CBSE Sample Paper-04 (solved)
SUMMATIVE ASSESSMENT –I
SCIENCE (Theory)
Class – X

Time allowed: 3 hours Maximum Marks: 90

General Instructions:

a) All questions are compulsory.
b) The question paper comprises of two sections, A and B. You are to attempt both the sections.
c) Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
d) Questions 4 to 6 in section A are two marks questions. These are to be answered in about 30 words each.
e) Questions 7 to 18 in section A are three marks questions. These are to be answered in about 50 words each.
f) Questions 19 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
g) Questions 25 to 27 in section B are 2 marks questions and Questions 28 to 36 are multiple choice questions based on practical skills. Each question of multiple choice questions is a one mark question. You are to select one most appropriate response out of the four provided to you.

Section A

1. What happens when Hydrogen combines with Oxygen in the presence of an electric current?
2. Why is nutrition necessary for an organism?
3. Why is tungsten metal selected for making filaments of incandescent lamp bulbs?
4. Write two observations you would make when quicklime is added to water.
5. Where does cerebrospinal fluid occur in our body? Mention any two of its functions.
6. Draw a sketch of the iron fillings as you spray them on a magnet.
7. (a) What is an ionic equation? Give an example.
   (b) Write the name of following compounds:
   (i) $Mn(OH)_2$ (ii) $FeCl_3$
8. (a) What is Double displacement reaction? Give an example.
   (b) Write balanced equation:
   Sodium + Water $\longrightarrow$ Sodium hydroxide + Hydrogen
9. (i) What is the action on litmus of:
   (a) Dry ammonia gas. (b) Solution of ammonia gas in water
   (ii) State the observations you would make on adding ammonium hydroxide to aqueous solutions of (a) Ferrous sulphate, (b) Aluminium chloride.

10. What is an alloy? Name the constituents of 22-carat gold. Why is 24-carat gold converted to 22-carat gold?
11. State reasons for the following:
    (a) Aluminium oxide is called an amphoteric oxide.
    (b) Sodium and potassium metals are kept immersed under kerosene oil.
    (c) Hydrogen gas is not evolved when most metals react with nitric acid.
12. List two vital functions of the human kidney. Draw a labelled diagram of an artificial kidney.
13. Explain the process by which inhalation occurs during breathing in human beings.
14. Draw a diagram showing endocrine glands in a human male body. Label the following glands on it:
    (a) Pituitary (b) Thyroid (c) Adrenal (d) Testes
15. Name the unit used in selling electrical energy to consumers. Two lamps, one rated 100 W at 220 V and the other 40 W at 220 V are connected in parallel to a 220 V mains supply. Calculate the electric current drawn from the supply line.
16. Draw the pattern of lines of force due to magnetic field associated with a current carrying straight conductor. State how the magnetic field produces changes:
    (i) with an increase in current in the conductor and
    (ii) the distance from the conductor
17. Vinod went to his ancestral village alongwith his father during the summer holidays. He found that the women of the village used dried cow-dung cakes (uple) as the fuel to cook food and for other heating purposes. One day Vinod went to Panchayat meeting in a village which is attended by all the village elders and requested them to install "Gobar Gas plant" in the village and used cow-dung in it to produce gobar gas, instead of burning cow-dung cakes directly. He explained the advantages of using the gobar gas as a fuel instead of cow-dung cakes. Everyone liked the idea and thanked Vinod for guidance.
    Read the above passage and answer the following questions:
    (a) State one disadvantage of using dried cow-dung cakes as a fuel for cooking food.
    (b) State one advantage of using gobar gas as a fuel for cooking food.
    (c) What values are displayed by Vinod in this whole episode?

    [Value Based Question]
18. (a) Write the principle of generation of electric power by a boiling water type nuclear reactor. Name the coolant used in such a reactor.
    (b) Explain the process of generation of energy in the Sun and name the scientist who was first to propose it.
19. Translate the following statements into chemical equations and then balance them:
    (a) Hydrogen gas combines with nitrogen to form ammonia.
    (b) Hydrogen sulphide gas burns in air to give water and sulohur dioxide.
    (c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.
    (d) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.
    (e) Hydrogen sulphide gas reacts with oxygen gas to form solid sulphur and liquid water.

Or

Write the difference between Displacement reaction and Double displacement reactions. Write equations for these reactions also.

20. Four metals A, B, C and D are, in turn, added to the following solutions one by one. The observations made are tabulated below:

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	---------	---------
B	Displacement	---------	No reaction	---------
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Answer the following questions based on above information:

(i) Which is the most active metal and why?

(ii) What would be observed if B is added to a solution of Copper (II) sulphate and why?

(iii) Arrange the metals A, B, C and D in order of increasing reactivity.

(iv) Container of which metal can be used to store both Zinc sulphate and Silver nitrate solution?

(v) Which of the above solutions can be easily stored in a container made up of any of these metals?

Or

You are given the following materials:

(i) Iron nails (ii) Copper sulphate solution (iii) Barium chloride solution

(iv) Copper powder (v) Ferrous sulphate crystals (vi) quick lime

Identify the type of chemical reaction taking place when:

(a) Barium chloride solution is mixed with copper sulphate solution and a white precipitate is observed.

(b) On heating copper powder in air in a China dish, the surface of copper powder turns black.

(c) On heating green coloured ferrous sulphate crystals, reddish brown solid is left and smell of a gas having odour of burning sulphur is experienced.

(d) Iron nails when left dipped in blue copper sulphate solution become brownish in colour and the blue colour of copper sulphur fades away.

(e) Quick lime reacts vigorously with water releasing a large amount of heat.

21. How is 'Respiration' is different from 'Breathing'? Explain the process of 'Aerobic respiration' and 'Anaerobic respiration'.

Or

Draw a diagram showing 'Human respiratory system'. Label its following parts:

(i) Larynx (ii) Trachea (iii) Primary Bronchus (iv) Lungs

Why do the walls of the trachea not collapse when there is less air in it?

22. A household uses the following electric appliances:
    (i) Refrigerator of rating 400 W for 10 hours each day.
    (ii) Two electric fans of rating 80 W each for 6 hours daily.
    (iii) Six electric tubes of rating 18 W each for 6 hours daily.
    Calculate the electricity bill for the household for the month of June if cost electrical energy is ` 3.00 per unit.

    (i) The potential difference between two points in an electric circuit is 1 volt. What does is mean? Name a device that helps to measure the potential difference across a conductor.
    (ii) Why does the connecting cord of an electric heater not glow while the heating element does?
    (iii) Electric resistivities of some substances at 20^{o} C are given below:

Silver	$1.60\times10^{-8}\Omega$ m	Copper	$1.62\times10^{-8}\Omega$ m
Tungsten	$5.2\times10^{-8}\Omega$ m	Iron	$10.0\times10^{-8}\Omega$ m
Mercury	$94.0\times10^{-8}\Omega$ m	Nichrome	$100\times10^{-6}\Omega$ m

    Answer the following questions using above data:
    (a) Among Silver and Coper, which one is a better conductor and why?
    (b) Which material would you advise to be used in electrical heating devices and why?

23. State Fleming's Left hand rule. With a labelled diagram, describe the working of an electric motor. What is the function of split ring commutator in motor?

Or

Explain with a neat diagram, the principle, construction and working of an A.C. generator.

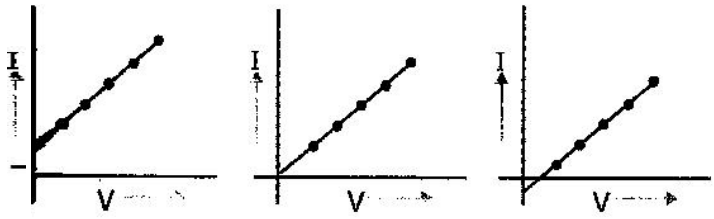
24. What are magnetic field lines? How will you draw them? Write their characteristics.

Or

Show a domestic electric circuit with fuse, a bulb and a geyser from main electric line. Indicate also the capacity of fuse used for geyser and the bulb.

25. If we mix equal volume of 1 M NaOH solution with 1 M solution of HCl and then if we add blue litmus into it, then what will be the change in litmus paper? Write the chemical reaction involved.
26. In an experiment on photosynthesis, a student fixed a strip of black paper on the dorsal surface of a Bougainvillea leaf in the morning. In the evening she tested the leaf for starch.
    (a) What will be the result?
    (b) Justify your answer

27. In the experiment on studying the dependence of current (I) on the potential difference (V), three students plotted the following graphs between (V) and (I) as per their respective observations.



(I) (II) (III)

(a) Which observation is correct?
(b) Justify your answer.

28. Four students I, II, III and IV were asked to examine the changes for blue and red litmus paper strips with dilute HCl (solution A) and dilute NaOH (solution B). The following observations were reported by the four students. The sign $(-)$ indicating no colour change.

(I)

Litmus	A	B
Blue	----	Red
Red	----	Blue

(II)

Litmus	A	B
Blue	Red	----
Red	----	Blue

(III)

Litmus	A	B
Blue	Red	Red
Red	Blue	Blue

(IV)

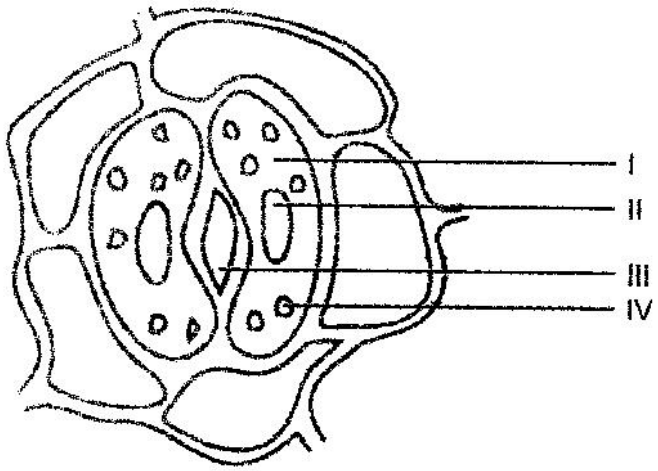
Litmus	A	B
Blue	Blue	Blue
Red	Red	Red

The correct observation would be of the student:
(a) I (b) II (c) III (d) IV

29. The apparatus should be kept air tight because:
(a) SO_2 is lighter than air.
(b) SO_2 is soluble in water.
(c) SO_2 will escape from the gaps.
(d) SO_2 is poisonous.

30. When acidified potassium dichromate solution is added to a jar containing sulphur dioxide gas, the solution becomes:
(a) colourless (b) brown (c) dark orange (d) green

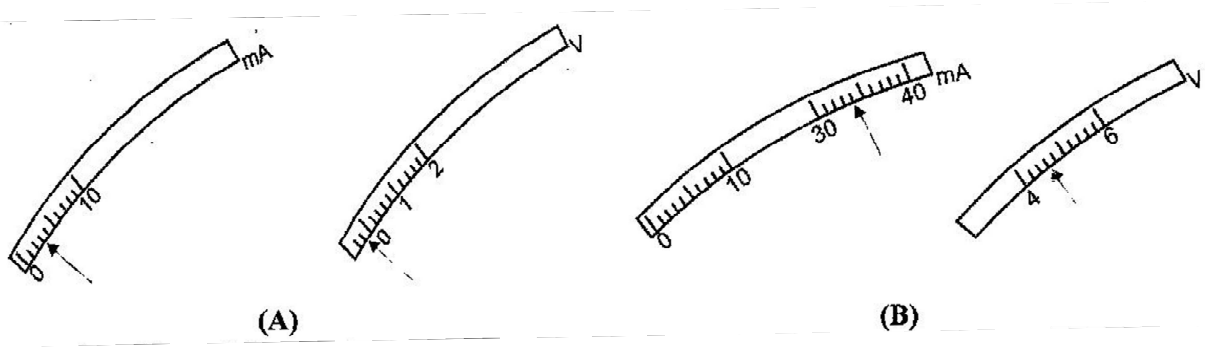
31. Which structure out of I, II, III and IV marked in the given diagram of the epidermal peel of leaf should be labelled as stoma:



(a) I (b) II (c) III (d) IV

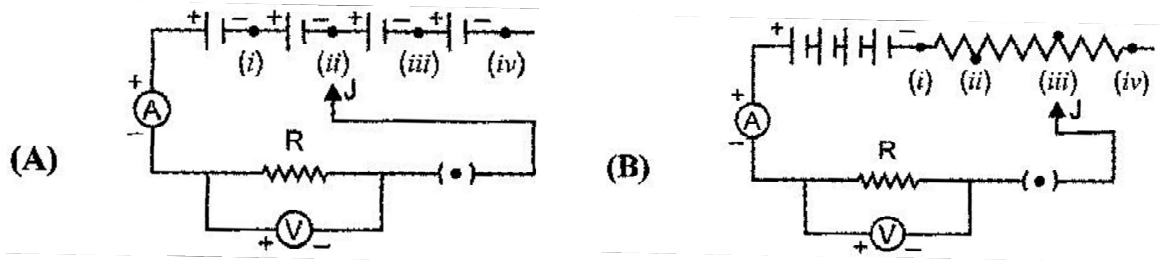
32. Phototropism : Shoots : Geotropism : _____
(a) Leaves (b) Flowers (c) Roots (d) Shoots

33. The rest positions of the needles in a Milliammeter and Voltmeter were shown in figure A. When a student used these in her experiment, the final readings of the needle were in the position shown in figure B.



The correct readings of the two instruments are:
(a) 34 mA and 4.2 V respectively (b) 37 mA and 4.8 V respectively
(c) 31 mA and 4.8 V respectively (d) 31 mA and 4.2 V respectively

34. To study the dependence of current (I) on the potential difference (V) across a resistor, two students used the two set ups shown in figure (A) and (B) respectively. They kept the contact J in four different positions, marked (i), (ii), (iii), (iv) in the two figures.



For the two students, their Ammeter and Voltmeter readings will be minimum when the contact J is in the position:

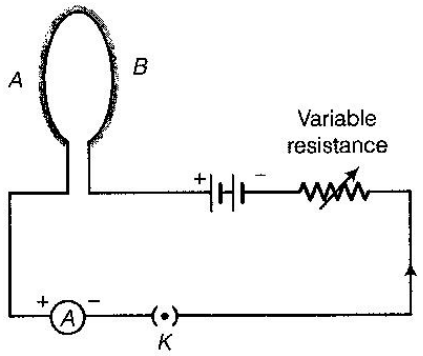
(a) (i) in both the set ups.

(b) (iv) in both the set ups.

(c) (iv) in set up (A) and (i) in set up (B)

(d) (i) in set up (A) and (iv) in set up (B)

35. A circular loop placed in a plane perpendicular to the place of paper carries a current when the key is ON. The current as seen from points A and B (in the plane of paper and on the axis of the coil) is anti-clockwise respectively. The magnetic field lines from B to A. The N-pole of the resultant magnet is on the face close to:



(a) A

(b) B

(c) A, if the current is small and B, if the current is large.

(d) B, if the current is small and A, if the current is large.

36. In a hydro power plant:

(a) Potential energy possessed by stored water is converted into electricity.

(b) Kinetic energy possessed by stored water is converted into potential energy.

(c) Electricity is extracted from water.

(d) Water is converted into steam to produce electricity.

CBSE Sample Paper-04 (solved)
SUMMATIVE ASSESSMENT –I
SCIENCE (Theory)
Class – X
(Solutions)

SECTION-A

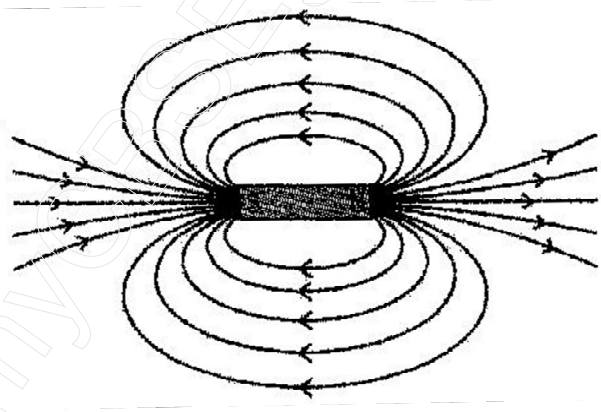
1. When Hydrogen combines with Oxygen in the presence of electric current, water is formed.

$$2H_2 + O_2 \xrightarrow[\text{current}]{\text{electric}} 2H_2O$$

2. Nutrition is necessary for an organism because it serves as energy source which is utilized in all physiological activities like growth, development and maintenance of life.
3. Tungsten metal has high resistivity and high melting point.
4. (i) The solution becomes hot.
   (ii) Quicklime forms milky solution with water.

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

5. The cerebrospinal fluid occurs in the sub-arachnoid space in the cerebral ventricles and spinal canal.

   Functions:
   (a) It serves to maintain a constant pressure inside the cranium.
   (b) It provides protection to the ears against mechanical injury and shock.
6. 

7. (a) The equation involving ions and elements is called an ionic equation, e.g.,

$$2I^-(aq) + Br_2(aq) \longrightarrow I_2(aq) + 2Br^-(aq)$$

   (b) (i) Manganese Hydroxide, (ii) Ferric chloride
8. Double displacement reaction is a reaction in which compounds exchange their ions, i.e. two atoms or ions displace each other, e.g.,

$$Ba(NO_3)_2(aq) + (NH_4)_2CO_3(aq) \longrightarrow BaCO_3(s) + 2NH_4NO_3(aq)$$

   Barium Nitrate — Ammonium carbonate — Barium Carbonate — Ammonium Nitrate

   (b) $2Na + 2H_2O \longrightarrow 2NaOH + H_2$

9. (i) (a) Litmus has no action on dry ammonia gas.
(b) Solution of ammonia gas in water turns red litmus blue.
(ii) (a) When ammonium hydroxide is added to ferrous sulphate solution, geren precipitate is formed.

$$FeSO_4 + 2NH_4OH \longrightarrow Fe(OH)_2 + (NH_4)_2SO_4$$

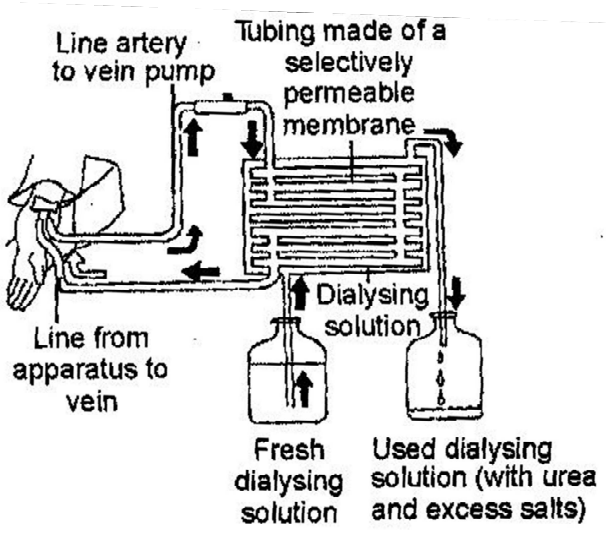
(b) Gelatinous white precipitate is formed.

$$AlCl_3 + 3NH_4OH \longrightarrow Al(OH)_3 + 3NH_4Cl$$

10. An Alloy is homogeneous mixture of two or more metals. Ore of them can be non-metals also.
22-carat gold contains $\frac{22}{24} \times 100 = 90.66\%$ gold and remaining copper.
It is because 24-carat gold (pure gold) is too soft to make ornaments.

11. (a) It reacts with both acids as well as bases therefore, it is called amphoteric oxide.
(b) It is because they are highly reactive and catch fire in moist air.
(c) It is because nitric acid is strong oxidizing agent

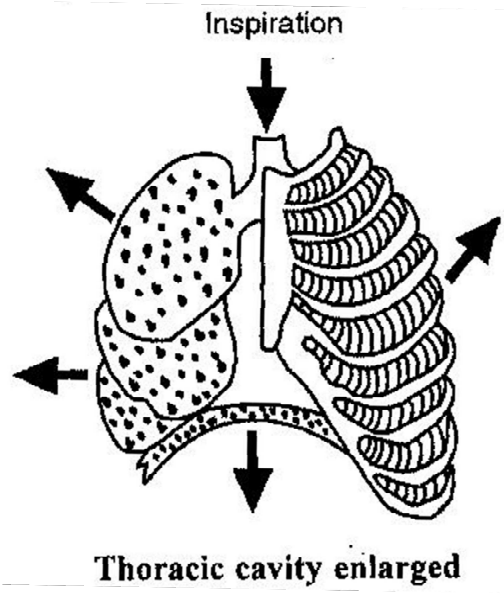
12. The vital functions of human kidney are as follows:
(i) **Excretion**: Metabolic wastes are excreted in the form of urine.
(ii) **Osmoregulation**: Maintenance of water quantity in all the parts of the body.



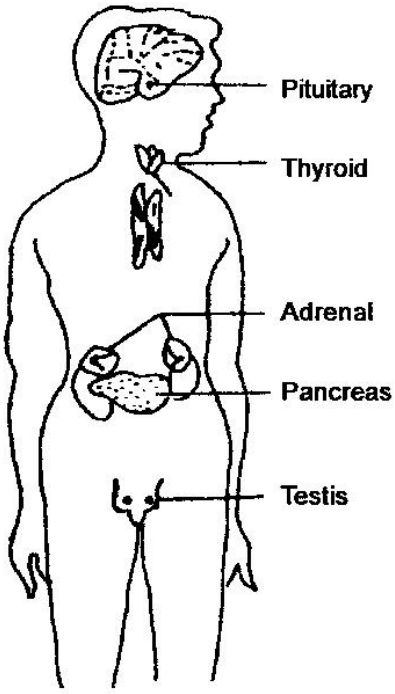
Artificial Kidney

13. Inhalation or inspiration is the process by which air is brought into the lungs during breathing in human beings. It involves the following steps.
(i) The external intercostal muscles contract causing ribs to pull out and chest cavity to expand.
(ii) Diaphragm contracts and is brought down a little. This also expands the chest cavity.

(iii) There is a contraction of the abdominal muscles. The expansion of chest cavity creates a partial vacuum and atmospheric air rushes the lung.



14.



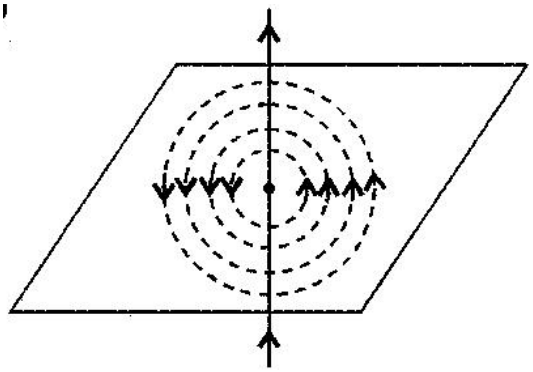
15. In parallel connection, $\frac{1}{R_p}=\frac{1}{R_1}+\frac{1}{R_2}$ $\Rightarrow$ $\frac{V^2}{R_p}=\frac{V^2}{R_1}+\frac{V^2}{R_2}$ $\Rightarrow$ $P = P_1 + P_2$

$\Rightarrow$ $P = 100 + 40 = 140$ W

Potential applied = 220 V

$\therefore$ Current drawn from the power supply $I = \frac{P}{V}=\frac{140}{220}=\frac{7}{11}$ A

16.



(i) Magnitude of field increases as $(B \propto I)$

(ii) Magnetic field decreases with an increase in distance from the conductor $\left(B \propto \frac{1}{r}\right)$

17. (a) Burning of dried cow-dung cakes as fuel produces a lot of smoke which cause air pollution in the houses and damage the health of all the family members, especially women and children.

(b) Gobar gas burns without producing any smoke and hence does not cause any air pollution. This ensures good health for village people especially women and children who spend most of their time inside the house.

(c) General awareness of the alternative sources of energy and concern about the environment and health of village people.

18. (a) It is based on the fission of self sustaining controlled chain reaction of U-235. The heat produced in the reactor is taken away the coolant such as water or heavy water or liquid sodium and used to heat the water and convert it into steam. The high pressure steam rotates the turbine which generates electricity.

(b) The process of generation of energy in the sun is nuclear fusion. For every fusion of deuterium, it releases 21.6 MeV energy. It was Hans Bethe who first proposed it. Helium is the product of the fusion.

$${}^{2}_{1}H + {}^{2}_{1}H \longrightarrow {}^{4}_{2}He + 21.6\ MeV$$

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

(b) $2H_2S(g) + 3O_2(g) \longrightarrow 2H_2O(l) + 2SO_2(g)$

(c) $3BaCl_2(aq) + Al_2(SO_4)_3(aq) \longrightarrow 2AlCl_3(aq) + 3BaSO_4(s)\downarrow$

(d) $2K(s) + 2H_2O(l) \longrightarrow 2KOH(aq) + H_2(g)$

(e) $2H_2S(g) + O_2(g) \longrightarrow 2S(s) + 2H_2O(l)$

Or

Displacement reaction: In a displacement reaction, a more reactive element displaces or removes another element from its compound.

For example, Zinc being more reactive, displaces copper from its compound.

$$Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$$

Double Displacement reaction: In case double displacement reaction, two compounds react by exchanging their ions and form two new compounds.

For example, Silver and Sodium exchange their ions, NO_3^- and Cl^- respectively and form two new compounds in the following reaction.

$$AgNO_3(aq) + NaCl(aq) \longrightarrow AgCl(s) + NaNO_3(aq)$$

20. (i) 'B' is most active metal because it can displace iron from iron (II) sulphate, whereas A, C, D cannot displace iron from iron (II) sulphate.
    (ii) 'B' will displace copper (reddish brown) from copper sulphate solution because 'B' can displace both iron as well as copper.
    (iii) B > A > C > D
    D, C, A, B is increasing order of reactivity.
    (iv) Zinc sulphate solution can be stored in metal B, C and D, silver nitrate solution can be stord in container of metal D.
    (v) Zinc sulphate

Or

(a) $BaCl_2$ (aq) + $CuSO_4$ (aq) $\longrightarrow$ $BaSO_4$ (s) + $CuCl_2$ (aq)
Barium Chloride — Copper sulphate — White ppt (Barium sulphate) — Copper chloride
It is precipitation reaction and Double Displacement reaction.

(b) 2Cu (s) + O_2 (g) $\longrightarrow$ 2CuO (s)
Copper — Oxygen — Black copper oxide
It is Combination reaction. It can also be called as Oxidation reaction.

(c) $2FeSO_4$ (s) $\xrightarrow{heat}$ Fe_2O_3 (s) + SO_2 + SO_3 (g)
Iron (II) sulphate Green — (Ferric oxide) Reddish Brown Solid — Sulphur dioxide (smell of burning sulphur) — Sulphur trioxide
It is Decomposition reaction.

(d) Fe (s) + $CuSO_4$ (aq) $\longrightarrow$ $FeSO_4$ (aq) + Cu(s)
Iron — Blue — Pale green — Copper (reddish brown)
It is Single Displacement reaction. Iron can displace copper from copper sulphate solution.

21. Difference between Breathing and Respiration:

Breathing	Respiration
(i) It is a bio-physical process where oxygen is taken and carbon dioxide is given out.	(i) It is a bio-chemical process where oxidation of food occurs and carbon dioxide is released.
(ii) It does not require enzymes.	(ii) It occurs in the presence of respiratory enzymes.
(iii) No energy is released during the process.	(iii) Energy is released in the form of ATP.
(iv) It occurs at organ level.	(iv) It occurs at cellular level.
(v) It is found in higher animals only.	(v) It is found in all animals and plants.

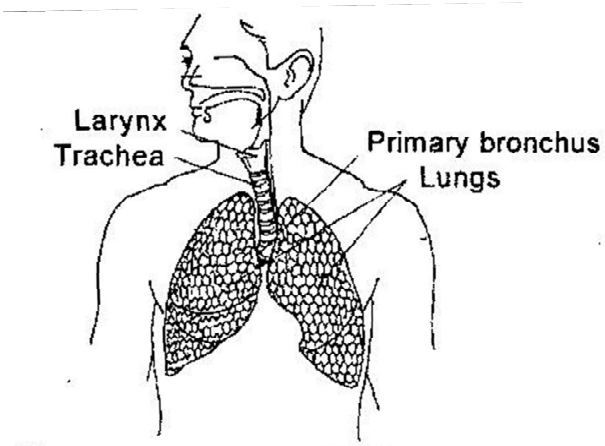
Aerobic respiration: When tissues carry our oxidation of food materials, utilizing molecular oxygen, the process is called Aerobic respiration.

$$\text{Glucose} \xrightarrow[\text{(in cytoplasm)}]{\text{Glycolysis}} \underset{\text{(2 molecules of pyruvate)}}{\text{Pyruvic acid}} \xrightarrow[\text{(in mitochondria)}]{\text{(in presence of } O_2\text{)}} \underset{\text{(energy)}}{6CO_2 + 6H_2O + 38\ ATP}$$

Anaerobic respiration: When cells or organisms carry out oxidation of nutrients without utilizing molecular oxygen, the process is called Anaerobic respiration.

$$\text{Glucose} \xrightarrow[\text{(in cytoplasm)}]{\text{Glycolysis}} \underset{\text{(2 molecules of pyruvate)}}{\text{Pyruvic acid}} \xrightarrow[\text{(yeast fermentation)}]{\text{(in absence of } O_2\text{)}} \underset{\text{(energy)}}{2C_2H_5OH + 2CO_2 + 2\ ATP}$$

Or



Human Respiratory System

The walls of trachea does not collapse when there is less air in it as it is supported by rings of cartilage.

22. Energy consumed per day by refrigerator = 0.4 kW x 10 h = 4 kWh

(Power of refrigerator = 400 W = $\frac{400}{1000}$ kW = 0.4 kW)

Energy consumed per day by fans = 2 x 0.08 kW x 6 h = 0.96 kWh

(Power of each fan = 80 W = $\frac{80}{1000}$ kW = 0.08 kW)

Energy consumed per day by Lights = 6 x 0.018 kW x 6 h = 0.648 kWh

Total energy consumed per day = 4 + 0.96 + 0.648 = 5.608 kWh

Energy consumed in 30 days = 30 x 5.608 = 168.24 kWh

Cost of 261.84 units @ `3.00 = 1.68.24 x 3 = ` 504.72

Or

(i) The potential difference between two points is 1 volt means that if a charge of 1 coulomb is moved from one point to other, 1 joule of work is required.

The potential difference across a conductor us measured by means of an instrument called the "Voltmeter".

(ii) The electric power P is given by $P = I^2R$

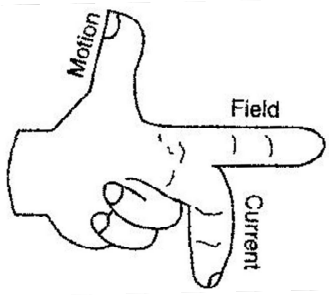
The resistance of the heating element is very high. Large amount of heat generates in the heating element and it glows hot.

The resistance of connecting cord is very low. Thus, negligible heat generates in the connecting cord and it does not glow.

(iii) (a) Silver is a better conductor due to its lower resistivity.

(b) Nichrome should be used in electrical heating devices due to very high resistivity.

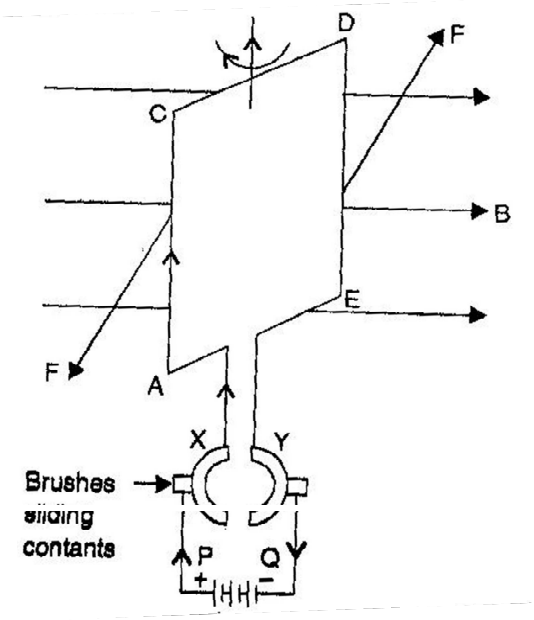
23. **Fleming's Left hand rule**: Stretch the first three fingers of the left hand mutually perpendicular to each other such that the fore finger points the direction of magnetic field, the middle finger points the direction of current, then the thumb will indicate the direction of force experienced by the conductor. It is to be applied when the current and field are perpendicular to each other.



Electric motor: The device used to convert electrical energy to mechanical energy is called Electric Motor. It is used in fans, machines etc.

Principle: Electric motor works on the principle of force experienced by a current carrying conductor in a magnetic field. The two forces in the opposite sides are equal and opposite. Since they act in different lines they bring rotational motion.

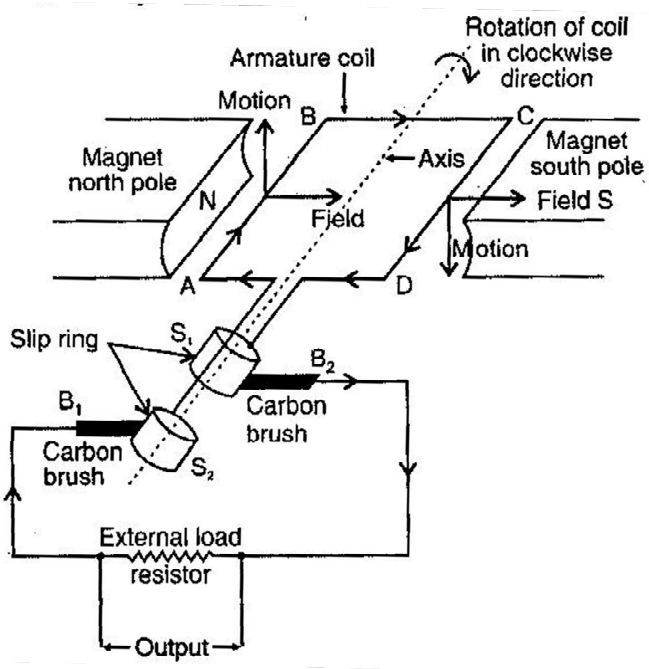
Working: It consists of an armature coil with many turns, a strong magnetic field source, commutator, carbon brushes and a source of electrical energy. As the current I flows in the coil ACDE, it will experience equal and opposite forces separated by a perpendicular distance. This makes the coil to rotate about its axis. After 180° rotation, the arms of the coil (say AC and DE) change the sides. At this stage the commutator reverses the direction of the current and ensures the flow of current in the same direction. So the motor continues to rotate the coil. During this rotation, some induced current is produced and it flows in the opposite direction. This causes a reduction in the current flowing through the coil as the speed increases.



Functions of split ring commutator: After half a rotation of the coil about its axis, the commutator reverses the direction of current and ensures the flow of current in the same direction. So the motor continues to rotate the coil.

Or

AC electric generator produces potential which reverses after every 180° rotation of the coil.

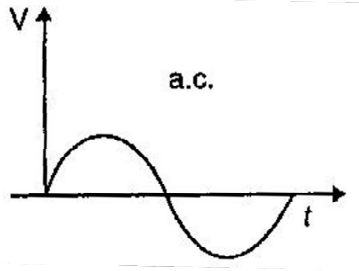


Working of an A.C. generator:

When the armature coil ABCD rotates in the magnetic field, with the help of some external mechanical work in clockwise direction i.e. arm AB moves up and CD moves down, due to change in the magnetic flux, induce current sets up in the coil. Then according to Fleming's right-hand rule, the current is flowing in the direction ABCD.

After half rotation, CD starts moving up and AB moves down. Hence net induced current in the direction DCBA.

Thus after every half rotation, the polarity of the induced emf thereby induced current across the load resistance changes. Therefore in the external circuit, we get alternating current.



24. **Magnetic field**: Surrounding a magnet its influence is felt by any other magnetic element. It may be an attractive of a repulsive influence.

The direction of magnetic field at a point is determined by drawing a tangent at that point. The direction of tangent gives the direction of magnetic field.

Characteristics of Magnetic field lines:

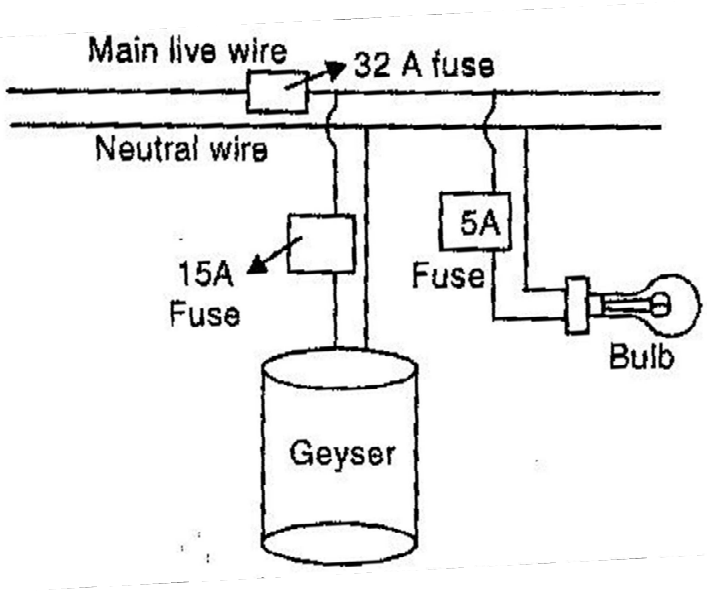
(i) The direction of the magnetic field is indicated by the arrow in the line at any point (Tangent).

(ii) The field lines come out of the North pole and get into the South pole (closed loops are formed).

(iii) The strength of magnetic field is indicated by the closeness of the field lines. Closer the lines, more will be the strength and farther the lines, lesser will be the field strength.

(iv) No two field lines will intersect each other – if they intersect there will be two different directions for field at the same point which is not possible.

Or



25. No effect will be on blue.
    $NaOH + HCl \longrightarrow NaCl + H_2O$
    NaCl is neutral, so blue litmus will remain blue. There is no effect.
26. (a) The entire leaf turned blue black. (b the diffused light reaching the ventral surface, photosynthesis takes place and so the
    whole leaf responds to starch test.
27. (a) The observation of student II is correct.
    (b) As V = 0, then I should also be zero, since V = IR.
28. (b)
29. (c)
30. (d)
31. (c)
32. (c)
33. (c)
34. (b)
35. (a)
36. (a)