

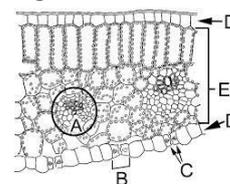
QUESTION BANK, CLASS – X

BIOLOGY

Ch. 5 LIFE PROCESSES

Q.1 What are various types of nutrition? Describe Holozoic nutrition in Amoeba with the help of well labelled diagram.

Q.2 Given below is the diagram of a cross section of a dicot leaf. Observe it and answer the following questions.



i) Label the parts marked as A, B, C, D and E.

ii) What is the role of A, B, C, D and E?

iii) In which surface of the leaf exchange of gases takes place during photosynthesis? Why?

iv) The rate of photosynthesis is higher near the upper surface of the leaf. Give reason.

v) What are the factors that influence the rate of photosynthesis?

vi) The leaves of a plant were covered with aluminium foil; how would it affect the physiology of the plant?

Q.3 Explain the role of the following in the process of nutrition in human being-

a) Tongue b) Saliva c) Gastric juice d) Liver e) Pancreas f) Microvilli

Q.4 Design an experiment to show that CO_2 is necessary for photosynthesis.

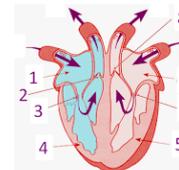
Q.5 Compare between aerobic and anaerobic respiration.

Q.6 Draw a flow chart to show various pathways of breaking of glucose during respiration. Which pathway produces more energy and why?

Q.7 Mention the respiratory organs of the following organisms – Fish, Earthworm, Cockroach, Frog and Amoeba.

Q.9 Describe Double circulation with the help of a suitable diagram. How is it useful for the organisms? Give two examples.

Q.10 Observe the diagram and answer the questions given below.



i) Label the parts shown in the diagram from 1 to 8.

ii) Mention the role of all the parts marked in the diagram.

iii) Name the blood vessels that are bringing the blood towards the heart in the given diagram.

iv) Name the blood vessels that are taking the blood away from the heart in the given diagram.

Q.11 Compare between- i) Blood and Lymph ii) Artery and Vein.

Q.13 When will be the rate of Ascent of sap higher – during day or during night? Explain.

Q.14 Draw and label parts of human excretory system and mention the role of its various parts.

Q.15 Write the methods of excretion in plants.

Q.16 In which part of a nephron the following activity takes place?

i) Ultra filtration of blood ii) Re absorption of Amino acids and glucose iii) Regulation of concentration of water in the body.

Ch. CONTROL AND COORDINATION

Q.17 Design activity to show the following in plants –

i) Phototropism in root and shoot of a plant. ii) Hydrotropism in root and shoot of a plant.

iii) Geotropism in root and shoot of a plant.

Q.18 Explain the role of Auxin in bending of the shoot of a plant towards the light.

Q.19 What is Reflex action? Draw a reflex arc and write the significance of reflex action.

Q.20 Write the role of the following parts of a brain - i) Cerebrum ii) Medulla oblongata iii) Pons iv) Cerebellum v) Cerebrospinal Fluid

Q.21 Write the function of the following hormones-

i) Releasing Hormone ii) Thyroxine iii) Insulin iv) Testosterone v) Estrogen vi) Adrenalin

Q.22 What are Growth promoter and Growth inhibitor hormones? Give examples.

Ch- HEREDITY

Q.21(a) Why did Mendel carry out an experiment to study inheritance of two traits in garden pea?

(b) What were his findings with respect to inheritance of traits in F_1 and F_2 generation?

(c) State the ratio obtained in the F_2 generation in the above-mentioned experiment.

Q.22A green stemmed rose plant denoted by 'GG' and a brown stemmed rose plant denoted by 'gg' are allowed to undergo a cross with each other.

(a) List your observations regarding:

(i) Colour of stem in their F_1 progeny

(ii) Percentage of brown stemmed plants in F_2 progeny if plants are self pollinated.

(iii) Ratio of GG and Gg in the F_2 progeny.

(b) Based on the findings of this cross, what conclusion can be drawn?

Q.23(a) What is the law of dominance of traits? Explain with an example.

(b) Why are the traits acquired during the life time of an individual not inherited? Explain.

Q.24 "Only variations that confer an advantage to an individual organism will survive in a population." Justify this statement.

Q.25 Mention the various laws of inheritance proposed by Mendel. What term did Mendel use for genes? Where are the genes located?

Q.26 "The father is responsible for the sex of a child, not the mother." Justify this statement.

Ch. OUR ENVIRONMENT

Q.27 What do you mean by ecosystem? Name the components of ecosystem.

Q.28 What is 10% law of energy transfer? Explain giving example.

Q.29 Energy transfer is said to be unidirectional whereas biochemical transfer is said to be cyclic. Why?

Q.30 Define food chain and food web. Why food chains are generally small? What is the significance of food chain?

Q.31 DDT is a pesticide, nonbiodegradable in nature. How the concentration of DDT increases in higher trophic levels of a food chain? Name the phenomenon. Write its harmful effects.

Q.32 How is the Ozone layer formed in the atmosphere? Why is damage to the ozone layer a cause for concern? What are its causes and what steps are being taken to limit this damage?

REPRODUCTION

Q.33 What is reproduction? Mention the importance of DNA copying in reproduction.

Q.34 Enlist different mode of asexual reproduction in organisms. Explain each method by diagram and give two examples each.

OR

a) Differentiate between Binary fission and Multiple fission.

b) Fragmentation and Regeneration

Q.35 Give reason: Regeneration is not the same as reproduction.

Q.36 Explain vegetative propagation by Root, Stem and Leaves with examples.

Q.37 Write advantage and disadvantages of vegetative propagation.

Q.38 How does Rhizopus multiply by spores. Explain in brief. Sketch neat labelled diagram of this method.

Q.39 Differentiate between:

a) External fertilization and Internal fertilization in at least three points.

b) Asexual reproduction and Sexual reproduction.

c) Pollination and fertilization.

Q.39. Draw a well labelled diagram of a complete flower.

OR

a) Draw a diagram of a pistil showing pollen tube growth into the ovule and label the following: pollen grain, male gamete, female gamete and ovary.

b) Explain fertilization in a flowering plant.

Q.40 A student was asked to observe and identify the various parts of an embryo of a red kidney bean seed. He identified the parts and listed them as : I. Tegmen II. Testa III. Cotyledon IV. Radicle V. Plumule Draw and label the parts he identified.

Q.41 List six specific characteristics of sexual reproduction.

Q.42 Name the male and female gametes in animals. What is fertilization and where does it take place in human females?

Q.43 In what respect is the human male gamete different from the female gamete? What is the importance of this difference? List two functions performed by testes and ovary in human beings.

Q.44 Draw male reproductive system and describe in brief the role of:

i. testis ii. seminal vesicle iii. vas deferens iv. ureter prostate gland

Q.45 Draw a labelled diagram of female reproductive system and name the parts where:

(i) fertilisation takes place. (ii) implantation of the fertilised egg occurs.

Q.46 What happens when the egg is not fertilized?

Q.47 What is placenta? State its functions in case of a pregnant human female.

Q.48 List four techniques that have been developed to prevent pregnancy. How does the use of these techniques have a direct impact on the health and prosperity of a family?

CHEMISTRY

1. Write the molecular formula of ethene and draw its electron dot structure.

2. Give reasons:

(a) Platinum, gold and silver are used to make jewellery.

(b) Metals like sodium and potassium are stored under oil.

OR

Silver articles become black when kept in open for some time, whereas copper vessels lose their shiny brown surfaces and gain a green coat when kept in open. Name the substances present in air with which these metals react and write the name of the products formed.

3. On heating blue coloured powder of copper (II) nitrate in a boiling tube, black copper oxide, O_2 and a brown gas X is formed.

(a) Identify the type of reaction and gas X.

(b) Write the balanced chemical equation of the reaction.

(c) Write the pH range of aqueous solution of the gas X.

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

(b) Dry hydrogen chloride gas does not change the colour of dry litmus paper why?

OR

How is sodium hydroxide manufactured in industries? Name the process. In this process, a gas X is formed as a by-product. This gas reacts with lime water to give a compound Y, which is used as a bleaching agent in the chemical industry. Identify X and Y and write the chemical equation of the reaction involved.

5. What are amphoteric oxides? Give an example. Write balanced chemical equations to justify your answer.

6. What is a homologous series of carbon compounds? Give an example and list its three characteristics.

7. A teacher provided acetic acid, water, lemon juice, aqueous solution of sodium hydrogen carbonate and sodium hydroxide to students in the school laboratory to determine the pH values of these substances using pH papers. One of the students reported the pH values of the given substances as 3, 12, 4, 8 and 14 respectively. Which one of these values is not correct? Write its correct value stating the reason.

OR

What would a student report nearly after 30 minutes of placing duly cleaned strips of aluminium, copper, iron and zinc in freshly prepared iron sulphate solution taken in four beakers?

What is observed when a pinch of sodium hydrogen carbonate is added to 2 mL of acetic acid taken in a test tube? Write chemical equation for the reaction involved in this case.

8. Draw electron dot structure of carbon dioxide and write the nature of bonding between carbon and oxygen in its molecule.

OR

List two properties of carbon which lead to the huge number of carbon compounds we see around us, giving the reason for each.

9. Give reason:

- (a) Carbonate and sulphide ores are usually converted into oxides during the process of extraction.
 (b) Aluminium is a highly reactive metal; still, it is widely used in making cooking utensils.
10. Which compounds are called (i) alkanes, (ii) alkenes and (iii) alkynes? C_4H_{10} belongs to which of these? Draw two structural isomers of this compound.
11. Name a metal of medium reactivity and write three main steps in the extraction of this metal from its sulphide ore.
12. List two chemical properties based on which ethanol and ethanoic acid may be differentiated and explain how.

OR

Unsaturated hydrocarbons contain multiple bonds between two carbon atoms and these compounds show addition reactions. Out of saturated and unsaturated carbon compounds, which compounds are more reactive? Write a test to distinguish ethane from ethene.

13. During the reaction of some metals with dilute hydrochloric acid, the following observations were made by a student:
 (a) Silver does not show any change.
 (b) Some bubbles of gas are seen when a lead is reacted with the acid.
 (c) The reaction of sodium is found to be highly explosive.
 (d) The temperature of the reaction mixture rises when aluminium is added to the acid.

Explain these observations giving an appropriate reason.

14. Given below are the steps for the extraction of copper from its ore. Write the chemical equation of the reactions involved in each case.

- (i) Roasting of copper (I) sulphide.
 (ii) Reduction of copper (I) oxide from copper (I) sulphide
 (iii) Electrolytic refining.

15. A compound 'X' on heating with excess cone. sulphuric acid at 443 K gives an unsaturated compound 'Y'. 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X', 'Y' and 'Z'. Write the equation of the chemical reaction of the formation of 'Y' and write the role of sulphuric acid in the reaction.

16. Decomposition reactions require energy either in the form of heat or light or electricity for breaking down the reactants. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light, and electricity.

17. 2 ml of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with a dilute solution of a strong acid?

OR

The pH of a salt used to make tasty and crispy pakoras is 14. Identify the salt and write a chemical equation for its formation. List its two uses.

18. (a) Why are most carbon compounds poor conductors of electricity?
 (b) Write the name and structure of a saturated compound in which the carbon atoms have arranged a ring. Give the number of single bonds present in this compound.
 (c) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for electrolytic refining of copper.

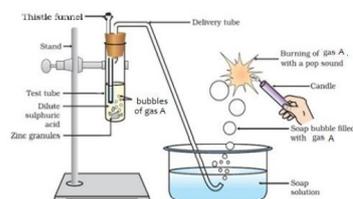
19. A student added few pieces of aluminium metal to two test tubes A and B containing aqueous solution of iron sulphate and copper sulphate. In the second part of her experiment, she added iron metal to another test tube C and D containing aqueous solution of aluminium sulphate and copper sulphate. In which test tube or test tubes will she observe colour change? Based on this experiment state which one is the most reactive metal and why?

20. What is observed when a solution of sodium sulphate is added to a solution of barium chloride in a test tube? Write equation for the chemical reaction involved and name the type of reaction in this case.

21. Elements P, Q, R and S have atomic numbers 11, 15, 17 and 18 respectively. Which of them are reactive non-metals?

- i) P and Q ii) P and R iii) Q and R iv) R and S

22. Identify gas A in the following experiment.

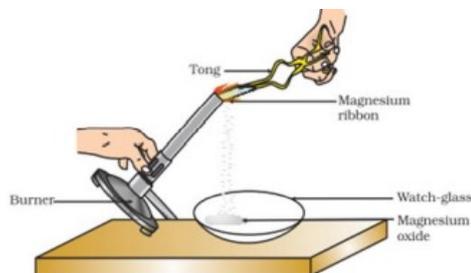


- A. Nitrogen B. Hydrogen C. Oxygen D. Carbon dioxide

23. In the redox reaction $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

- (a) MnO_2 is reduced to $MnCl_2$ & HCl is oxidized to H_2O (b) MnO_2 is reduced to $MnCl_2$ & HCl is oxidized to Cl_2
 (c) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to Cl_2 (d) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to H_2O

OR



Which of the following is the correct observation of the reaction shown in the above set up?

- (a) Brown powder of Magnesium oxide is formed.
- (b) Colourless gas which turns lime water milky is evolved.
- (c) Magnesium ribbon burns with brilliant white light.
- (d) Reddish brown gas with a smell of burning Sulphur has evolved

24.1 Assertion: Silver bromide decomposition is used in black and white photography. Reason: Light provides energy for this exothermic reaction

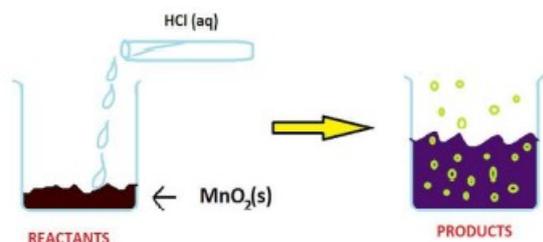
24.2 Assertion: Fresh milk in which baking soda is added, takes a longer time to set as curd. Reason: Baking soda decreases the pH value of fresh milk to below 6.

24.3 Assertion: Decomposition of vegetable matter into compost is an endothermic reaction. Reason: Decomposition reaction involves breakdown of a single reactant into simpler products

24.4 Assertion: After white washing the walls, a shiny white finish on walls is obtained after two to three days. Reason: Calcium Oxide reacts with Carbon dioxide to form Calcium Hydrogen Carbonate which gives shiny white finish

25. Read the following and answer any of the four.

The reaction between MnO_2 with HCl is depicted in the following diagram. It was observed that a gas with bleaching abilities was released.



25.1 The chemical reaction between MnO

- a) displacement reaction
- b) combination reaction
- c) redox reaction
- d) decomposition reaction.

25.2 Chlorine gas reacts with _____ to form bleaching powder.

- a) dry $Ca(OH)_2$
- b) dil. solution of $Ca(OH)_2$
- c) conc. solution of $Ca(OH)_2$
- d) dry CaO .

25.3 Identify the correct statement from the following:

- a) MnO is getting reduced whereas HCl is getting oxidized
- b) MnO_2 is getting oxidized whereas HCl is getting reduced.
- c) MnO_2 and HCl both are getting reduced.
- d) MnO_2 and HCl both are getting oxidized.

25.4 In the above discussed reaction, what is the nature of MnO_2 ?

- a) Acidic oxide
- b) Basic oxide
- c) Neutral oxide
- d) Amphoteric oxide

25.5 What will happen if we take dry HCl gas instead of aqueous solution of HCl ?

- a) Reaction will occur faster.
- b) Reaction will not occur.
- c) Reaction rate will be slow
- d) Reaction rate will remain the same

26. The following observations were made by a student on treating four metals P, Q, R and S with the given salt solutions

Sample	$MgSO_4(aq)$	$Zn(NO_3)_2(aq)$	$CaSO_4(aq)$	$Na_2SO_4(aq)$
P	No reaction	Reaction occurs	Reaction occurs	No reaction
Q	Reaction occurs	Reaction occurs	Reaction occurs	Reaction occurs
R	No Reaction	Reaction Occurs	No Reaction	No Reaction
S	No Reaction	No Reaction	No Reaction	No Reaction

Based on the above observations:

(a) Arrange the given samples in the increasing order of reactivity

(b) Write the chemical formulae of products formed when Q reacts with $CuSO_4$ solution

27. An organic compound 'X' is a liquid at room temperature. It is also a very good solvent and has the molecular formula C_2H_6O . On oxidation 'X' gives 'Y' which give, break effervescence on reacting with $NaHCO_3$. X reacts with Y in the presence of conc. H_2SO_4 to give another compound 'Z' which has a pleasant smell. Identify X, Y and Z. also write chemical equations to show the formation of Y and Z.

28. A compound 'X' of sodium is used as an antacid and it decomposes on strong heating.

- (i) Name the compound 'X' and give its chemical formula.
- (ii) Write a balanced chemical equation to represent the decomposition of 'X'.
- (iii) Give one use of compound 'X' besides an antacid.

OR

You are provided with 90 mL of distilled water and 10 mL of concentrated sulphuric acid to prepare dilute sulphuric acid.

- (i) What is the correct way of preparing dilute sulphuric acid? Give reason.
- (ii) How will the concentration of H_3O^+ ions change on dilution?

29. Identify the compound of calcium which is used for plastering of fractured bones. With the help of chemical equation show how it is prepared and what special precautions should be taken during the preparation of this compound.

OR

'Sweet tooth may lead to tooth decay'. Explain why? What is the role of tooth paste in preventing cavities?

30. A clear solution of slaked lime is made by dissolving $Ca(OH)_2$ in an excess of water. This solution is left exposed to air. The solution slowly goes milky as a faint white precipitate forms. Explain why a faint white precipitate forms, support your response with the help of a chemical equation.

OR

- (i) Write two observations when lead nitrate is heated in a test tube.
- (ii) Name the type of reaction.
- (iii) Write a balanced chemical equation to represent the above reaction.

PHYSICS

Light-Reflection and Refraction

1. State two positions in which a concave mirror produces a magnified image of a given object. List two differences between the two images.
2. Draw ray diagrams to show the principal focus of a:
 - (i) Concave mirror
 - (ii) Convex mirror
3. Draw a ray diagram to show the formation of image by a convex lens when an object is placed in front of the lens between its optical centre and principal focus.
 - (b) In the above ray diagram mark the object-distance (u) and the image-distance (v) with their proper signs (+ve or -ve as per the new Cartesian sign convention) and state how these distances are related to the focal length (f) of the convex lens in this case.
 - (c) Find the power of a convex lens which forms a real, and inverted image of magnification -1 of an object placed at 20 cm from its optical centre.
4. A student focuses the image of a well illuminated distant object on a screen using a convex lens. After that he gradually moves the object towards the lens and each time focuses its image on the screen by adjusting the lens.
 - (i) In which direction-towards the screen or away from the screen, does he move the lens?
 - (ii) What happens to the size of the image-does it decrease or increase?
 - (iii) What happens to the image on the screen when he moves the object very close to the lens?
5. State the laws of refraction of light. Explain the term 'absolute refractive index of a medium' and write an expression to relate it with the speed of light in vacuum.

OR

What is meant by power of a lens? Write its SI unit. A student uses a lens of focal length 40 cm and another of -20 cm. Write the nature and power of each lens.

6. Draw a ray diagram in each of the following cases to show the formation of image, when the object is placed:

- (i) Between optical centre and principal focus of a convex lens.
- (ii) Anywhere in front of a concave lens.
- (iii) At $2F$ of a convex lens.

7. With the help of a ray diagram state what is meant by refraction of light. State Snell's law for refraction of light and express it mathematically.

The refractive index of air with respect to glass is $\frac{2}{3}$ and the refractive index of water with respect to air is $\frac{4}{3}$. If the speed of light in glass is 2×10^8 m/s, find the speed of light in (a) air, (b) water.

8. An object of height 4.0 cm is placed at a distance of 30 cm from optical centre 'O' of a convex lens of focal length 20 cm. Draw a ray diagram to find the position and size of the image formed. Mark optical centre 'O' and principal focus 'F' on the diagram. Also find the approximate ratio of size of image to the size of object.

9. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.

- (i) Use the lens formula to find the distance of the image from the lens.
- (ii) List four characteristics of the image (nature, position, size, erect/inverted) formed by the lens in this case.
- (iii) Draw ray diagram to justify your answer of the part (ii).

HUMAN EYE AND COLOURFUL WORLD

10. (a) A student is unable to see clearly the words written on the black board placed at approximately 3 m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect and explain the method of correcting it.

(b) Why do stars twinkle? Explain.

11. (a) Write the function of each of the following parts of the human eye:

- (i) Cornea
- (ii) Iris
- (iii) Crystalline lens
- (iv) Ciliary muscles

12. Differentiate between a glass slab and a glass prism. What happens when white light passes through

- (a) glass slab and
- (b) glass prism?

13. Define the term power of accommodation. Write the modification in the curvature of the eye lens which enables us to see the nearby objects clearly?

14. What is a rainbow? Draw a labelled diagram to show the formation of a rainbow.

15. (a) List two causes of hypermetropia.

(b) Draw ray diagrams showing (i) a hypermetropic eye and (ii) its correction using suitable optical device.

16. A student suffering from myopia is not able to see distinctly the objects placed beyond 5 m.

(a) List two possible reasons due to which this defect of vision may have arisen. With the help of ray diagrams, explain

(i) Why the student is unable to see distinctly the objects placed beyond 5 m from his eyes?

(ii) The type of the corrective lens used to restore proper vision and how this defect is corrected using this lens.

(b) If, in this case, the numerical value of the focal length of the corrective lens is 5 m, find the power of the lens as per the new Cartesian sign convention

17. How will you use two identical glass prisms so that a narrow beam of white light incident on one prism emerges out of the second prism as white light? Draw and label the ray diagram.

18. What is atmospheric refraction? Use this phenomenon to explain the following natural events.

(a) Twinkling of stars

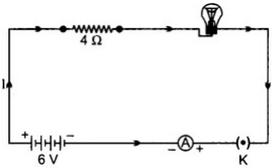
(b) Advanced sun-rise and delayed sun-set. Draw diagrams to illustrate your answers

ELECTRICITY

19. State Ohm's law. Draw a labelled circuit diagram to verify this law in the laboratory. If you draw a graph between the potential difference and current flowing through a metallic conductor, what kind of curve will you get? Explain how would you use this graph to determine the resistance of the conductor.
20. For the series combination of three resistors current in each resistor, establish the relation $R = R_1 + R_2 + R_3$ where the symbols have their usual meanings. Calculate the equivalent resistance of the combination of three resistors of $6\ \Omega$, $9\ \Omega$ and $18\ \Omega$ joined in parallel.
21. Show how would you join three resistors, each of resistance $9\ \Omega$ so that the equivalent resistance of the combination is (a) $13.5\ \Omega$ (b) $6\ \Omega$?
22. (a) Write Joule's law of heating.
 (b) Two lamps, one rated $100\ \text{W}; 220\ \text{V}$, and the other $60\ \text{W}; 220\ \text{V}$, are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line, if the supply voltage is $220\ \text{V}$.
23. The values of current (I) flowing through a given resistor of resistance (R), for the corresponding values of potential difference (V) across the resistor are given below:

V (volts)	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0
I (amperes)	0.1	0.2	0.3	0.4	0.5	0.6	0.8	1.0

24. State the relation correlating the electric current flowing in a conductor and the voltage applied across it. Also draw a graph to show this relationship.
25. (a) With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistances joined in parallel is equal to the sum of the reciprocals of the individual resistances.
 (b) In an electric circuit two resistors of $12\ \Omega$ each are joined in parallel to a $6\ \text{V}$ battery. Find the current drawn from the battery.
26. An electric lamp of resistance $20\ \Omega$ and a conductor of resistance $4\ \Omega$ are connected to a $6\ \text{V}$ battery as shown in the circuit. Calculate:



- (a) the total resistance of the circuit, (b) the current through the circuit,
 (c) the potential difference across the (i) electric lamp and (ii) conductor, and (d) power of the lamp. [5]
27. While studying the dependence of potential difference (V) across a resistor on the current (I) passing through it, in order to determine the resistance of the resistor, a student took 5 readings for different values of current and plotted a graph between V and I . He got a straight-line graph passing through the origin. What does the straight-line signify? Write the method of determining the resistance of the resistor using this graph.

OR

What would you suggest to a student if while performing an experiment he finds that the pointer/needle of the ammeter and voltmeter do not coincide with the zero marks on the scales when the circuit is open? No extra ammeter/voltmeter is available in the laboratory.

Magnetic Effect of Electric Current

28. (a) What is an electromagnet? List any two uses. (b) Draw a labelled diagram to show how an electromagnet is made.
 (c) State the purpose of soft iron core used in making an electromagnet. (d) List two ways of increasing the strength of an electromagnet if the material of the electromagnet is fixed.
29. What is a solenoid? Draw the pattern of magnetic field lines of (i) a current-carrying solenoid and (ii) a bar magnet. List two distinguishing features between the two fields.
30. State how the magnetic field produced by a straight current carrying conductor at a point depends on
 (a) current through the conductor
 (b) distance of point from conductor.
31. A current carrying conductor is placed in a magnetic field. Now answer the following.
 (i) List the factors on which the magnitude of force experienced by conductor depends.
 (ii) When is the magnitude of this force maximum?
 (iii) State the rule which helps, in finding the direction of motion of conductor.
 (iv) If initially this force was acting from right to left, how will the direction of force change if:
 (a) direction of magnetic field is reversed? (b) direction of current is reversed?
32. (a) Draw a schematic diagram of a common domestic circuit showing provision of
 (i) Earth wire, (ii) Main fuse (iii) Electricity meter and (iv) Distribution box.
 (b) Distinguish between short circuiting and overloading.
33. (i) Alternating current has a frequency of $50\ \text{Hz}$. What is meant by this statement? How many times does it change its direction in one second? Give reason for your answer. (ii) Mention the frequency of D.C that is given by a cell.
34. A student fixes a white sheet of paper on a drawing board. He places a bar magnet in the centre and sprinkles some iron filings uniformly around the bar magnet. Then he taps gently and observes that iron filings arrange themselves in a certain pattern.
 (a) Why do iron filings arrange themselves in a particular pattern?
 (b) Which physical quantity is indicated by the pattern of field lines around the bar magnet?
 (c) State any two properties of magnetic field lines.
