अनुक्रमांक/ROLL NO **सेट / SET: 02**

केंद्रीय विद्यालय संगठन ,जयपुर संभाग

KENDRIYA VIDYALAYA SANGATHAN, JAIPUR REGION

अभ्यास पत्र /Practice Paper :2024-25

कक्षा / CLASS: 10th

विषय /SUB: Science (कोड / CODE: 086)

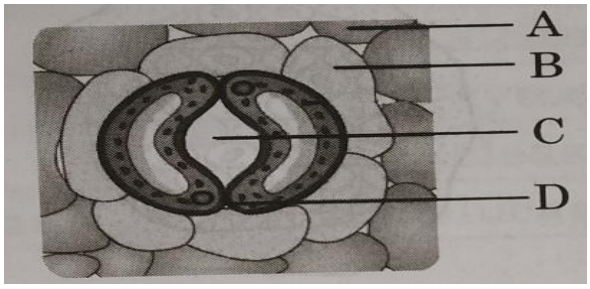
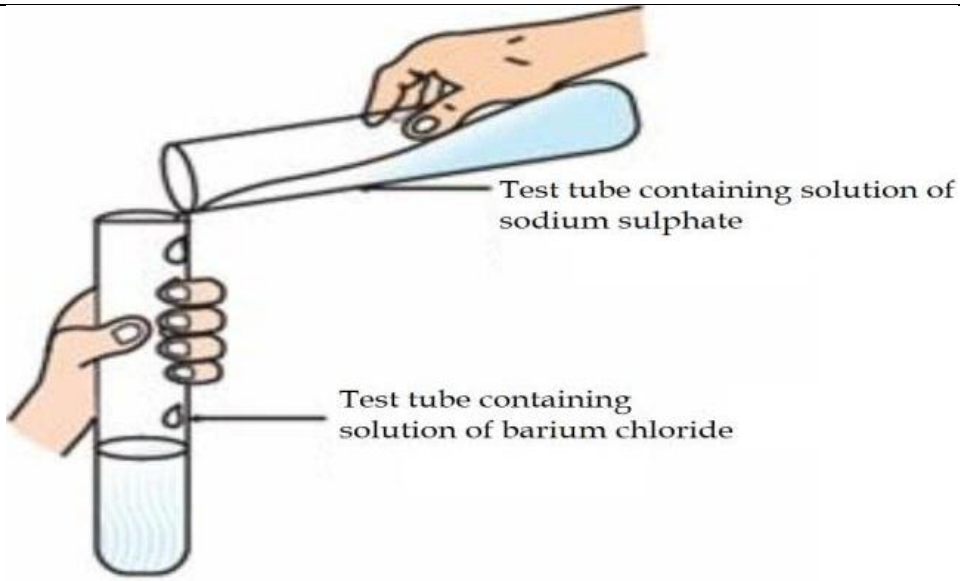
अधिकतम आवधि / Time Allowed: 3 Hours

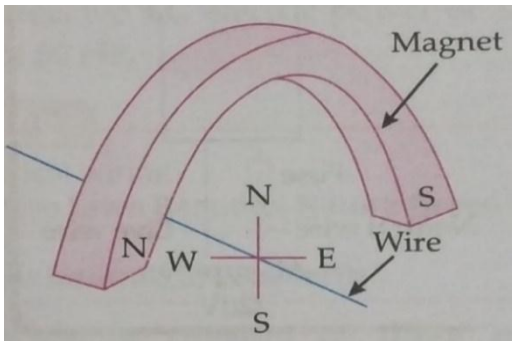
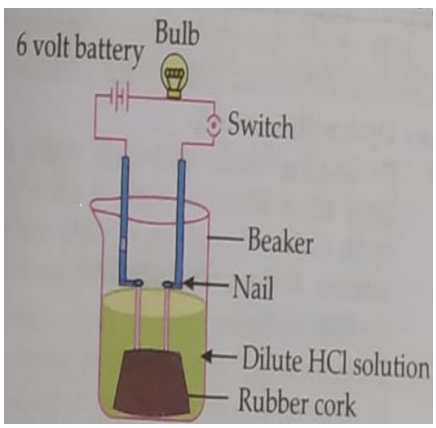
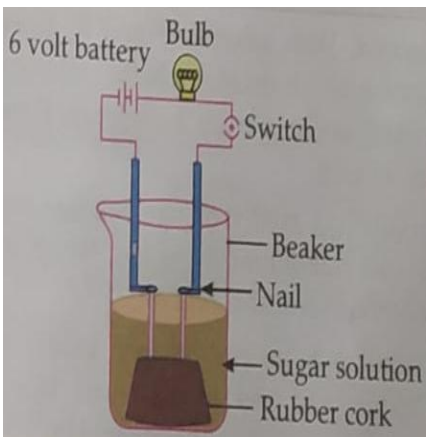
अधिकतम अंक / Maximum Marks: 80

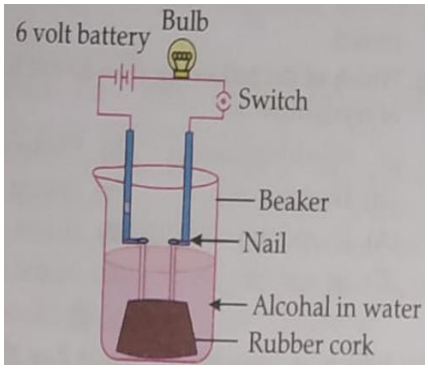
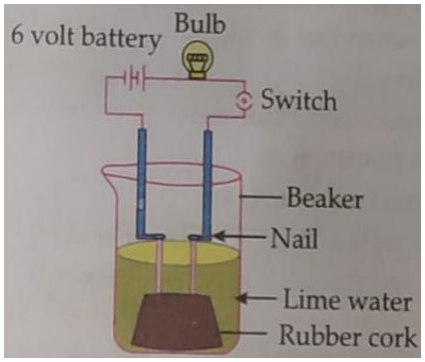
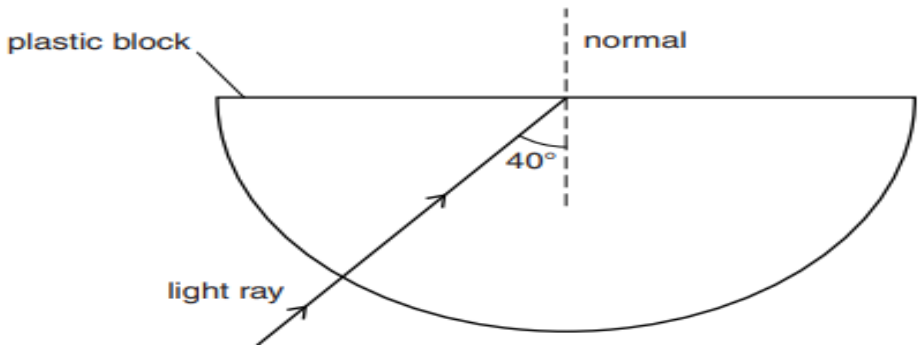
सामान्य निर्देश / General Instructions:

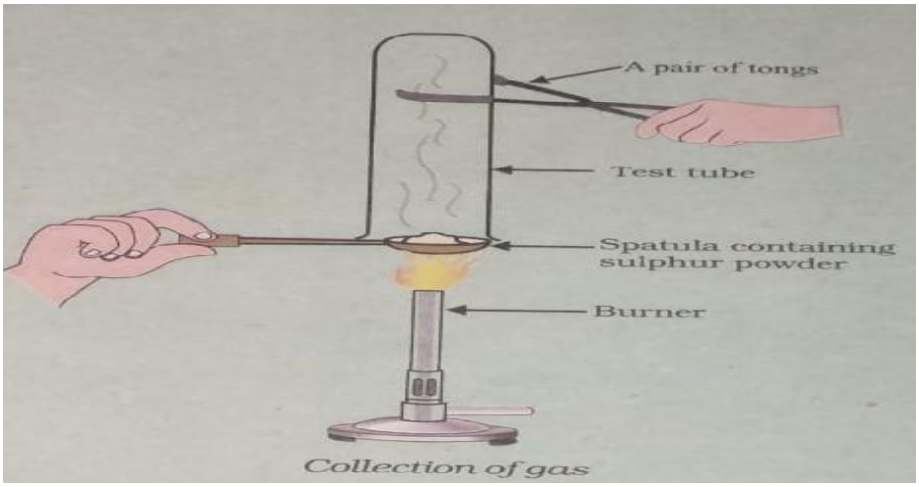
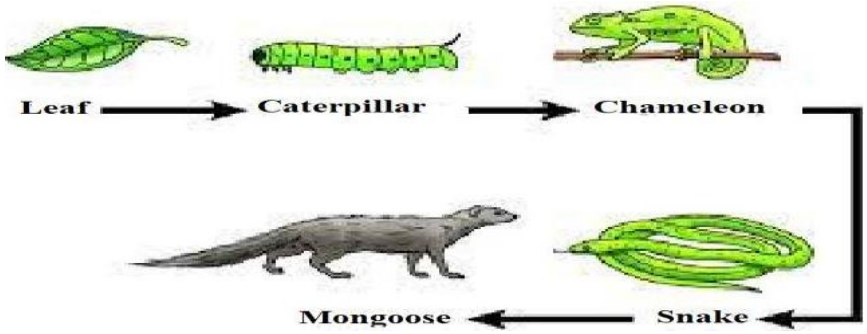
1. All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.
2. Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.
3. Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.
4. Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.
5. Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.
6. Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1 or 2 marks

SECTION A		
S.No.	**Question**	**Marks**
Q. 1	When 2 ml of sodium hydroxide solution is added to few pieces of granulated zinc in a test tube and then warmed, the reaction that occurs can be written in the form of balanced chemical equation as- (a) $NaOH + Zn \longrightarrow NaZnO_2 + H_2O$ (b) $2NaOH + Zn \longrightarrow Na_2ZnO_2 + H_2$ (c) $2NaOH + Zn \longrightarrow NaZnO_2 + H_2$ (d) $2NaOH + Zn \longrightarrow Na_2ZnO_2 + H_2O$	1
Q. 2	10 ml of a solution of NaOH is found to be completely neutralised by 8 ml of a given solution of HCl. If we take 20 ml of the same solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralise it will be- (a) 4 ml (b) 8 ml (c) 12 ml (d) 16 ml	1
Q. 3	Vinegar is a solution of- (a) 5% - 8% acetic acid in alcohol (b) 5% - 8% acetic acid in water (c) 50% - 80% acetic acid in alcohol (d) 50% - 80% acetic acid in water	1
Q. 4	The breakdown of pyruvate to give carbon dioxide, water and energy takes place in- (a)Chloroplast (b)Mitochondria (c)Cytoplasm (d)Nucleus	1

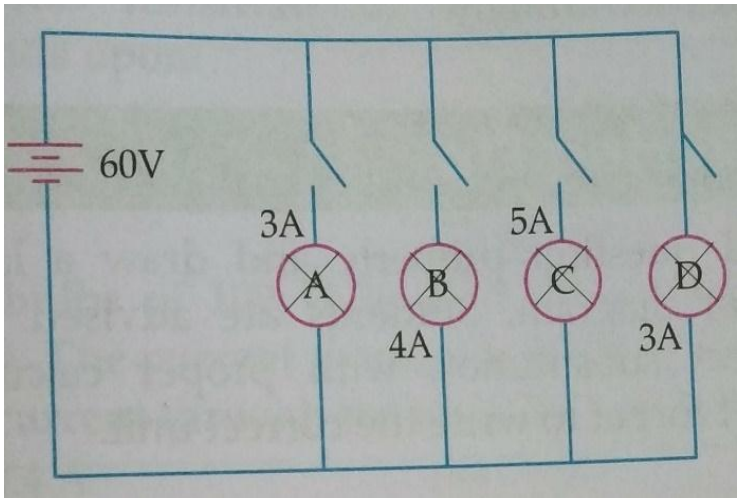
Q. 5	The figure of tiny pores present on the green parts of the plants that help in gaseous exchange is given. Label A, B, C and D in the given figure-  (a) A- Subsidiary cell, B – Epidermal cell, C – Stomatal Pore, D – Guard cell (b) A- Epidermal cell, B - Subsidiary cell, C – Stomatal Pore, D – Guard cell (c) A- Guard cell, B–Subsidiary cell, C – Stomatal Pore, D –Epidermal cell (d) A- Epidermal cell, B – Guard cell, C – Stomatal Pore, D – Subsidiary cell	1
Q. 6	Identify the correct statement about the following reaction: $2H_2S + SO_2 \longrightarrow 2H_2O + S$ (a) H_2S is oxidising agent and SO_2 is reducing agent. (b) H_2S is reduced to sulphur. (c) SO_2 is oxidising agent and H_2S is reducing agent. (d) SO_2 is reduced to sulphur.	1
Q. 7	Attached earlobes in humans is an inherited condition. The allele for attached earlobes is recessive. What are the chances of parents, both having attached earlobes, to have a child with attached earlobes? (a) 0% (b) 25% (c) 75% (d) 100%	1
Q. 8	 Identify the product which represents the solid state in the above reaction. a) Barium chloride c) Sodium chloride b) Barium sulphate d) Sodium sulphate	1
Q. 9	What is the maximum resistance which can be made using five resistors each of 1/5 Ω? (a) 1/5Ω (b) 10Ω (c) 5Ω (d) 1Ω	1
Q. 10	A metal and a non-metal that exists in liquid state at the room temperature respectively are: (a) Bromine and Mercury (b) Mercury and Iodine (c) Mercury and Bromine (d) Iodine and Mercury	1

Q. 11	In a nerve cell, the site where the electrical impulse is converted into a chemical signal is known as: (a) Axon (b) Cell body (c) Dendrites (d) Neuromuscular junction	1
Q. 12	Consider the following statements: (i) The sex of a child is determined by what it inherits from the mother. (ii) The sex of a child is determined by what it inherits from the father. (iii) The probability of having a male child is more than that of a female child. (iv) The sex of a child is determined at the time of fertilisation when male and female gametes fuse to form a zygote. The correct statements are: (a) (i) and (iii) (b) (ii) and (iv) (c) (iii) and (iv) (d) (i), (iii) and (iv)	1
Q. 13	Which of the following correctly describes the magnetic field near a long straight wire? (a) The field consists of straight lines perpendicular to the wire. (b) The field consists of straight lines parallel to the wire. (c) The field consists of radial lines originating from the wire. (d) The field consists of concentric circles centred on the wire.	1
Q. 14	An electric bulb is rated 220 V and 100 W. When it is operated on 110 V, the power consumed will be- (a) 100 W (b) 75 W (c) 50 W (d) 25 W	1
Q. 15	A copper wire is held between the poles of a magnet.  The current in the wire can be reversed. The pole of the magnet can also be changed over. In how many of the four directions shown can the force act on the wire? (a) 1 (b) 2 (c) 3 (d) 4	1
Q. 16	In which of the following setups would the bulb glow? (i) (ii)   	1

	(iii)  (iv)  (a) (i) & (ii) (b) (i) & (iv) (c) (ii), (iii) & (iv) (d) (i), (ii) & (iv)	
	Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: a) Both A and R are true, and R is the correct explanation of A. b) Both A and R are true, and R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	
Q. 17	**Assertion(A):** On freely suspending a current-carrying solenoid, it comes to rest in geographical N-S direction. **Reason(R):** One end of current-carrying straight solenoid behaves as a North pole and the other end as a South pole, just like a bar magnet.	1
Q. 18	**Assertion(A):** A geneticist crossed a pea plant having violet flowers with a pea plant having white flowers, he got all violet flowers in first generation. **Reason(R):** White colour gene is not passed on to next generation.	1
Q. 19	**Assertion(A):** Fresh milk to which baking soda is added takes less time to set as a curd. **Reason(R):** Baking soda decreases the pH value of fresh milk to below 6.	1
Q. 20	**Assertion(A):** The number of chromosomes in a cell and in a germ cell is not the same in any species. **Reason(R):** When 2 germ cells combine they restore the normal number of chromosomes in a species.	1
	SECTION B	
Q. 21	(i) Explain why the refractive index of any material with respect to air is always greater than 1. (ii) Complete the ray diagram of the given scenario when the light ray comes out of the plastic block from the top flat end.  	2

Q. 22	When a sportsman runs, he often gets muscle cramps. Why? **Or** The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms. Give reason.	2
Q. 23	Abhishek took sulphur powder on a spatula and heated it. He collected the gas evolved by inverting a test tube over it, as shown in the figure.  (a) What will be the action of gas on dry litmus? (b) Write a balanced chemical equation for the reaction taking place.	2
Q. 24	Explain how water and minerals are transported in plants. **OR** Explain how is food transported in plants?	2
Q. 25	How do auxins promote the growth of a tendril around a support?	2
Q. 26	Study the food chain given below and answer the questions that follow:  a) If the amount of energy available at the third trophic level is 100 joules, then how much energy will be available at the producer level? Justify your answer. b) Is it possible to have 2 more trophic levels in this food chain just before the fourth trophic level? Justify your answer.	2
	SECTION C	
Q. 27	Sushmita and Rajesh shifted to their new house and decided to get it white-washed. Sushmita observed that the workers dissolved some white powdery material into water and the mixing resulted in a vigorous reaction and then they left it for some time. They then applied the white suspension obtained to the walls. In the beginning the wall looked pale white and watery but after two-three days the walls become shiny bright white in colour. Based on the given information, answer the following questions: (a) Name the white powdery substance and write its chemical reaction with water. (b) Is it an endothermic or exothermic reaction? (c) Why do the walls turned shiny bright white colour after two-three days?	3

Q. 28	A student holding a mirror in his hand, directed the reflecting surface of the mirror towards the sun. He then directed the reflected light on to a sheet of paper held close to the mirror. (a) What should he do to burn the paper? (b) Which type of mirror does he have? (c) Will he be able to determine the approximate value of focal length of this mirror from this activity? Give reason and draw ray diagram also.	3
Q. 29	(a) What is double circulation? (b) Why is the separation of the right side and the left side of the heart useful? (c) How does it help birds and mammals?	3
Q. 30	Ozone is a deadly poison. However, at the higher levels of the atmosphere, ozone performs an essential function. It shields the surface of the Earth from ultraviolet (UV) radiation from the Sun. (a) How is the ozone formed in the atmosphere? (b) In which layer of the atmosphere is it present? (c) What are the major causes of its depletion? **Or** Ravi noticed his mother keeping two dustbins in her kitchen, one blue and the other green. He asked his mother about it. His mother explained him that the waste we generate is of two types and it should be segregated, so that it can be disposed off easily. (a) Based on the colour of the dustbin used, differentiate between the two types of wastes generated. (b) Discuss the importance of segregation of wastes. (c) How do decomposers help in cleaning the environment?	3
Q. 31	Give reasons: (a) Platinum, gold and silver are used to make jewellery. (b) Sodium, potassium and lithium are stored under oil. (c) Aluminium is a highly reactive metal, yet it is used to make utensils for cooking.	3
Q. 32	(a) What is an electromagnet? (b) State the purpose of soft iron core used in making an electromagnet. (c) List any two ways of increasing the strength of an electromagnet if the material of the electromagnet is fixed.	3
Q. 33	A lens produces a magnification of -0.5. Is this a converging or diverging lens? If the focal length of the lens is 6 cm, draw a ray diagram showing the image formation.	3
SECTION D		
Q. 34	(a) Describe the role of prostate gland, seminal vesicle and testes in the human male reproductive system. (b) How is the surgical removal of unwanted pregnancies misused? (c) Explain the role of oral contraceptive pills in preventing conception.	5

	Or (a) Draw the diagram of female reproductive system and match and mark the parts- (i) Where block is created surgically to prevent fertilisation. (ii) Where Copper T is inserted? (iii) Inside which part femidom (female condom) can be placed? (b) Why do more and more people prefer to use condoms? What is the principle behind use of condoms?	
Q. 35	In the given circuit A, B, C and D are four lamps connected with a battery of 60 V.  Analyse the circuit to answer the following questions:- (a)What kind of combination are the lamps arranged in (series or parallel)? (b) Explain what are the advantages (any two) of this combination of lamps? (c) Explain with proper calculations which lamp glows the brightest? (d) Find out the total resistance of the circuit. **OR** a) State ohms law. b) Derive its formula c) Draw a circuit diagram for ohms law. d) Draw ohmic and non-ohmic graphs	5
Q. 36	An organic compound 'X' is liquid at room temperature. It is also very good solvent and has the molecular formula C_2H_6O. Upon oxidation 'X' gives 'Y'. 'Y' releases a gas 'W' with brisk 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. (a) Give the chemical name and chemical formula of 'Y'. (b) How will you test for the gas 'W'? (c) Depict the formation 'Y' and 'Z' using chemical equations. (d) Name the reaction of formation of 'Z'. (e) Give any one use of 'Z'. **OR** (A) What is a homologous series of carbon compounds? Write general formula for the alkenes. Name and draw the electron dot structure of first homolog of alkene. (B) State the meaning of the functional group in an organic compound. Write the formula of the functional group present in aldehyde and ketone.	5

SECTION E

Q. 37	Poornima has green eyes, while her parents and brother have black eyes. Poornima's husband Ravi has black eyes, while his mother has green eyes and his father has black eyes. (i) On the basis of he given information, the green eye colour is- (a) Dominant (b) Recessive (c) Both (d) None (ii) What is the possible genetic makeup of Poornima's brother's eye colour? (a) Green eye (b) Blue eye (c) Black eye (d) Red eye (iii) 50% of the offspring of Poornima's brother are green-eyed. With the help of a cross show how this is possible. **OR** What is the probability that the offspring of Poornima and Ravi will have green eyes? Also, show the inheritance of eye colour in the offspring with the help of a suitable cross.	4
Q. 38	A student took four metals P, Q, R and S and carried out different experiments to study the properties of metals. Some of the observations were: • All metals could not be cut with knife except metal R. • Metal P combined with oxygen to form an oxide M_2O_3 which reacted with both acids and bases. • Reaction with water: P – Did not react with both cold and hot water but reacted with steam. Q – Reacted with hot water and the metal started floating. R – Reacted violently with cold water. S – Did not react with water at all. Answer the following questions on basis of above observations: (i) Out of the given metals, the one which needs to be stored using kerosene is- (a) P (b) R (c) S (d) Q (ii) Out of the given metals, the metal Q is: (a) Iron (b) Zinc (c) Potassium (d) Magnesium (iii) Write name and formula of two metals which forms amphoteric oxides. **OR** Identify the metal from P,Q,R and S which forms amphoteric oxides and also write the increasing order of the reactivity of P,Q,R and S.	4

Q. 39	The pictures show four ray diagrams of images formed by concave mirrors:	4

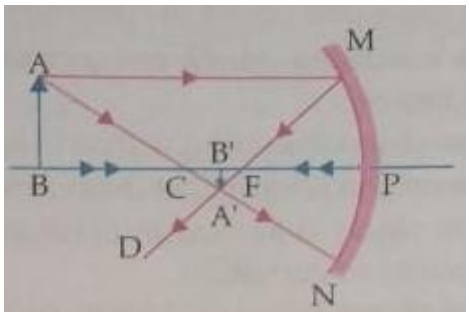


Figure 1

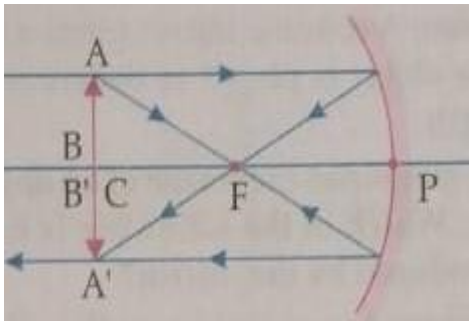


Figure 2

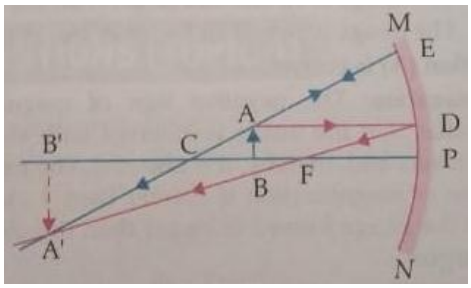


Figure 3

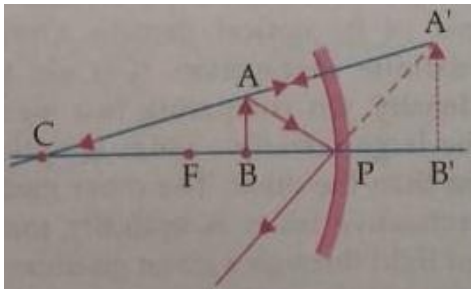


Figure 4

- P is the pole or centre of the reflecting surface of the mirror.
- C is the centre of curvature of the mirror.
- F is the focus of the mirror.
- Ab is the object and A'B' is the image of the object.

(i) Which of these can be concluded from diagram 1?
(a) Image is formed at the focus.
(b) Distance between pole and the centre of curvature is twice the focal length.
(c) Distance between the image and the focus is half the distance between the object and focus.
(d) Size of the image is equal to the size of the object.
(ii) In which condition does a concave mirror produce a virtual image?
(a) When object is located within the focal length.
(b) When object is located at the centre of curvature.
(c) When object is located in between infinity and the centre of curvature.
(d) When object is located in between the centre of curvature and the focus.

(iii)Draw a ray diagram when the object is placed at infinity infront of a concave mirror.

OR

Draw a ray diagram when the object is placed between focus and pole of the concave mirror.