

MOST

**IMPORTANT
QUESTIONS**



CBSE
Class X Science
Most Important Questions

SECTION A

Chapter 1: Chemical Reactions and Equations

1. Why are decomposition reactions called opposite of combination reactions? [1]
2. When potassium chlorate ($KClO_3$) is heated in the presence of manganese dioxide catalyst, it decomposes to form potassium chloride and oxygen gas. Represent this in the form of a balanced chemical equation. [1]
3. A solution of potassium chloride when mixed with silver nitrate solution forms an insoluble white substance. Write the chemical reaction involved and mention the type of chemical reaction. [2]
4. Equal lengths of Mg ribbon are taken in test tubes A and B. Hydrochloric acid is added to test tube A, while acetic acid is added to test tube B. In which case the reaction would occur more vigorously and why? Write the chemical equations for reactions in test tubes A and B. [2]
5. Describe an activity to show the decomposition reaction of ferrous sulphate in the laboratory. [3]
6. A solution of a substance 'X' is used for white washing. [3]
 - i. Name the substance 'X' and write its formula.
 - ii. Write the reaction of the substance 'X' named in (i) above with water.
 - iii. Write the balanced equation for the following chemical reaction:



7. [5]
- a) Write chemical equations for the reactions taking place when
- i. Zinc sulphide is heated in air
 - ii. Zinc carbonate is calcined
 - iii. Manganese dioxide is heated with aluminium powder
- b)
- i. What happens when a strip of lead metal is placed in a solution of copper chloride? Write the balanced chemical equation for the reaction along with the colour changes observed during the reaction.
 - ii. What are precipitation reactions? Give one example of a precipitation reaction.
8. [5]
- a) A water-insoluble calcium compound (A) on reacting with dil. H_2SO_4 released a colourless and odourless gas (B) with brisk effervescence. When gas (B) was passed through lime water, the lime water turned milky and again formed compound A. Identify A and B and write the chemical equations for the reactions involved.
- b) A brown substance 'X' on heating in air forms a compound 'Y'. When hydrogen gas is passed over 'Y', it changes to 'X' again.
- i. Name substances 'X' and 'Y'.
 - ii. Name the processes occurring during the two changes.
 - iii. Write the chemical equations involved.

Chapter 2: Acids, Bases and Salts

1. Define the term rancidity. [1]
2. Write the chemical name and formula of 'Plaster of Paris'. [1]
3. [2]
 - i. Write the chemical name and formula of washing soda. How is it prepared? Write the chemical equation of the reaction.
 - ii. Why does distilled water not conduct electricity, whereas rainwater does?
4. Define 'water of crystallisation'.
Give two examples of substances having water of crystallisation.
Write their chemical formulae. [2]
5. [3]
 - i. Name the compound which is obtained from baking soda and is used to remove the permanent hardness of water.
 - ii. Write its chemical formula.
 - iii. What happens when it is recrystallised from its aqueous solution?
6. [3]
 - i. What change will you observe in the colour of red litmus paper when it is dipped into a solution of sodium sulphate? Give reason to explain your observation.
 - ii. A bottle filled up to the brim with concentrated sulphuric acid is left open in the atmosphere by mistake. Will there be any change in the level of liquid? Explain your answer with reasons.

7. [5]
- a) Write word equations and balanced equations for the reaction taking place when
- Dilute sulphuric acid reacts with zinc granules
 - Dilute hydrochloric acid reacts with magnesium ribbon
- b) What is the difference between hydrated salts and anhydrous salts?
- c) Give two important uses of washing soda.
8. [5]
- a) Write the chemical equation for the preparation of
- Bleaching powder
 - Plaster of Paris
 - Caustic soda
- b) What is the chlor alkali process? Give two uses of NaOH obtained from this process?

Chapter 3: Metals and Non-Metals

1. What happens when iron nails are kept in an aqueous solution of CuSO_4 ? [1]
2. Name a non-metal which is lustrous and a metal which is non-lustrous. [1]
3. What are amphoteric oxides? Give two examples. [2]
4. Name two allotropes of carbon. Which is the hardest natural substance known? [2]
5. [3]
- (a) What is roasting and calcination?
- (b) What is the difference between them?

6. What happens when [3]
 (i) Zinc reacts with copper sulphate
 (ii) Magnesium reacts with HCl
 (iii) Sodium reacts with water
7. Describe the use of aluminium as a reducing agent for the reduction of metal oxides. Give the equations involved. [5]
8. [5]
 (a) Write the electronic configurations of sodium and chlorine.
 (b) Show the formation of sodium chloride from sodium and chlorine by the transfer of electrons.

Chapter 4: Carbon and its Compounds

1. Write the name and structure of an aldehyde with four carbon atoms in its molecule. [1]
2. Name the functional group present in each of the following organic compounds: [1]
 i. CH_3COCH_3
 ii. $\text{C}_2\text{H}_5\text{COOH}$
3. Give a test for experimentally distinguishing between an alcohol and a carboxylic acid. Describe how these tests are performed. [2]
4. When you add sodium hydrogen carbonate to acetic acid in a test tube, a gas liberates immediately with brisk effervescence. Name this gas. Describe the method of testing this gas. [2]
5. What is meant by a homologous series of carbon compounds? Classify the following carbon compounds into two homologous series and name them.
 C_3H_4 , C_3H_6 , C_4H_6 , C_4H_8 , C_5H_8 , C_5H_{10} [3]

6. Name the gas liberated when ethanol reacts with sodium metal. How do we get ethene from ethanol? Write a chemical equation to justify your answer. State the role of acid in this reaction. [3]
7. What is the difference between the chemical composition of soaps and detergents?
State in brief the action of soaps in removing an oily spot from a shirt. Why are soaps not considered suitable for washing when water is hard? [5]
8. (a) State two properties of carbon which lead to a large number of carbon compounds.
(b) Why does micelle formation take place when soap is added to water? Why are micelles not formed when soap is added to ethanol?

OR

Explain isomerism. State any four characteristics of isomers. Draw the structures of possible isomers of butane, C_4H_{10} . [5]

Chapter 5: Periodic Classification of Elements

1. How were the positions of cobalt and nickel resolved in the modern periodic table? [1]
2. How does the electropositive character of elements change on going down in a group? [1]
3. How does the metallic character of elements change along a period of the periodic table from left to right and why? [2]
4. Explain why all the elements of a period have different chemical properties. [2]

5. State Mendeleev's periodic law. Which group of elements was missing from Mendeleev's original periodic table? Besides gallium, which two other elements have since been discovered for which Mendeleev had left gaps in his periodic table? [3]
6. How could the modern periodic law remove various anomalies of Mendeleev's periodic table? Explain with examples. [3]
7. Atoms of eight elements—A, B, C, D, E, F, G and H—have the same number of electrons in their outermost shell. Elements A and G combine to form an ionic compound. This ionic compound is added to a small amount of almost all vegetables and dishes during cooking. Oxides of elements A and B are basic in nature, while those of elements E and F are acidic. However, the oxide of element D is almost neutral. Based on the above information, answer the following questions: [5]
- To which group or period of the periodic table do these elements belong?
 - What would be the nature of the compound formed by a combination of elements B and F?
 - Which two of these elements could definitely be metals?
 - Which one of the eight elements is most likely to be found in the gaseous state at room temperature?
 - If the number of electrons in the outermost shell of elements C and G are 3 and 7, respectively, write the formula of the compound formed by the combination of C and G.
8. Explain the following: [5]
- Metals like Na, Ca and Mg are never found in the free state in nature.
 - Solder is used for welding electrical circuits.
 - Silver ornaments turn blackish after some time.
 - Gold is used to make jewellery.
 - Gallium will melt if you keep it on your palm.

Chapter 6: Life Processes

1. Why do fish die when taken out of water? [1]
2. Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms? [1]
3. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds? [2]
4. How do guard cells regulate the opening and closing of stomata? [2]
5. What are the different ways in which glucose is oxidised to provide energy in various organisms? [3]
6. How are fats digested in our body? Where does this process take place? [3]
7. [5]
 - (a) Draw a well-labelled diagram of the human digestive system.
 - (b) Describe the role of the following in the process of digestion.
 - (i) Bile
 - (ii) Salivary amylase
 - (iii) HCl
8. Describe the process of urine formation in the kidneys. [5]

Chapter 7: Control and Coordination

1. Which plant hormone is responsible for the promotion of cell division? [1]
2. What will happen if the intake of iodine is low in our diet? [1]
3. Name the part of the neuron [2]
 - (a) where information is acquired
 - (b) through which information travels as an electrical impulse
4. How are involuntary actions different from reflex actions? [2]
5. What happens at the synapse between two neurons? [3]
6. How does chemical coordination take place in animals? [3]
7. Draw a neat and well-labelled diagram of the structure of the human brain. Mention the functions of different parts of the human brain. [5]
8. [5]
 - (a) What are reflex actions?
 - (b) Explain a reflex arc.
 - (c) State the functions of
 - (i) Insulin
 - (ii) Adrenaline

Chapter 8: How do Organisms Reproduce?

1. What is the effect of DNA copying which is not perfectly accurate on the reproduction process? [1]
2. Where does fertilisation take place in human females? [1]
3. Name one sexually transmitted disease caused by bacterial infection and viral infection. How can these be prevented? [2]
4. List any four reasons for vegetative propagation being practised in the growth of some types of plants. [2]
5. (a) Explain regeneration in *Planaria*.
(b) How is regeneration different from reproduction? [3]
6. List any four methods of contraception used by humans. How does their use have a direct effect on the health and prosperity of a family? [3]
7. (a) List three distinguishing features between sexual and asexual types of reproduction.
(b) Explain why variations are observed in the offspring of sexually reproducing organisms. [5]
8. (a) Give one example each of a unisexual and a bisexual flower.
(b) Mention the changes a flower undergoes after fertilisation.
(c) How does the amount of DNA remain constant though each new generation in a combination of DNA copies of two individuals? [5]

Chapter 9: Heredity and Evolution

1. Give one difference between eyes and eye spot. Which animal possesses eye spots? [1]
2. Why do all the gametes formed in human females have an X chromosome? [1]
3. Give one example each of characters which are inherited and ones which are acquired in humans. Mention the difference between inherited and acquired characters. [2]
4. What are homologous structures? Is it necessary for organisms with homologous structures to have a common ancestor? [2]
5. State the evidence we have for the origin of life from inanimate matter. [3]
6. How are fossils formed? Describe, in brief, two methods of determining the age of fossils. [3]
7. Evolution has exhibited a greater stability of molecular structure when compared with morphological structures. Comment on the statement and justify your opinion. [5]
8. (a) Sex of children is determined by what they inherit from the father and not from the mother. Justify.
(b) Explain the result of a monohybrid cross. [5]

Chapter 10: Light- Reflection and Refraction

1. Why do we prefer a convex mirror as a rear-view mirror in vehicles? [1]
2. Where should an object be placed in front of a convex lens so as to obtain its real, inverted and magnified image? [1]
3. If an object is placed at a distance of 15 cm in front of a plane mirror, how far would it be from its image? [2]
4. What is the speed of light in a medium of refractive index 1.8 if its speed in air is 300000 km/s? [2]
5. Describe the Cartesian sign convention used in optics. Draw a neat labelled diagram to illustrate the sign convention. [3]
6. If a concave mirror has a focal length of 15 cm, find the two positions where an object can be placed to give, in each case, an image twice the height of the object. [3]
7. Draw a diagram to represent a convex mirror. On this diagram mark the principal axis, principal focus F and centre of curvature C if the focal length of a convex mirror is 5 cm. Also comment on the characteristics of the image if an object is placed 15 cm from the mirror. [5]
8. (a) Two lenses A and B have a power of $+3D$ and $-4D$, respectively. What is the nature and focal length of each lens?
(b) A combination of lens contains two converging lens of focal length 30 cm and 50 cm and a diverging lens of focal length 40 cm. Find the power and focal length of the combination. [5]

Chapter 11: Human Eye and the Colourful World

1. What is the far point and near point of the human eye with normal vision? [1]
2. What is the power of accommodation for the human eye? [1]
3. What is Tyndall effect? Explain with an example. [2]
4. Why does the sky appear blue during the day time and red at sunset? [2]
5. Explain myopia, hypermetropia and astigmatism and their corrective measures.[3]
6. An eye has a far point of 1.5 m. What type of lens would be required to increase the far point to infinity? Calculate the power of lens and determine the nature of the vision. [3]
7. With a neat labelled diagram, explain the functioning of all the parts of the human eye. [5]
8. Draw and explain the dispersion of white light through a prism. Also, comment on the deviation, wavelength, frequency and speeds of the dispersed light. [5]

Chapter 12: Electricity

1. Define power and state its SI units. [1]
2. What are the factors on which the heating effect of electric current depend? Explain with a practical example. [1]
3. State and explain Ohm's Law with a graph. [2]
4. What is resistivity? State the factors on which it depends. [2]

5. Three resistors of 10, 20 and 30 ohms are connected in parallel to a 9V battery. Calculate: [3]
- (a) Value of current through each resistor
 - (b) Total current in the circuit
 - (c) Total effective resistance of the circuit
6. An electric iron draws 2.4 amperes of current from a 240 V source. [3]
- Find its
- (a) Resistance
 - (b) Wattage (Power)
7. Give reasons for the following: [5]
- (i) Filament-type electric bulbs are not power efficient.
 - (ii) Coils of heating devices are made of alloys rather than pure metals such as copper.
 - (iii) An electric bulb is not filled with normal atmospheric air but is filled with argon or nitrogen.
 - (iv) Metals such as copper and aluminium are used on a largescale for transmission of electricity.
 - (v) Parallel combination of resistors are preferred more over series combination.
8. [5]
- (i) Derive the expression for heat produced due to current (I) flowing for time period (t) through a resistor (R) having potential difference (v) across the terminals.
 - (ii) Name the relation. List all the variables along with their SI units.
 - (iii) How much heat will an instrument of 14 W produce in half an hour if it is connected to a battery of 70 V?

Chapter 13: Magnetic Effect of Electric Current

1. What is the effect of magnetic field strength produced at a point near a straight conductor if the electric current flowing through it increases? [1]
2. What were the observations made by Oersted in his experiment of current-carrying conductors? [1]
3. If a current-carrying conductor is kept in a magnetic field, it experiences a force. List the factors on which the direction of this force depends. [2]
4. Explain Fleming's right-hand rule and left-hand rule. [2]
5. What is a magnetic field? List 2 characteristics of a magnetic field. If two magnetic field lines intersect at a point, what does that indicate? [3]
6. Define and explain the phenomenon of electromagnetic induction. [3]
7. Explain with a neat sketch the working of a DC motor. [5]
8. A coil of insulated copper wire is connected to a galvanometer. What happens if a bar magnet is [5]
 - (a) Pushed into the coil
 - (b) Pulled back from the hollow space of the coil
 - (c) Held stationary inside the coilList an additional method of inducing current in a coil.

OR

What is the difference between AC and DC? What is the advantage of AC over DC? What needs to be done to convert an AC generator to a DC generator?

Chapter 14: Sources of Energy

1. Why are thermal power plants set up near coal or oil fields? [1]
2. List any two advantages of wind energy. [1]
3. What are the qualities of a good fuel and a good source of energy? [2]
4. What is a hydroelectric power plant? List down all its advantages and disadvantages. [2]
5. List three advantages of using a solar cell. [3]
6. What are 'hot spots'? State the merits and demerits of the technique involving energy production from 'hot spots'. [3]
7. Two elements, A and B, with mass number 2 and 235, respectively, are available. State and explain which one of them is suitable for a
 - (i) Hydrogen bomb
 - (ii) Nuclear reactor
 - (iii) Differentiate between nuclear fusion and nuclear fission [5]
8. With a neat labelled diagram explain the construction and working mechanism of a biogas plant. [5]

Chapter 15: Our Environment

1. Give an example to illustrate that indiscriminate use of pesticides may result in environmental degradation. [1]
2. Why should biodegradable and non-biodegradable wastes be discarded in two separate dustbins? [1]
3. List the products of combustion of fossil fuels. What are their adverse effects on the environment? [2]
4. Differentiate between biodegradable and non-biodegradable substances. Cite examples. [2]
5. How is ozone formed in the upper atmosphere? Why is damage to the ozone layer a cause of concern to us? What causes this damage? [3]
6. Explain the phenomenon of 'biological magnification'. How does it affect organisms belonging to different trophic levels particularly the tertiary consumers? [3]
7. Name the wastes which are generated in your house daily. What measures would you take for their disposal? [5]
8. Explain some harmful effects of agricultural practices on the environment.[5]

Chapter 16: Management of Natural Resources

1. State an instance where human intervention saved the forests from destruction. [1]
2. List any two additional systems of water harvesting. [1]
3. Why must we conserve our forests? List any two causes for deforestation to take place. [2]
4. How do advantages of exploiting natural resources with short-term aims differ from the advantages of managing our resources with a long-term perspective? [2]
5. What is meant by sustainable management? Environmentalists insist on 'sustainable natural resource management'. State its four advantages. [3]
6. What is meant by exploitation of resources with short-term aims? List its four advantages. [3]
7. Is water conservation necessary? Give reasons. [5]
8. Describe the various methods of sustainable management of forests. [5]

SECTION B

Practical 1: Finding the pH of the following samples by using pH paper/universal indicator:

A student takes four test tubes and labels them I, II, III and IV. He puts dilute HCl, dilute NaOH solution, lemon juice and water in test tubes I, II, III and IV, respectively. What would the student observe on

- i. Adding few drops of universal indicator to test tubes I and II? [2]
- ii. Pouring solutions from test tubes III and IV on red and blue litmus papers? [2]

Practical 2: Performing and observing the following reactions and classifying them.

1. A student takes quick lime (calcium oxide) in a beaker and slowly adds water to it. He observed that the solution in the beaker is slightly warm.
Name the reaction. Give the balanced chemical equation for the reaction. [2]
2. Iron nails kept in blue copper sulphate solution turns the solution pale green.
Name the reaction and comment on the reactivity of zinc and copper. [2]

Practical 3: Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plot a graph between V and I.

1. Values of potential difference applied across a resistor and the corresponding values of current I flowing in the resistor are given below: [2]

Volts (V)	2.5	4	10	6.3	25
Current (I) Ampere	0.5	0.5	0.4	0.8	1.01

Plot a graph between V and I, and calculate the resistance of the resistor.

2. Name the law which is illustrated by the above V-I graph. [1]

Practical 4: Determining the equivalent resistance of two resistors when connected in series and parallel.

1. Decorative lights with hundred bulbs are connected in series. Due to a minor damage, the 3rd light gets disconnected. What would you observe? [2]
A. No change in the working of the light bulbs.
B. All the light bulbs stop glowing.
C. Only the first three light bulbs glow.
D. Only the first bulb glows.
2. How will you connect three resistors of 2 ohm, 3 ohm and 5 ohm so as to obtain a resultant resistance of 2.5 ohm? Draw the circuit with suitable battery and a key. [2]

Practical 5: Preparing a temporary mount of a leaf peel to show stomata.

1. What would a well-stained leaf peel preparation show when viewed under a high power of the microscope? [2]
2. Which part/portion of the Petunia leaf peel will a student use to prepare a good temporary mount showing many stomata? [2]

Practical 6: Experimentally show that carbon dioxide is given out during respiration.

1. What are the precautions taken during the experimental setup in proving that carbon dioxide is given out during respiration? [2]
2. Why is it essential to destarch a leaf before using it in an experiment on photosynthesis? [2]

Practical 7: Study the following properties of acetic acid (ethanoic acid):

- i. odour
- ii. solubility in water
- iii. effect on litmus
- iv. reaction with sodium bicarbonate

1. A student adds a spoonful of powdered sodium hydrogen carbonate to a flask containing ethanoic acid. List two main observations he must note in his notebook about the reaction that takes place. Also write the chemical equation for the reaction. [2]
2. What do we observe on pouring acetic acid on red and blue litmus papers? [2]

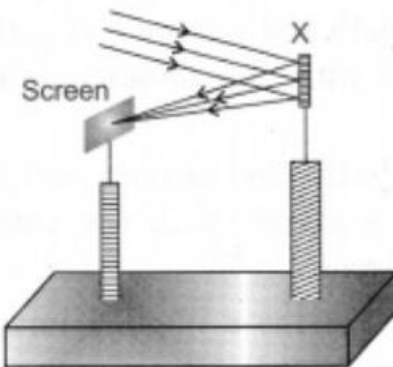
Practical 8: Studying the comparative cleaning capacity of a sample of soap in soft and hard water.

1. (i) A student takes 2 ml of distilled water in four test tubes marked I, II, III and IV, and then adds sodium chloride solution to test tube I, calcium chloride solution to test tube II, hydrochloric acid to test tube III and magnesium chloride solution to test tube IV. [2]
In which test tube/s will lather be formed with synthetic detergent? Justify.
2. A student takes about 6 ml of distilled water in each of the four test tubes P, Q, R and S, then dissolves in equal amount four different salts, namely sodium chloride in 'P', potassium chloride in 'Q', calcium chloride in 'R' and magnesium chloride in 'S'. He then adds 10 drops of soap solution to each test tube and shakes its contents. [2]
In which test tube would the student observe a sufficient lather and why?

Practical 9: Determining the focal length of concave and convex lenses.

- Of the following, the best way to perform the experiment on finding the focal length of a concave mirror by obtaining the image of a distant object is to [2]
 - Hold the mirror in hand and keep the screen on a stand kept behind the mirror
 - Place the mirror on a stand and hold the screen in hand, with the screen in front of the mirror
 - Keep both mirror and screen on suitable stands with the screen in front of the mirror
 - Keep both mirror and screen on suitable stands with the screen behind the mirror

- A student determines the focal length of an object X by focusing the image of another far off object on the screen positioned as shown below: [2]



What is object 'X'?

- Convex lens
- Concave lens
- Convex mirror
- Concave mirror

Practical 10: Tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result.

1. On the basis of the above experiment, which of the following conclusions are true: [2]
 - A. Angle of incidence is greater than the angle of emergence.
 - B. Angle of emergence is lesser than the angle of refraction.
 - C. The incident ray and the emergent ray are parallel to each other.
 - D. The emergent ray is parallel to the refracted ray.

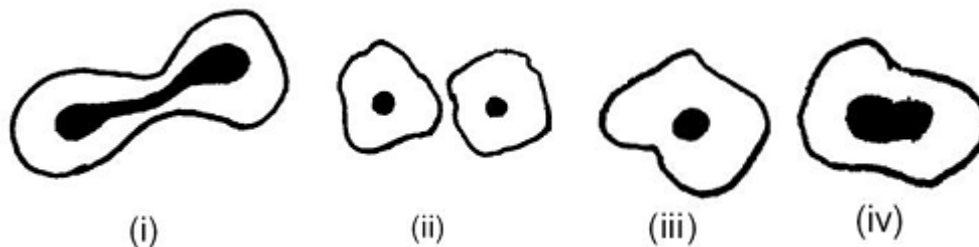
Practical 11: Studying (a) binary fission in *Amoeba* and (b) budding in yeast with the help of prepared slides.

1. Name the type of asexual reproduction in which two individuals are formed from a single parent and the parental identity is lost. Draw the initial and final stages of this type of reproduction. State the event with which reproduction starts. [2]
2. Students were asked to observe the permanent slides showing different stages of budding in yeast under high power of a microscope. [2]
 - (A) Which adjustment screw (coarse/fine) were you asked to move to focus the slides?
 - (B) Draw three diagrams in correct sequence showing budding in yeast.
3. Slides of binary fission in *Amoeba* and budding in yeast were given to a group of students for observation. Some observations reported by the group are given below: [2]
 - (i) Cytokinesis was observed in the yeast cell.
 - (ii) A chain of buds was observed in *Amoeba*.
 - (iii) Single cells of *Amoeba* and single cells of yeast were undergoing binary fission and budding, respectively.
 - (iv) Elongated nuclei were dividing to form daughter nuclei in *Amoeba*.

Which of the above observations are correct?

4. Observe the steps in the process carefully:

[2]



(a) Which method of reproduction is shown in the figure above? Identify the correct order of the steps.

(b) List two organisms which reproduce by the above method.

Practical 12: Tracing the path of the rays of light through a glass prism.

1. After tracing the path of rays of light through a glass slab for three different angles of incidence, a student measured the corresponding values of the angle of refraction r and the angle of emergence e and recorded them in the table shown below:

[2]

Sr. No.	$\angle i$	$\angle r$	$\angle e$
I	30°	20°	31°
II	50°	31°	49°
III	40°	25°	40°

The correct observations are

- A. I and III
- B. III and II
- C. I and II
- D. I, II and III

Practical 13: Finding the image distance for varying object distances in case of a convex lens and drawing corresponding ray diagrams to show the nature of the image formed.

1. A 4-cm tall object is placed on the principal axis of a convex lens. The distance of the object from the optical centre of the lens is 12 cm, and its sharp image is formed at a distance of 24 cm from it on a screen on the other side of the lens. If the object is now moved a little away from the lens, in which way (towards the lens or away from the lens) will he have to move the screen to get a sharp image of the object on it again? How will the magnification of the image be affected? [2]

Practical 14: Identifying the different parts of an embryo of a dicot seed (Pea, gram or red kidney bean).

1. What are the advantages of seed formation in plants? [2]
2. A student is asked to study the different parts of an embryo of pea seeds. List the essential steps for this experiment. [2]

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