the ore strongly in limited air 2. carbonate ores are converted into oxides

19.Draw a neat diagram showing the structure of a flower and label

a) Stigma **b) Anther**



20.Plants do not have a excretory system but excretory products are got rid off. How?

1. Oxygen and carbon dioxide are exchanged through stomatal pores.
2. They get rid of excess water by transpiration.
3. Many of their tissues consist of dead cells.
4. Many wastes are stored in cellular vacuoles.
5. Waste products are stored in leaves that fall off.
6. Some waste products are stored in the form as resins and gums, especially in old xylem.
7. Plants excrete some waste substances into soil.

21.a) State Mendeleev's Periodic Law.

b) Write two advantages of Mendeleev's Periodic table.

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*.

1.Mendaleev arranged the elements in increasing order of atomic mass

2.Mendaleev left some gaps in his periodic table, predicted the existence of some elements which are not discovered.

3 .Noble gases discovered placed in a new group without disturbing the existing order.

4.Elements having similar properties were placed directly under one another

22.Mention the defects of vision and its correction.

Myopia : a person can see nearly objects clearly but cannot see distant objects distinctly.

Myopia can be corrected by using a concave lens of suitable power.

Hypermetropia : a person can see far objects clearly but cannot see nearby objects clearly.

Hypermetropia can be corrected by using a convex lens of suitable power.

Presbyopia : a person find difficult to see nearby objects comfortably and distinctly withot corrective glasses.

Presbyopia can be corrected by using bifocal lenses of suitable power

[OR]

Why do stars twinkle?

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.

23.What are the qualities of an ideal source of energy?

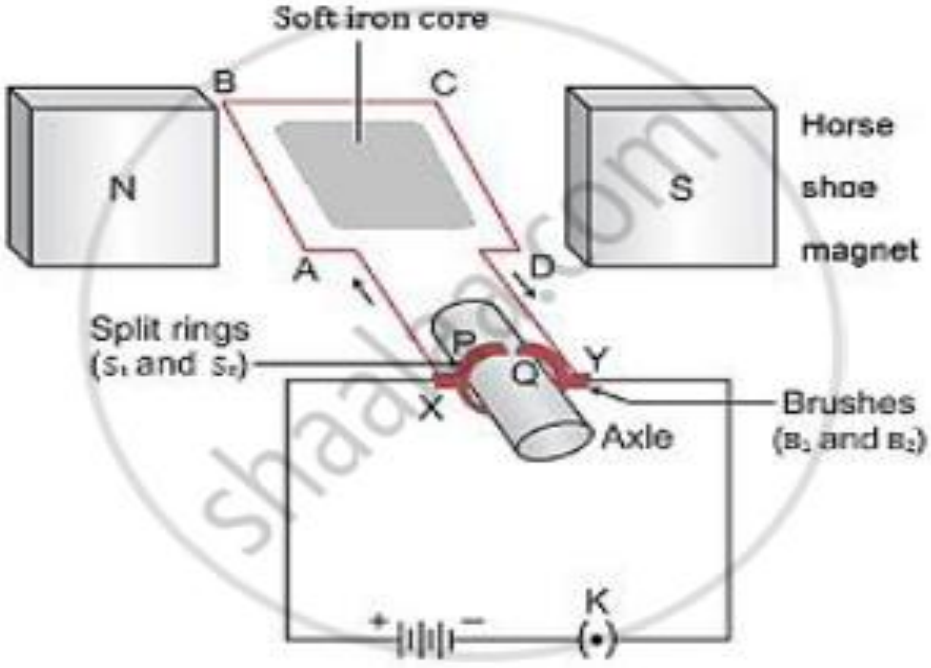
I) a good source of energy is one which would do a large amount of work per uni volume,

ii) be easily accessible,

iii)easy to store and transport,

iv) be economical

24.Draw a neat diagram of an electric motor.



Answer the following questions. **3x9=27**

25.What is budding? Explain with examples the process of budding.

Organisms use regenerative cells and a bud is developed as an out growth due to repeated cell division at one specific site.

These buds delop into tiny individuals and when fully mature detach from the parent body and become new individual.

26.Explain the chlor–alkali process.

When electricity is passed through an aqueous solution of sodium chloride it decomposes to form sodium hydroxide. this process is called chlor-alkali process because the products formed chlor for chlorine and alkali for sodium hydroxide.

$2NaCl(aq) + 2H_2O$----------->$2NaOH\ (aq) + Cl_2(g) + H_2(g)$

27.a) Write the chemical formula of plaster of Paris

b) Why is it used for fractured bones.

a) P**laster of Paris** -$CaSO_4 1/2H_2O$

b) doctors use plaster of paris for supporting fractured bones in the right position.

[OR]

What is the Common name of $CaOCl_2$.list out their Uses.

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.

28.a) How Respiration is an Exothermic reaction

Respiration is an excothermic reaction because energy is liberated in the reaction.

b) Write the chemical equation to represent Aerobic respiration

a) Respiration is an Exothermic reaction because energy is liberated.

b) $C_6H_{12}O_6$ (aq)+ $6O_2$ (aq) ----------> $6CO_2$ (aq) + $6H_2O$ (l) + enrgy

[OR]

a) Name the acid present in gastric juice.

b) Write the functions of Pancreatic juice

a) Hydrochloric acid

b) Pancreatic juice contain trypsin which digest the proteins and lipase digest emulsified fats.

29.What are soaps? Explain the cleaning action of soap on oily dirt.

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.

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

30. A yellow coloured flower plant YY is crossbreed with that of white coloured flower plant yy

a) State the colour of the flower in F_1 plants.

b) If F_1 plants are self-pollinated what is the ratio of yellow and white flowers.

c) Write the ratio of genotype YY and Yy in the F_2 Progeny.

a) The colour of the flower in F1 plants are yellow

b) If F_1 plants are self-pollinated what is the ratio of yellow and white flowers is

12 :4

C) The ratio of genotype YY and Yy in the F_2 Progeny 1:2

31. **A 20cm tall object is placed perpendicular to the principle axis of a convex lens of focal length 10cm. The distance of the object from the lens is 15cm. Find the nature, position and size of the image. Also find its magnification** .h=20cm

f= 10cm

u= -15cm

v=?

1/f=1/v – 1/u

1/10=1/v + 1/15

1/v=1/10-1/15

1/v=1/30

V=30cm

m=v/u

m=30/-15

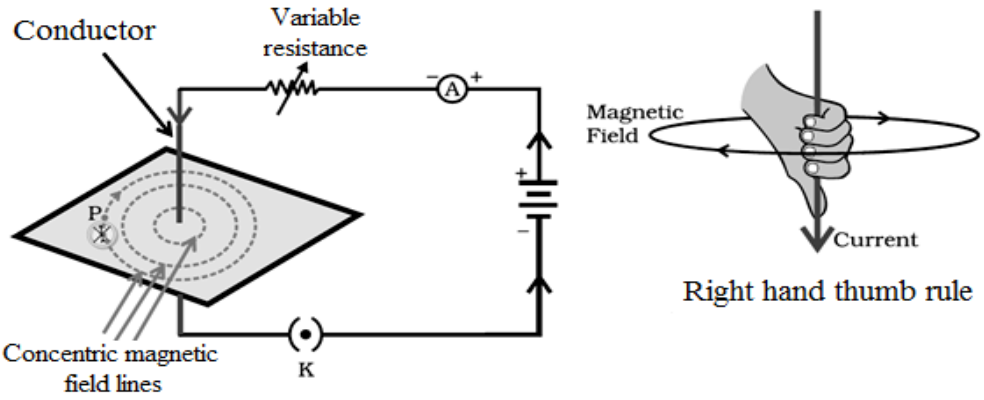
m=-2

$m=h^i/h$

$-2= h^i/20$

$h^i= -40cm$

32. Describe an experiment to show the magnetic field lines in a straight current carrying conductor.



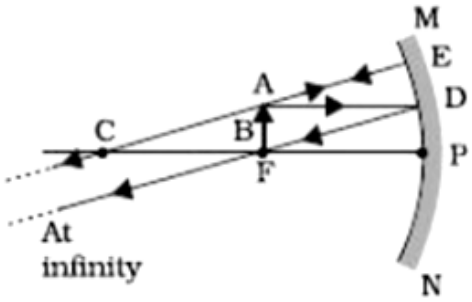
Arrange the apparatus as shown in the figure. Insert the thick wire through the centre, normal to the plane of a rectangular card board. Sprinkle some iron fillings uniformly on the cardboard. Close the key so that the current flows through the wire. Gently tap the cardboard a few times. The iron fillings 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.

33.The image Focussed At the distance of 15 Cm in a Concave mirror of a Focallength 20 Cm.Find the object Distance .

V= 15 cm
f= -20 cm
u= ?
1/f=1/v + 1/u
-1/20=1/15 + 1/u
1/u= -1/15 - 1/20
1/u= -7/ 60
u=-8.5 cm

OR

Draw a ray diagram to get a highly enlarged image in a concave mirror. Mention the positon and nature of the image.



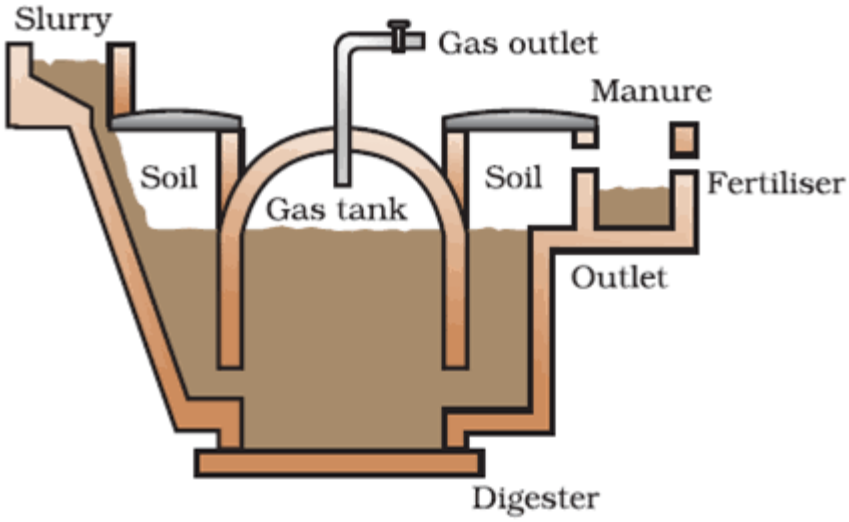
- Image is formed at infinity.
- It is real, inverted and highly enlarged.

Answer the following.

4x4=16

34. What are Biodegradable and non-biodegradable substance. How does harmful substances enter the trophic levels? Explain.
35. What are natural resource? What are their types? Explain the 3R's to save the environment.

36. Draw and label Biogas plant .



37. An electric lamp where resistance is 20Ω and a conductor of 4Ω resistance are connected in series to a 6V battery calculate.

a) The total resistance of the circuit b) The current through the circuit and

c) The potential difference across the electric lamp and conductor.

a) The total resistance of the circuit : $Rt = R_1 + R_2$

=20+4

=24 Ω

b)The current through the circuit : $I = V/R$

$= 6/24$

$= 0.25$ A

c)The potential difference across the electric lamp and conductor

$V = IR$

$V = 0.25 \times 20$

$V = 5v$

Answer the following question. 1x5=5

38.**What is variation? Traits acquired during the lifetime of an individual are not inherited Explain.**

The differences in characteristics between individuals of the same species is called *variation*.

Some *variation* is passed on from parents to offspring, via genes, during reproduction.

A trait can be only inherited when it brings a change in genes present in the gametes of an organism. Changes in non-reproductive tissues cannot be passed on to DNA of germ cells. Therefore traits acquired during lifetime of an individual are not inherited by the offspring because they are changes in somatic cells and not in germ cells.

SUBJECT: GENERAL SCIENCE
MODEL QUESTION PAPER 19-20
SET – 6

Marks: 80

Four alternatives are given for the following question. Choose the appropriate alternative and write with its alphabet. 1x8=8

1. Electrical resistivity of a given metallic wire depend upon.
   A. its length B. its thickness
   C. its shape **D. nature of the metallic**

   D. nature of the metallic

2. According to the law of Reflection angle of incidence (î) and angle of reflection ($\hat{r}$) have relation.
   A. $\hat{i} = \hat{r}$ B. $\hat{i} > \hat{r}$
   C. $\hat{i} < \hat{r}$ D. $\hat{i}/\hat{r} = 0$

   A. $\hat{i} = \hat{r}$

3. In plants cell division is brought about by the plant hormone.
   A. Cytokine B. Gibberellins
   C. Abscisic acid D. Auxin

   A. Cytokinin

4. Insert gases or noble gases belong to the group.
   A. 1^{st} group B. 2^{nd} group
   C. 17^{th} group **D. 18^{th} group**

   D. 18^{th} group

5. Pentanone is a five carbon compound with the functional group of.
   A. Carboxylic acid B. Aldehyde
   C. Ketone D. Alcohol

   C. Ketone

6. In hydra, the type of asexual reproduction takes place by
   A. Fragmentation **B. Budding**
   C. regeneration D. Spore formation

   B. Budding

7. A zygote which has an 'Y' chromosome inherited from the father will develop into a

A. Bo B. Girl

C. Girl or Boy D. Y chromosome does not determine the sex of a child.

A. Boy

8. During electrolytic refining of a metal pure metal gets deposited o**n**

A. Cathode B. Anode

C. Anode Mud D. Any electrode

A. Cathode

Answer the following **1x8=8**

9. Write the Function of Insulin hormone.

Insulin regulates the sugar level in the blood

10. Metals lose their lustre on exposing to air. Why?

Metals react with oxygen, carbon dioxide and moisture present in the air forming oxide layer on the metal surfaces losing their lusture

11. **What will happen of stomata is absent**?

1. If the stomata is absent there is no exchange of gasses and photosynthesis do not takes place.
2. Transpiration do not take place.

12. **Alloys are used more than metals in daily life. Why**?

Alloys are used more than metals in daily life because, alloys do not rust, corrode easily. They do not oxidize readily at high temperatures.

13. **What is a redox reaction**?

The reaction in which one reactant get reduced while the other is get oxidised are called redox reaction.

14. **Define an electric circuit**.

A continous and closed path of electric current is called electric circuit

15. **How much energy is given to each coulomb of change passing through 6v Battery**.

W=VQ

W=6 x 1

W=6J

16.Name some devices in which electric motors are used

Devices in which electric motors are used in fan, mixers, washing machine, computers

Answer the following. 2x8=16

17.a) **A milkman adds a very small amount of a baking soda to fresh milk. Why**?

b) Salivary amylase is acidic, basic or neutral

a) A milkman adds a very small amount of a baking soda to fresh milk to avoid the curdling of milk

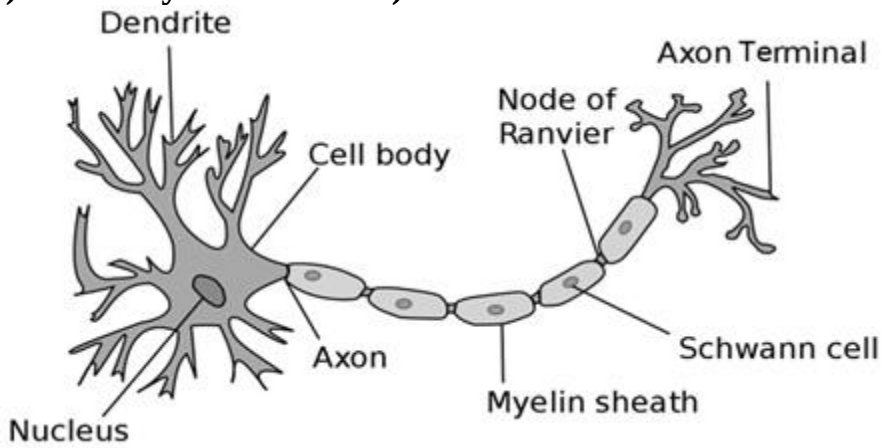
b) Salivary amylase is neutral

18.Mention two methods to prevent rusting.

Painting, greasing, alloying, oiling, Galvonisation, anodising, chrome plating

19.Draw a neat diagram of neuron and labelled.

a) Cell body b) Axon



20.a) **State modern periodic law**.

The properties of the elements are periodic function of their atomic number

b) **What are periods and groups with reference to the periodic table?**

Periods are the horizontal rows, groups are vertical columns with reference to the periodic table.

21. **What is the difference between photosynthesis and respiration? Represent with chemical equation**.

Photosynthesis	Respiration
1. Reduction of carbon dioxide to carbohydrates 2. Light energy is converted into chemical energy.	1. Oxidation of carbohydrates to carbon dioxide, water and energy 2.carbohydrates are oxidised to liberate heat and energy.

22. Define Hypermetropia? What is kind of lens required to correct the defect?

Hypermetropia : a person can see far objects clearly but cannot see nearby objects clearly.

Hypermetropia can be corrected by using a convex lens of suitable power.

23. **What are the disadvantages of fossil fuels**?

1. Fossil fuels are exhaustible.
2. Fossil fuels are non-renewable
3. Fossil fuels are limited in nature
4. Fossil fuels causes pollution

OR

List the properties of magnetic lines of force.

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.

Answer the following. **3x9=27**

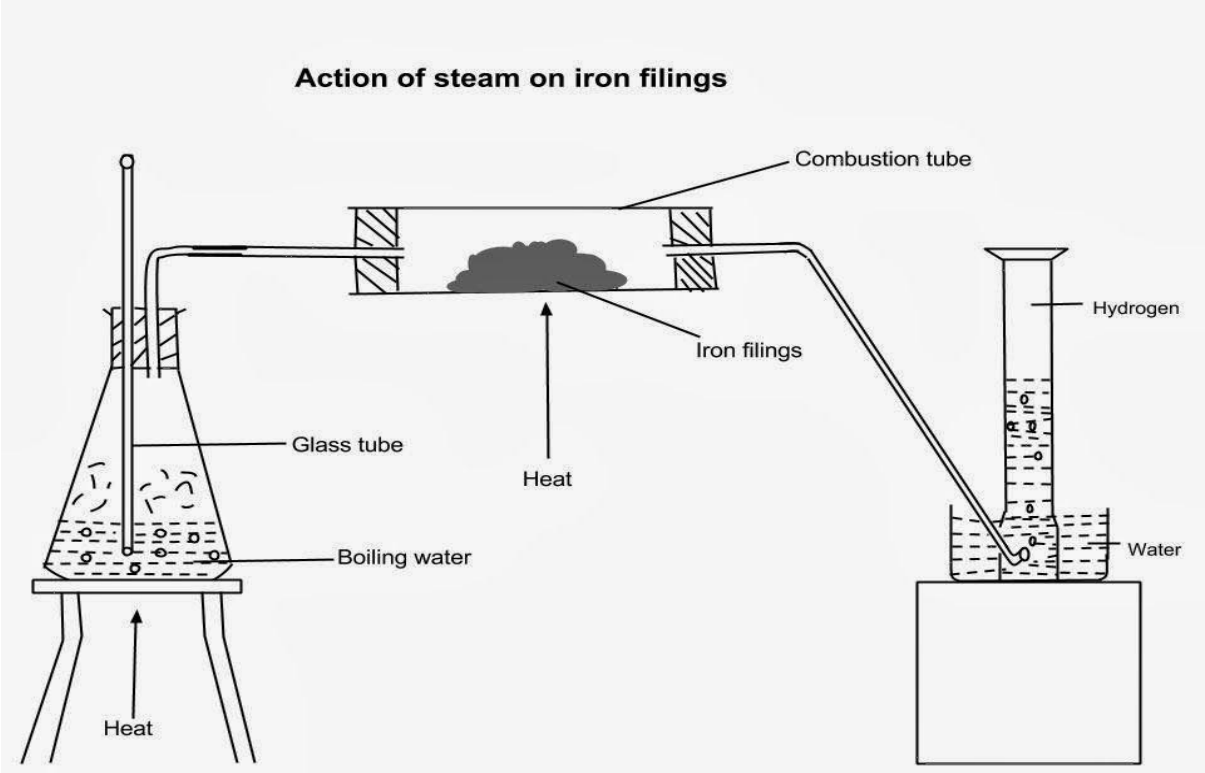
24. **What is fission? Write the difference between binary fission and multiple fission**.

Unicellular organisms split into two equal halves during cell division.

Ex :amoeba.

Binary fission	Multiple fission
1. Unicellular organisms split into two equal halves in a definite orientation in relation to their structure during cell division. 2. Ex Leishmania	1. Unicellular organisms split into many daughter cells simultaneously during cell division. 2. Ex :Plasmodiumv

25.Draw a neat labelled diagram showing action of steam on a metal.



26.a) Write the chemical name of baking soda.

b) Write the uses of Baking soda.

c) Why is it used as an antacid.

a) Sodium hydrogen carbonate or Sodium bicarbonate

b) 1. Used in fire extinguishers.

2. Used in antacids.

3. Used in baking powder.

c) It is a mild non-corrosive basic salt, it neutralises the excess acid in the stomach and provides relief.

27. **What is the difference between soaps and detergents. What are the advantages of using detergents**?

Soaps	Detergents
The molecules of soap are sodium or potassium salts of long chain carboxylic acids.	The molecules of detergents are sodium salts of sulphonic acids or ammonium salts with chlorides or bromides ions.

when hard water is treated with detergents calcium and magnesium salts present in hard water reacts with detergents do not form scum (insoluble substance)

[OR]

a) **Write the chemical name of bleaching powder.**

b) How is it obtained?

c) Write its uses?

A) calcium chloride hypochloride or Calcium oxy chloride.

B) Bleaching powder is produced by the action of chlorine on dry slaked lime.

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

C) 1. Bleaching powder is used in paper, textile, wood pulp industry.

2.to make drinking water free from germs.

28. The end product of nutrition is glucose, how is it broken down during.

a) Aerobic respiration b) Anaerobic respiration

c) in muscle cells due to lack of oxygen.

a) **Aerobic respiration**: 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) **Anaerobic respiration** : 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) **In muscle cells due to 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.

29.a) Describe the process of digestion in amoeba

b) What is the end product of nutrition in humans?

c) Bile juice plays an important role during the digestion of food in the human digestive system. Explain.

a) Amoeba takes in food using temperory finger-like extensions of the cell surface which fuse over the food particle forming a food vacuole. inside the food vacuole complex substances are broken down into simpler ones. Which then diffuse into the cytoplasm. The remaining undigested material is moved to the surface of the cell and thrown out.

b) Glucose

c) The food coming from the stomach is acidic and has to be made alkaline. Bile juice creates alkaline medium for the pancreatic enzymes to act. Bile salts break down large globules into smaller globules increasing the efficiency of enzyme action.

30. **An object is placed at a distance of 10cm from a convex mirror of focal length 15cm. Find the position and nature of the image**.

u= -10cm
f=15cm
v= ?
1/f=1/v+1/u
1/15=1/v-1/10
1/v=1/15+1/10
1/v=5/30
1/v=1/6
V=6 cm
m= -v/u
=-6/-10
m =0.6

Virtual image, diminished image.

31. What are the advantages and disadvantages of using a solar cooker?

Advantages of solar coocker are :

1. Food can prepared with the help of sun light
2. It is clean fuel, do not causes pollution

Disadvantages of solar coocker are :

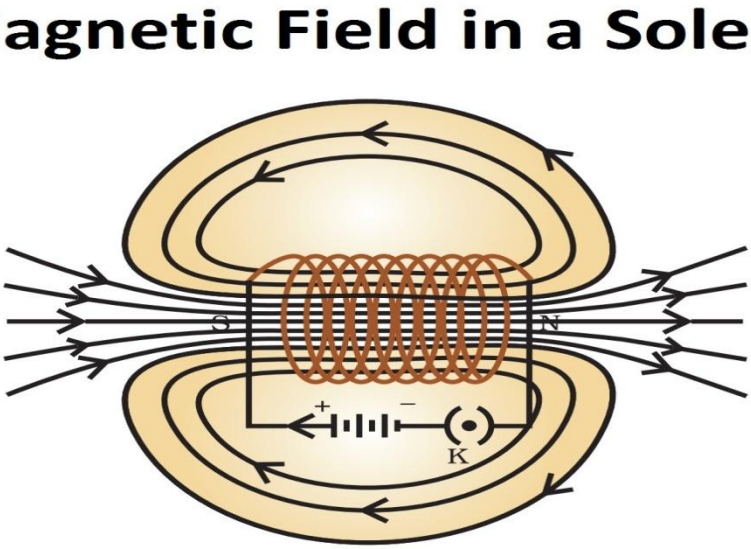
1. It is not useful during night, cloudy day and rainy season.
2. It is expensive

32. List the properties of magnetic lines of force.

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.

OR

Describe an experiment to show that solenoid behave like a magnet.



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

Connect the two ends of the coil to a battery. When the current flows in the coil magnetic field is produced.

The pattern of field lines are similar to the field lines of a bar magnet..The poles of a solenoid behave like a bar magnet. It can be tested with

the help of magnetic compass needle. The north pole of the compass needle usually repelled by north pole of electromagnet and attracted by the south pole.

Answer the following **4x4=16**

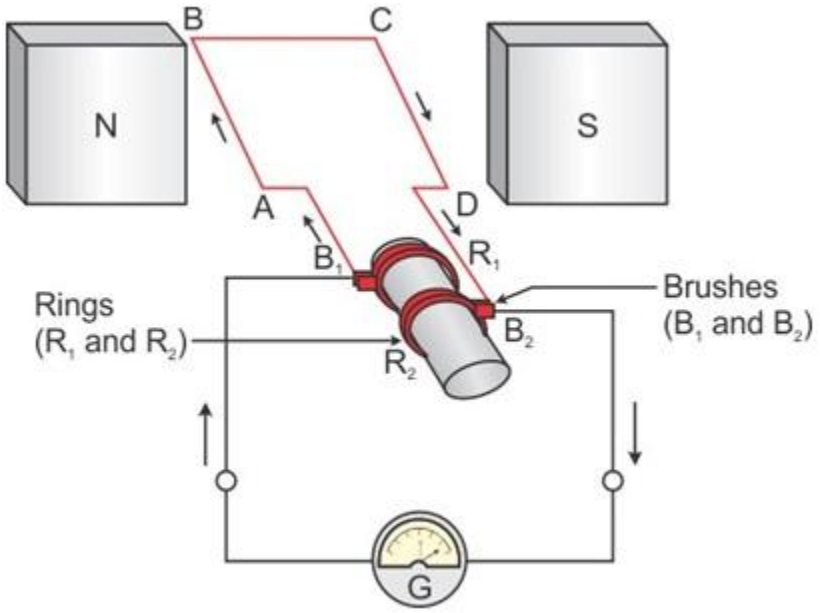
34.Describe the working of electric generator with a help of a neat diagram.

Working :

When the axle attached to the two rings is rotated such that the arm AB moves up and arm CD moves down. Let us say the coil is rotated clockwise. By applying Flemings right hand rule the induced currents are set up along the directions AB and CD. Thus the induced current flows in the direction ABCD. This means the current in the external circuit flows from B_2 to B_1.

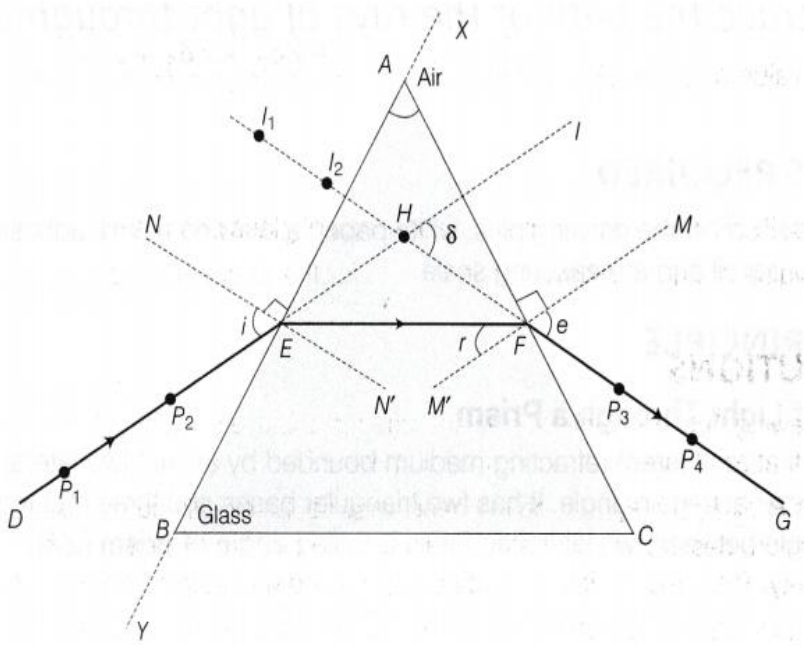
After half rotation arm CD starts moving up and AB moving down. As a result the directions of the induced currents in both the arms change. This means the current in the external circuit flows from B_1 to B_2.

Such a current which changes direction after equal intervals of time is called an alternating current. The device is called AC generator.



35.Describe an experiment of Refraction of light through a prism.

DE is the incident ray, EF is the refracted ray and FG is the emergent ray. The light ray entering from air to glass at the surface AB. The light ray on refraction has bent towards the normal. At the surface AC the light ray has entered from glass to air. Hence it has bent away from the normal. The angle of incidence and angle of refraction at each refracting surface of the prism are equal.



36.What is Bio-magnification? The amount of harmful substances is highest in the higher tropic level. Explain.

The accumulation of harmful chemicals in higher trophic levels is called bio-magnification

The use of several pesticides and other chemicals to protect our crops from diseases and pests. These chemicals are washed down into the soil or into the water bodies.from the soilthese are absorbed by the plants along with water and minerals and from the water bodies these are taken up by aquatic plants and animals. These get accumulated progressively at each trophic level.

37.What is the role of stake holders in saving the environment. What methods are employed to save our environment.

1. Forest department of the government which owns the land and controls the resources of the forests.
2. the wildlife and nature enthusiasts who want to conserve nature in its pristine form.
3.The people who live in or around forests are dependent on forests
4. the industrialists who are dependents on the forests

VI. Answer the following. **1x5=5**

38.**What is speciation? Explain the factors that could lead to speciation**

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

Causes for speciation are,

1.Geographical isolation : Geographical isolation is a major factor is a major factor in the speciation of organisms that reproduce sexually because it interrupts gene flow.

2.**Genetic drift**: in small reproductively isolated populations, special circumstances exist that can produce rapid changes in gene frequencies totally independent of mutation and natural selection.

3.Natural selection : population cease exchanging genes, there by diverging into separate species because of adoptive changes.

4.**Change in DNA** : If DNA changes are severe enough, such a change in number of chromosomes ,eventually the germ cells of the two groups can not fuse with each other.

5.Reduction in Gene flow : causes speciation because population with the reduced gene flow both begin to evolve independently

6.Reproductive isolation : the mechanism of reproductive isolation are a collection of evolutionary machanisms, behaviours and physiological process.

GOVT. PU COLLEGE FOR GIRLS, KOLAR.

STATE LEVEL SSLC PREPARATORY EXAMINATION,

FEBRUARY- 2020

SUBJECT : SCIENCE **CODE : 83E**

I.

1. (B) . combination reaction
2. (D) . chemotropism
3. (A) . the distance between optical centre and principal focus
4. (B). $_7N^{14}$ and $_4Be^9$
5. (D) .medium A
6. (A) . wing of a bird and forelimb of a horse – Homologous organs
7. (C) . -CHO
8. (C) . any one of the chromosome of Q gamete

II.

9. Plane mirror do not cover a larger area and always produces an image equall to the size of the object.
10. Ripening of fruit – ethylene, wilting of leaves – abscisic acid
11. $2HgS + 3O_2 \longrightarrow 2HgO + 2SO_2$

    $2Hgo \longrightarrow 2Hg + O_2$
12. Splitting of white light into its constituent colours is called dispersion of light.
13. The properties of the elements are periodic function of their atomic number.
14. In the test tube A slightly yellow colour or orange colour appears. This is because the enzyme salivary amylase present in the saliva converts starch into simple sugars. iodine react with sugar to form slightly yellow colour or orange colour
15. The given compound is saturated carbon compound because it has single bond between carbon atoms
16. P=-2.0 D

It is a concave lens

P=1/f

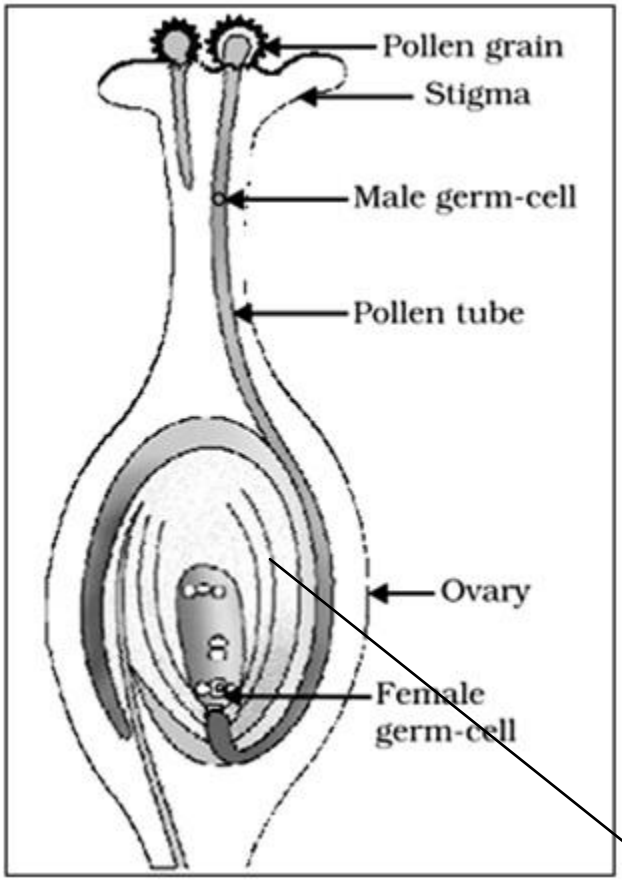
f=1/P

f=1/-2

f=-0.5 m

III.

17.



Here the fertilization occours

18. f= 50cm

u=-75 cm

v= ?

m=?

1/f=1/v-1/u

1/50=1/v -1/-75

1/50=1/v+1/75

1/v=1/50-1/75

1/v=1/150

v=150 cm

m=v/u

m=150/-75

m=-2

19. If a substance gains oxygen during a reaction is called oxidation reaction.

i) In the reaction aluminium is oxidized.

ii) In the reaction iron oxide is reduced.

iii) In the reaction aluminium is reducing agent.

OR

The reaction in which a single reactant breaks into two or more simpler products is called decomposition reaction.

When ferrous sulphate crystals are heated ferrous sulphate decompose into iron oxide,sulphur dioxide and sulphur trioxide.

$FeSO_4$ ----------> $Fe_2O_3 + SO_2 + SO_3$

20. Gastric juice contains hydrochloric acid creates an acidic medium. The food coming from the stomach is acidic and has to be made alkaline. Bile juice creates alkaline medium for the pancreatic enzymes to act. Bile salts break down large globules into smaller globules increasing the efficiency of enzyme action.

Hence the action of gastric juice and bile juice are complimentary to each other for efficient digestion in human beings.

OR

Organism B is autotroph and organism A is heterotroph.

Organism B is an autotroph prepares its own food and store the food in the form of starch.

Organism A an heterotroph store the digested food in the form of glycogen

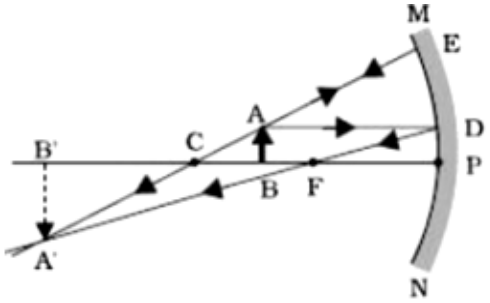
21. K, Na, Al, S

As the effective nuclear charge acting on the valance shell electrons increases across a period the tendency to lose electrons will decrease. Down the

group the effective nuclear charge acting on the valance shell electrons decreases the tendency to lose electrons will increases.

Hence across the period electronegativity increases. Down the group electronegativity decreases

22. When the object is between Centre of curvature and principal Focus:



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

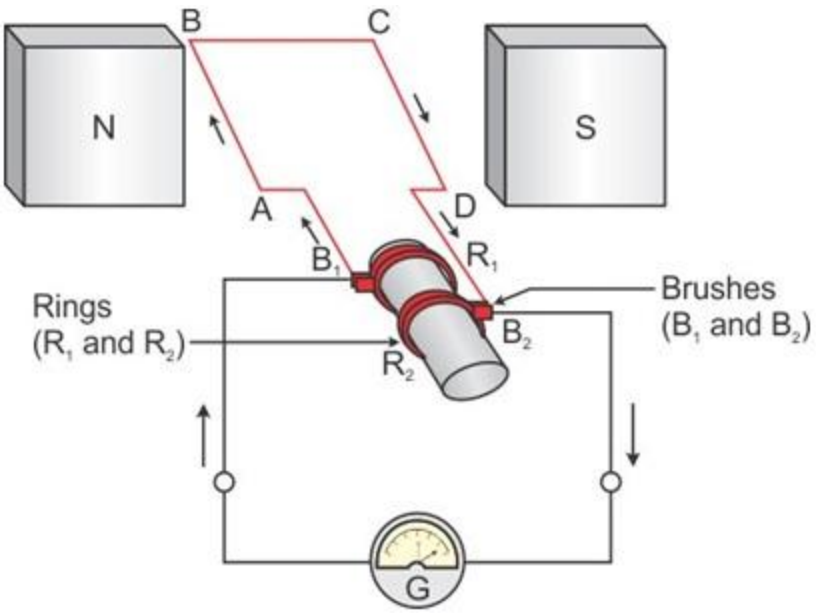
23. i) Reduce : I turn off the taps during brushing teeth

ii) Repurpose : empty glass bottle is used to grow small plants and to keep water for birds

iii) Refuce : I refuse the plastic bag or reuse the plastic bag

iv) Recycle : recycle the plastic bucket

24.



IV.

25.

Natural eco system	Artificial ecosystem
Forest lake	Crop field aquarium

In forest and lakes there are different plants and animals interact with each other. Their growth, reproduction and other activities are affected by the abiotic components of the ecosystem.

where as crop field and aquarium are man made here there are only a few kinds of plants and animals they do not interact with each other. Their growth, reproduction and other activities are not affected by the abiotic components of the ecosystem.

OR

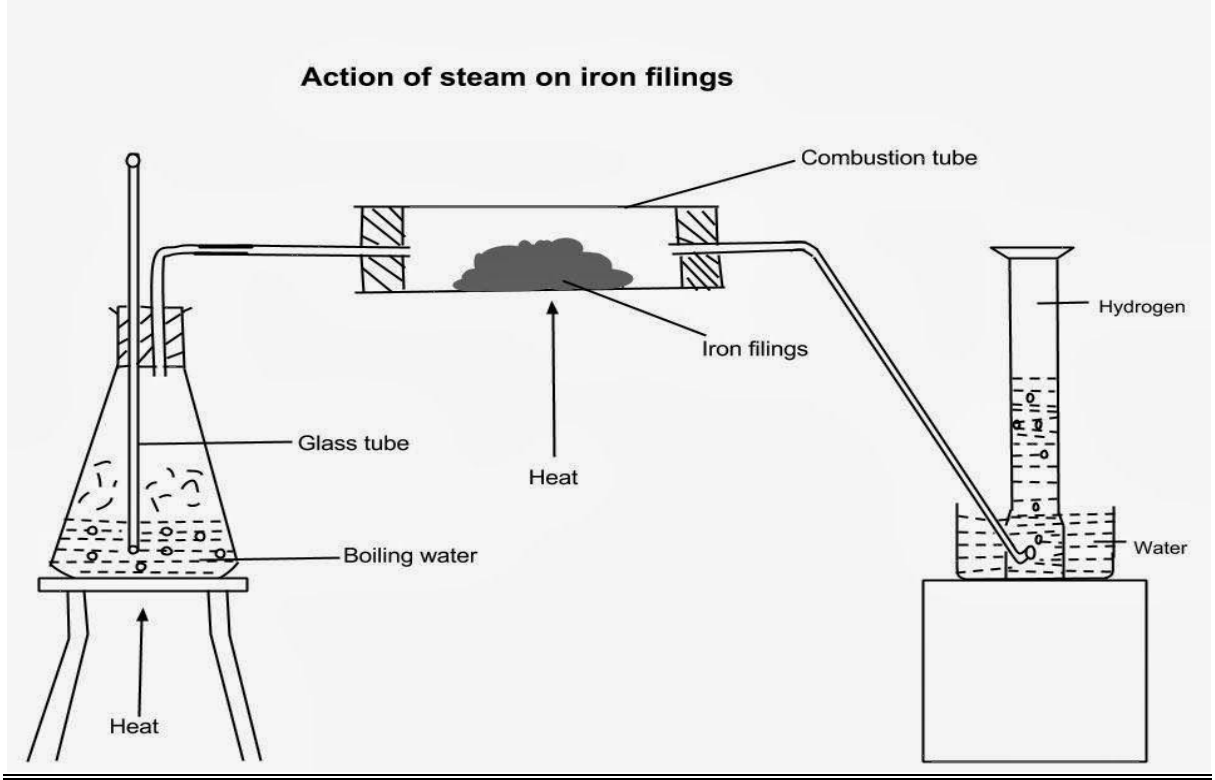
Non-bio-degradable wastes causes

1. Land, water, air pollution,
2. Biomagnification,
3. Soil destruction
4. Remain as permanent residues,
5. Harm various members of ecosystem.
6. Destruction of ecological balance.

The changed lifestyle increased this problem by our practices such as

1. We are using plastic for many purp[ses
2. We are using fertilizers ,chemicals and pesticides in large quantity to protect our crops
3. We are burning various materials which are releasing non-bio-degradable wastes
4. Use of ferfumes and aerosols

26.



27. R=20Ω

R_1= 10+ x

R2=25+75

R2= 100

1/RT=1/ R_1= + 1/R2

20=R1 + R2

1/20=1/10+x + 1/100

X= 15 Ω

V=IR

I=V/R

I=6/20

I=0.3A

OR

R=5 Ω

l=1m

A= a sq units

⇨ R= ƒl/A

5=ƒ1/a

ƒ=5a

Now

l=4m

A=5a

R= ?

R=ƒl/A

$R = \frac{5a \times 4}{5a}$

R=4 Ω

28. **Ovary**: the female germ cells or eggs are produced in the ovaries. They also produce the harmone estrogen

Oviduct: where the sperm encounter the egg.

Uterus: the embryo is implanted in the lining of the uterus. Where the embryo grow and develop organs to become foetus.

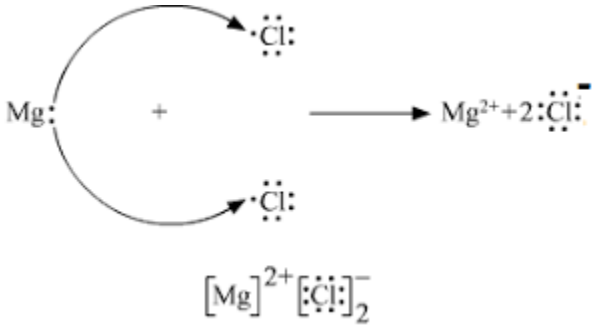
The essential materials are supplied for development of foetus with the help of special tissue called placenta.

29 Atomic number of B-12- Mg

Atomic number of M-17 – Cl

$Mg + Cl_2$ ----------> $MgCl_2$

Ionic bond is formed when a metal reacts with a non metal to form a salt.



$[Mg]^{2+}[Cl]_2^-$

30. When a person can't see the distant objects clearly is called as short sightedness or myopia.

This is due to

i)excessive curvature of the eye lens

ii)elongation of the eye ball.

Concave lens is used to correct this defect

Concave lens diverges the light rays coming from the object and bring the image back on to the retina.

31. a) Thyroid gland secrets thyroxin hormone. Thyroxin regulates carbohydrate, protein and fat metabolism in the body so as to provide the best balance for growth.

b) pancreas secrets insulin directly into the blood which helps to maintain the sugar level in the blood.

OR

In the animals information is carried out by nervous system with the help of electrical impulses.

Plants use electrical-chemical means to convey the information from cell to cell. Plant cells change shape by changing the amount of water in them, resulting In swelling or shrinking and therefore changing the shapes. This is how plants respond to the stimuli

32. A slurry of cow-dung and water is made in the mixing tank from where it is fed into the digester. Digester is a sealed chamber in which there is no oxygen. Anaerobic micro-organisms that do not require oxygen

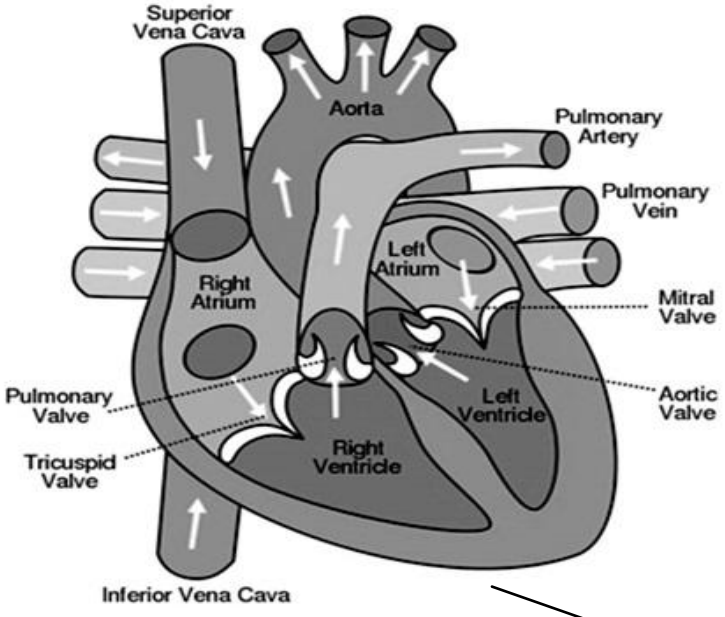
decompose the cow dung slurry. The gases such as methane, hydrogen, carbon dioxide and hydrogen sulphide are generated after the completion of the decomposition. The bio gas is stored in the gas tank above the digester from which it is drawn through the pipe.

OR

Now a days use of solar cells are encouraged because,

1. they do not causes pollution and it is a clean fuel
2. they can be set up in remote areas
3. they have no moving parts, require little maintenance and work quite satisfactorily without the use of focusing device.
4. To conserve the fossil fuels.
5. They are useful in radio, TV relay stations
6. It is a renewable and inexhaustible source of energy.

33.



septum : the wall that separates oxygenated and de-oxygenated blood

V.

34. a). The energy supplied to the circuit by the source in time t is p x t. that is VIt. This energy gets dissipated in the resistor as heat. Thus for steady current I, the amount of heat H produced in time t is

$H=VIt$

$H=I^2Rt$

OR

The heat produced in a resistor is directly proportional to the resistance, time for which the current flows through the resistor and square of the current.

$H=VIt$

$H=I^2Rt$

b) $H=200J$

$t=1sec$

$R=8\Omega$

$V=?$

$P=?$

$W=p \times t$

$200=p \times 1$

$P= 200\ w$

$P=V^2/R$

$V^2=p \times R$

$=200 \times 8$

$=1600$

$V=40\ v$

35. The compound X is sodium bicarbonate ($NaHCO_3$)

Sodium bicarbonate is a major component of antacids because it neutralizes the excess hydrochloric acid present in the stomach.

Sodium carbonate can be obtained by heating sodium bicarbonate. Recrystallisation of sodium carbonate gives washing soda.

$Na_2CO_3 + 10H_2O$ ----------> $Na_2CO_3.10H_2O$

OR

i) When dil.Hcl reacts with zinc hydrogen gas is liberated

$Zn + dil.2HCl \longrightarrow Zncl_2 + H_2$

The gas liberated in the above reaction is passed through the soap solution. The bubbles are formed in the soap solution. Take a burning candle near a gas filled bubble. We observe the burning of hydrogen gas with a pop sound.

ii) When dil.Hcl reacts with zinc carbonate carbon dioxide gas is liberated

$ZnCO_3 + dil.2HCl \longrightarrow Zncl_2 + H_2O + CO_2$

The gas liberated in the above reaction is passed through the lime water, lime water turns to milky due to the formation insoluble white precipitate of calcium carbonate .

36. a) Reasons for overloading are

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

Earth wire is necessary for the appliances with metallic body,

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.

3.The user may not get severe electric shock.

b) A strong magnetic field produced inside a solenoid can be used to magnetise a piece of magnetic material like soft iron placed inside the coil

OR

Electromagnets are made by wounding large number of turns of the conducting wire in a current carrying coilon soft iron core.

The poles of the electromagnet can be tested with the help of magnetic compass needle. The north pole of the compass needle usually repelled by north pole of electromagnet and attracted by the south pole.

37. a)The tools that have been used for tracing evolutionary relationship of humans are

1.time dating

2.excavating

3.study of fossils

4. determining DNA sequence

b) Genes are responcible for control the charectorstics of tallness of a plant Tt in which T is dominant gene, t is recessive gene.

gametes	T	t
T	TT	Tt
t	Tt	tt

Phenotypic ratio 3:1

Among them three are tall and one is dwarf

VI.

38. When methane burns in air or oxygen to give carbon dioxide, water with the release of heat and light.

$CH_4 + O_2$ ----------> $CO_2 + H_2O$ + heat and light

Methane undergoes substitution reaction

In presence of sunlight, chlorine is added to methane. Chlorine replaces hydrogen atoms one by one

$CH_4 + Cl_2$ ----------> $CH_3Cl + HCl$

Methane do not under go addition reaction because it is saturated hydrocarbon, the valency is fulfilled. Hence no more hydrogen or other atoms can be added