CBSE Sample Paper-05
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 to lime water when CO_2 gas is bubbled through it in excess?
2. Define photolysis.
3. On which the resistivity of a metallic wise depends.
4. What is efforescence? Give an example.
5. Differentiate between tropic and nastic movements in plants, give one example of each.
6. What are magnetic lines of force? Roughly trace the magnetic field lines for a bar magnet.
7. What are the displacement reactions. Give example also.
8. What is a chemical formula? What information is conveyed by a chemical formula.
9. What will you observe when:
   (i) Red litmus is introduced into a solution of sodium sulphate.
   (ii) Methyl orange is added to dilHCl.
   (iii) Blue litmus is introduced into a solution of ferric chloride
10. Explain the following terms by giving one example of each:
    (i) Mineral (ii) Ore (iii) Gangue
11. Give reasons:
    (i) Metals are regarded as electropositive elements.

(ii) When a piece of Copper metal is added to a solution of Zinc sulphate, no change takes place, but the blue colour of Copper sulphate fades away when a piece of Zinc is placed in its solution.

(iii) Articles made of aluminium do not corrode even though aluminium is an active metal.

12. Draw a diagram of the human respiratory system and label the following in it:
(a) Lungs (b) Primary bronchus (c) Trachea (d) Larynx
13. Give reasons for the following:
(a) The glottis is guarded by epiglottis.
(b) The lung alveoli are covered with blood capillaries.
(c) The wall of trachea is supported by cartilage rings
14. What are the male and female gonads in human beings? State any two functions of each of them.
15. (a) Draw a schematic diagram of a circuit consisting of a battery of five 2 V cells, a 5 ohm resistor and a plug key, all are connected in series
(b) Calculate the electric current passing through the above circuit when the key is closed.
16. How does the strength of the magnetic field at the centre of a circular coil of wire depend upon:
(i) the radius of the coil
(ii) the number of turns of wire in the coil
(iii) the strength of current flowing in the coil?
17. (a) Name the four gases commonly present in biogas.
(b) list two advantages of using biogas over fossil fuels.
18. Vikalp's father had constructed a new room in their house. An electrician was called in to do the electric wiring. The electrician was asked to do wiring for two fans, two bulbs, a light socket and a power socket. Vikalp studies in tenth standard. Just when the electrician had completed the wiring, Vikalp returned home from school. Vikalp wanted to check the wiring by using all the switches and sockets. Vikalp found that the two fans and two sockets worked properly, each having a separate switch but there was a problem in the working of bulbs. Both the bulbs could be switched on and switched off with the same switch. Vikalp explained the mistake in wiring to electrician and then two separate switches were provided for the two bulbs.

Read the above passage and answer the following questions:

(a) In what way were the two fans and two sockets connected in the household circuit by electrician?
(b) What mistake made by the electrician in connecting two bulbs in the circuit?
(c) What values were displayed by Vikalp during this incident?

[Value Based Question]

19. You are provided with two containers made up of copper and aluminium. You are also provided with solutions of dil. HCl, dil. HNO_3, $ZnCl_2$ and H_2O. In which of the above containers these solutions can be kept?

Or

What happens when zinc granules are treated with dilute solution of H_2SO_4, HCL, HNO_3, NaCl and NaOH? Also write the chemical equations if reaction occurs.

20. (a) What is an 'activity series' of metals? Arrange the metals Zn, Mg, Al, Cu and Fe in a decreasing order of reactivity.
    (b) What would you observe when you put:
        (i) some zinc pieces into blue copper sulphate solution?
        (ii) some copper pieces into green ferrous sulphate solution?
    (c) Name a metal which combines with hydrogen gas. Name the compound formed.

Or

Describe with examples the following steps associated with the extraction of metals from their ores:
(i) Froth-floatation process
(ii) Roasting of an ore
(iii) Calcinations of an ore

21. Explain the process of Photosynthesis in plants. List four factors which influence this process and describe how each of them affects the rate of the photosynthesis process.

Or

List three differences between respiration in plants and respiration in animals. Describe with a labelled diagram how gaseous exchange occurs through root hair in plants.

22. (i) State and prove the Joule's law of heating.
    (ii) Give the commercial unit of electrical energy and relate it to Joule.
    (iii) When 40 W, 220 V bulbs are connected in series to a source of 220 V, find the current flowing in each. If one of the bulb fuses, what will be the current drawn from the source of 220 V?

Or

(a) Give reason, explain how he resistivity of the conductor vary if:
    (i) area is halved?
    (ii) length is doubled?
    (iii) area is doubled?
    (iv) both area and length are doubles?
(b) Draw the schematic diagram of a circuit containing the following electrical components:
    (i) a resistance (ii) a voltmeter (iii) an electric bulb
    (iv) a cell (v) lug key (open) (vi) an ammeter

23. Calculate the electricity bill amount for a month of 30 days, if the following devices are used as specified:
    (a) 4 bulbs of 60 W for 6 hours.
    (b) 3 tubelights of 40 W for 8 hours.

(c) A refrigerator of 300 W for 24 hours.
(d) An electric mixer of 750 W for 1 hour.
(e) A TV of 100 W for 6 hours.
The cost per unit of electricity consumed is Rs.2.50 for first 50 units and Rs.3.00 for every unit consumed in excess of 50.

Or

A 60 W bulb is connected (i) in series and (ii) in parallel with a room heater and is further connected across the mains. If 60 W bulb is now replaced by 100 W bulb in each case, will the heat produced by heater be less or more? Give reason.

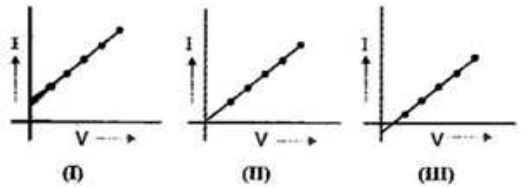
24. (a) What are Magnetic field lines? How is the direction of a magnetic field at a point determined?
(b) Draw two field lines around a bar magnet along its length on its two sides and mark the field directions on them by arrow marks.
(c) List any three properties of magnetic field lines.

Or

Why is pure iron not used for making permanent magnets? Name one materials used for making permanent magnets.
Describe how permanent magnets are made electrically.
State two examples of electrical instruments made by using permanent magnets.

Section B

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.



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

28. Which is a base and not alkali?
    (a) NaOH
    (b) KOH
    (c) $Fe(OH)_3$
    (d) None of these
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. What will happen when excess of SO_2 is passed through limewater and why:
    (a) The solution will become colourless due to formation of $Ca(HSO_3)_2$.
    (b) Limewater turns milky due to formation of $CaSO_3$.
    (c) The solution becomes green due to $CaSO_3$.
    (d) The solution becomes pink due to $Ca(HSO_3)_2$.
31. Sunlight used for photosynthesis is:
    (a) 5% (b) 50% (c) 0.5% (d) 4%
32. The process in which water is split during photosynthesis is called:
    (a) Photolysis (b) Hydrolysis (c) Glycolysis (d) None of these
33. Ammeter is always connected in:
    (a) Series (b) Parallel
    (c) Either in series or parallel (d) Neither in series nor in parallel
34. For current flow one need a:
    (a) Closed circuit (b) Source of potential difference
    (c) Both (a) and (b) (d) Neither (a) nor (b)
35. A voltmeter connected in parallel to a resistor reads 0.1 volt. There is:
    (a) Zero error (b) Positive error (c) Negative error (d) Both (b) & (c)
36. Which of the following is a non-renewable source of energy:
    (a) Wood (b) Sun (c) Fossil fuels (d) Wind

CBSE Sample Paper-05

SUMMATIVE ASSESSMENT –I

SCIENCE (Theory)

Class – X

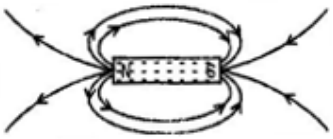
(Solutions)

SECTION-A

1. When CO_2 gas is bubbled through lime water in excess then initially it becomes milky but then its milkiness disappears.
2. The phenomenon of breaking down of water molecule using solar energy absorbed by chlorophyll molecules is known as photolysis.
3. Nature of material.
   Therefore 60 W bulb has a higher resistance.
4. It is property due to which a crystalline substance loses water of crystallization when exposed to air and becomes amorphous, e.g.,
   $Na_2CO_3.10H_2O \xrightarrow{air} Na_2CO_3.H_2O + H_2O$
5.

Tropic movements	Nastic movements
(i) Direction of movement is in the direction of the stimulus. (ii) Movements are slow. Example: The growth of the pollen tube towards a chemical produced by an ovule during the process of fertilization in a flower.	(i) Direction of movement is not determined by the direction of stimulus. (ii) Movements are fast. Example: The folding up and drooping of leaves of the sensitive 'touch-me-not' plant.

6. Lines indicating the presence of magnetic field in a region are called magnetic lines of force.



7. **Displacement** reaction is a reaction in which more reactive element displaces less reactive elements from its salts.
   Example: $2KI(aq) + Cl_2(g) \longrightarrow 2KCl(aq) + I_2(g)$
   It is a displacement reaction.
8. **Chemical formula** is a formula of a compound formed with the help of symbols and valency of elements and radicals.
   Information conveyed by a chemical formula:
   (i) It conveys the name of the compound.
   (ii) It conveys the number and kind of atoms present in one molecule of compound.
   (iii) It conveys the valency of atoms present in it.
   (iv) It represents the molecular weight of the compound.

(v) It indicates that the compound is not electrically charged. It is neutral molecule.

For example, formula $CaCO_3$ conveys following information:

(i) It stands for calcium carbonate.

(ii) It represents the one mole of calcium carbonate. Two molecules of calcium carbonate would be written as $2CaCO_3$ and so on.

(iii) It tells that each formula of $CaCO_3$ contains 1 atom of Ca, 1 atom of C and 3 atoms of O.

(iv) It stands for 100 parts by weight of $CaCO_3$.
(40 + 12 + 3 x 16 = 40 + 12 + 48 = 100)

(v) The ratio among Ca : C : O is 40 : 12 : 48 by weight.

9. (i) It will undergo any colour change because solution of Na_2SO_4 is water is almost neutral.
(ii) In the acidic solution, the colour of methyl Orange will change to reddish.
(iii) $FeCl_3$ solution on reacting with water will form ferric hydroxide and hydrochloric acid. Since the acid is strong, the solution will be acidic. Therefore the colour of blue litmus will change to red.

10. (i) **Mineral**: It is naturally occurring substance from which a metal may or may not be extracted profitably, e.g., Borax is mineral from which boron cannot be extracted economically.
(ii) **Ores**: They are naturally occurring rocky substances which contain sufficient quantity of minerals from which metals can be extracted profitably, e.g., Al is extracted from Bauxite.
(iii) **Gangue**: They are rocky materials present in the ores along with the minerals, e.g., SiO_2 is present as gangue in ore of iron.

11. (i) It is because metals can loss electrons easily to form positive ions, therefore regarded as electropositive elements.
(ii) It is because copper is less reactive than Zn, therefore, it cannot displace Zn from $ZnSO_4$ solution.

$Cu + ZnSO_4 \longrightarrow$ No reaction

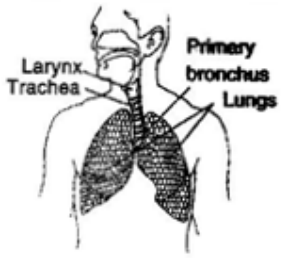
But when Zn is dipped in copper sulphate solution, it displaces copper from $CuSO_4$ to form $ZnSO_4$ which is colourless. Reddish brown copper metal gets precipitated because Zn is more reactive than Cu.

$Zn + CuSO_4 \longrightarrow ZnSO_4 + Cu$

Zinc (Blue) (colourless) Copper

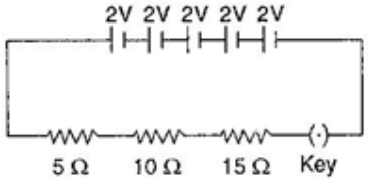
(iii) It is because oxide layer is formed on the surface of aluminum due to which it does not react further because it is non-penetrating layer.

12.



Human Respiratory System

13. (a) Glottis is guarded by epiglottis to prevent food from entering the windpipe at the time of swallowing.
    (b) The lung alveoli are covered with blood capillaries for the easy diffusion of respiratory gases, since both alveoli and blood capillaries are thin-walled.
    (c) The wall of trachea is supported by cartilage rings so that it does not collapse when there is not much air in it.
14. Male gonads are testes and female gonads are ovaries in human beings.
    Functions of Testes:
    (i) Testes produce sperms, the male haploid gametes.
    (ii) They produce male sex hormones, i.e., testosterone.
    Functions of Ovaries:
    (i) They produce ova, the female haploid gametes.
    (ii) They produce female sex hormones i.e., estrogen and progesterone.
15. (a)



    (b) $R_{eq} = R_1 + R_2 + R_3 = 5 + 10 + 15 = 30\,\Omega$
    $V = V_1 + V_2 + V_3 + V_4 + V_5 = 2 + 2 + 2 + 2 + 2 = 10\ V$
    $\therefore \quad I = \frac{V}{R_{eq}} = \frac{10}{30} = \frac{1}{3}\ A$
16. The strength of the magnetic field produced at the centre of a circular coil of radius r, having N turns and carrying a current I, is given by:

$$B = \frac{\mu_o NI}{2r} \text{ tesla}$$

    Thus the strength of the magnetic field in the coil is:
    (i) inversely proportional to the radius of the loop. $\left(B \propto \frac{1}{r}\right)$
    (ii) directly proportional to the number of turns. $(B \propto N)$
    (iii) directly proportional to the current passing through it. $(B \propto I)$
17. (a) Methane, Carbon di-oxide, Hydrogen and Hydrogen sulphide
    (b) Advantages of biogas over fossil fuels:
    (i) Biogas burns without smoke and does not cause air pollution while fossil fuel burns and causes air pollution.
    (ii) Biogas does not leave any residue after burning while fossil fuel leaves residue like ash which have a disposal problem.
    (iii) Biogas is cheaper than fossil fuel.
18. (a) The two fans and two sockets were connected correctly in parallel circuits.

(b) The two electric bulbs were connected wrongly in series in the circuit.

(c) Vikalp showed the values of (i) Curiosity to check whether things worked properly or not (ii) Knowledge of household wiring and (iii) Application of knowledge.

19. The containers made up of copper or aluminium is suitable for storing the given solutions, can be decided by studying their reactions:

(i) Reaction of copper with

(a) Dil. HCl. Cu + dil. HCl $\longrightarrow$ No reaction.
So it can be stored in Cu container.

(b) Dil. HNO_3. Being a strong oxidizing agent, dil. HNO_3 reacts with copper, so it cannot be stored in copper container.

(c) $ZnCl_2$. Copper is less reactive than zinc so it does not react with $ZnCl_2$ solution. Therefore it can be stored in copper container.

(d) H_2O. Copper does not react with water. So its container can store H_2O in it.

(ii) Reaction of ALuminium with

(a) Dil. HCl. Al reacts with Dil. HCl, so it can not be kept in aluminium container.
$2Al + 6HCl \longrightarrow 2AlCl_3 + 3H_2$

(b) Dil. HNO_3. When dil. HNO_3 is kept in Al container, it forms a protective layer of aluminium oxide on it, therefore it can be kept in Al container.

(c) $ZnCl_2$. Al is more reactive than zinc, so it cannot keep $ZnCl_2$ solution in it.
$2Al + 3ZnCl_2 \longrightarrow 2AlCl_3 + 3Zn$

(d) H_2O. Al does not react with water (hot or cold). Therefore water can be kept in Al container.
Aluminium is attracted by steam to form aluminium oxide and hydrogen.

$$2Al(s) + 3H_2O(g) \longrightarrow Al_2O_3(g) + 3H_2(g)$$

Or

The reactions of zinc granules with various reagents are as follows:

(i) Dil. H_2SO_4

$$Zn(s) + H_2SO_4(aq) \longrightarrow \underset{\text{Zinc sulphate}}{ZnSO_4(aq)} + H_2(g)$$

(ii) Dil. HCl

$$Zn(s) + 2HCl(aq) \longrightarrow \underset{\text{Zinc sulphate}}{ZnCl_2(aq)} + H_2(g)$$

(iii) Dil. HNO_3

Dil. HNO_3 is an oxidizing acid so its reaction with a metal (e.g. Zn) is different than other dilute acids.

$$4Zn(s) + 10\,HNO_3(aq) \longrightarrow \underset{\text{Zinc Nitrate}}{4ZN(NO_3)_2(aq)} + 5H_2O(l) + \underset{\text{Nitrous oxide}}{N_2O(g)}$$

(iv) NaCl solution

Reaction does not take splace.

$Zn(s) + NaCl(aq) \longrightarrow$ No reaction

(v) NaOH solution

$Zn(s) + 2NaOH(aq) \longrightarrow Na_2ZnO_2(aq) + H_2(g)$

Sodium zincate

Thus, hydrogen gas is evolved with H_2SO_4, HCl and NaOH, nitrous oxide gas is evolved with dilute HNO_3 and no reaction takes place with NaCl solution.

20. (a) 'Activity series' of metals is the series in which metals are arranged in decreasing order of theirreactivities.

Mg > Al > Zn > Fe > Cu is in a decreasing order of reactivity.

(b) (i) When zinc is placed in copper sulphate solution, the solution becomes colourless and browncolour copper metal is depicted.

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

(ii) Copper does not react with ferrous sulphate because it is less reactive than iron. No change takes place.

(c) Sodium metal combines with hydrogen to form Sodium hydride.

$2Na + H_2 \longrightarrow 2NaH$ (Sodium hydride)

Or

(i) **Froth Floatation process**: It is the process to concentrate sulphide ore. The ore is mixed with water and pine oil and mixture is agitated with the blast of air. Froth is formed. Sulphide ore gets collected in froth whereas impurities are left behind e.g., Zinc Blende (ZnS) is concentrated by Froth Floatation process.

(ii) **Roasting of an ore**: The process of heating sulphide ore in presence of oxygen so as to convert it into oxide is called roasting, e.g.,

$2ZnS + 3O_2 \longrightarrow 2ZnO + 2SO_2$

(iii) Calcination of an ore: It is defined as heating of ore in absence of oxygen so as to convert it into oxide, e.g.,

$ZnCO_3 \xrightarrow{heat} ZnO + CO_2$

21. **Photosynthesis** is a process in which plants use sunlight, chlorophyll, Carbon di-oxide and water to synthesize food.

It occurs in two stages:

(i) **Light reaction**: During this reaction ATP and NADPH are generated. This step is light dependent.

(ii) **Dark reaction**: It is not dependent on light. During this reaction, carbon di-oxide is produced to carbohydrate. Source of energy is ATP and NADPH.

Factors affecting rate of photosynthesis process:

(i) **Light**: Rate of photosynthesis increases at the low intensities and decreases at its higher intensities.

(ii) **Temperature**: Low and high temperature has inhibitory effect on the rate of photosynthesis.

(iii) **Water**: The rate of photosynthesis will become slow under water deficient conditions.

(iv) **Carbon dioxide**: the rate of photosynthesis increases with an increase in CO_2 concentration up to a certain level beyond that it may prove inhibitory.

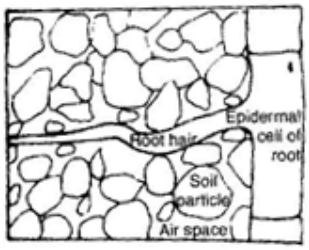
Or

Difference between Respiration in plants and Respiration in animals:

Respiration in plants	Respiration in animals
(i) Plants do not have respiratory system.	(i) Animals have respiratory system.
(ii) Direct diffusion of respiratory gas into the cells.	(ii) The respiratory gases are transported up to the tissue cells.
(iii) Plant respiration occurs at slower rate.	(iii) Animal respiration occurs at faster rate.

Gaseous exchange through root hair in plants:

Roots take up oxygen present in between the soil particles by the process of diffusion. Root hairs, the extension of epidermal cells of root are in contact with oxygen in the soil. Oxygen diffuses into root hairs and passes into other cells of the root. Carbon dioxide from root cells moves out into the soil. Thus, root hair provide increased surface area for gaseous exchange.



22. (i) According to Joule's law of heating, the heat H produced in a wire of resistance R while carrying a current I in time 't' is directly proportional to the square of current, resistance and time.

$$H = I^2Rt$$

Proof: Work done to carry a charge dq against a potential difference V is,

$$dW = V dq = VI dt \quad \Rightarrow \quad W = VIt = I^2Rt$$

This work done is dissipated as heat energy.

(ii) Commercial unit is kWh.

$$1 \text{ kWh} = 3.6\times10^6 \text{ joules}$$

(iii) Resistance of 40 W bulb = $\frac{220^2}{40}$

Net resistance = $4 \times \frac{220^2}{40} = 4840\,\Omega$

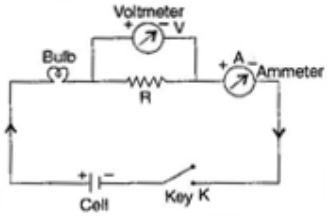
Current drawn and flowing through them = $I = \frac{220}{R} = \frac{220}{4840} = 0.045$ A

If one bulb fuses, no current flow will be seen in them.

Or

(a) Since resistivity depends neither on the length nor on the cross-sectional area of the conductor, the resistivity will remain unaffected in all variations. Also here material is same.

(b)



23. Electrical energy used by:

(a) 4 bulbs of 60 W = 4 x 60 x 6 x 30 = 43200 Wh

(b) 3 tubelights of 40 W = 3 x 40 x 8 x 30 = 28800 Wh

(c) 300 W refrigerator = 300 x 24 x 30 = 216000 Wh

(d) 750 W mixer = 750 x 1 x 30 = 22500 Wh

(e) TV of 100 W = 100 x 6 x 30 = 18000 Wh

Net energy consumption = 328500 Wh = 328.5 kWh = 328.5 units

Cost for first 50 units = 2.50 x 50 = Rs.125.00

Cost for the remaining units = 3.00 x 278.50 = Rs.835.50

Total cost of electricity consumed = Rs.960.50

Or

(i) **Series**

Net resistance = $R_{60} + R_H$

Where R_{60} is the resistance of 60 W bulb and R_H is the resistance of the heater.

Heat produced with a source of potential V (H) = $\frac{V^2}{R_{60} + R_H} t$

R_{100} – Resistance of 100 W bulb is less than that of R_{60}.

$\therefore$ Heat produced in same time 't' should be more with 100 W bulb than with 60 W bulb.

(ii) **Parallel**

Net resistance in parallel will be, R = $\frac{R_{60} R_H}{R_{60} + R_H}$

This will be less than R_{60} and R_H.

Heat produced, H = $\frac{V^2}{R} t$

If 60 W is replaced by 100 W bulb, the resistance R will further reduce. So heat produced will be increased.

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

(b) 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.

(c) **Aim**: To demonstrate the direction of the magnetic field generated around a current carrying conductor.

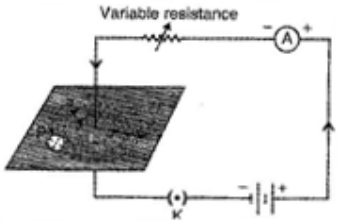
Procedure:

(i) Obtain the concentric circles pattern of iron fillings around the copper wire by flowing current through it as shown.

(ii) Place a magnetic needle (compass) at any point (P) over a circle.

(iii) Observe the direction of needle.

(iv) Show the direction by arrows.



Conclusion: The direction of the north pole of the compass needle would give the direction of the field lines produced by the electric current through the straight wire at that point.

The direction of the field is perpendicular to the plane of the coil and directed inwards for the clockwise current flowing. For anticlockwise current, it will be outwards.

Or

Pure iron is not used for making permanent magnets because it cannot retain their magnetism for long time and used only for electromagnet since alloys of iron and steel have strongly magnetized and have a capacity to hold it for a longer time period, they are used for permanent magnets.

Material used for permanent magnets – ALNICO

Formation of a permanent magnet electrically: Permanent magnets can be formed by placing a hard steel rod in the strong uniform magnetic field produced by the solenoid. Steels have the quality to retain its magnetism after switch off the solenoid current.

Permanent magnets are used in:

(i) Galvanometer (ii) Ammeter

Section B

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) In 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. (c)
29. (c)
30. (a)
31. (a)
32. (a)
33. (a)
34. (c)
35. (b)
36. (c)