



ST KABIR PUBLIC SCHOOL, SEC. 26, CHANDIGARH  
MID TERM EXAMINATION (2024-25)

Class- X  
Subject- SCIENCE (086)

Duration-3 hours  
Max. Marks – 80

**General Instructions:**

- i) This question paper consists of 39 questions in 5 sections.
- ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii) Section A consists of 20 objective type questions carrying 1 mark each.
- iv) Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v) Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi) Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
- vi) Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

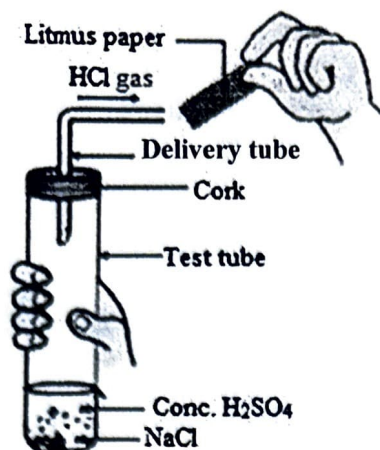
**SECTION – A**

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

Q.No	Questions	Marks
1	Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by liberation of heat. This process is called slaking of lime. Calcium hydroxide dissolves in water to form its solution called lime water. Which among the following is (are) true about slaking of lime and the solution formed? (i) It is an endothermic reaction (ii) It is an exothermic reaction (iii) The pH of the resulting solution will be more than seven (iv) The pH of the resulting solution will be less than seven (A) (i) and (ii) (B) (ii) and (iii) (C) (i) and (iv) (D) (iii) and (iv)	1
2	What happens when silver bromide is exposed to light? (A) It melts into a liquid (B) It decomposes into silver and bromine (C) It dissolves in water (D) It forms a crystalline structure	1
3	Ammonium chloride solution usually has a pH around: (A) 8 (B) 5 (C) 7 (D) 10	1

4

The change in color of the moist litmus paper in the given set up is due to



- i. presence of acid
- ii. presence of base
- iii. presence of  $H^+(aq)$  in the solution
- iv. presence of Litmus which acts as an indicator

(A) i and ii

(B) Only ii

(C) Only iii

(D) Only iv.

5

With reference to four gases  $CO_2$ ,  $CO$ ,  $Cl_2$  and  $O_2$ , which one of the options in the table is correct?

1

Option	Acidic oxide	Used in treatment of water	Product of respiration	Product of incomplete combustion
(a)	$CO$	$Cl_2$	$O_2$	$CO$
(b)	$CO_2$	$Cl_2$	$CO_2$	$CO$
(c)	$CO_2$	$O_2$	$O_2$	$CO_2$
(d)	$CO$	$O_2$	$CO_2$	$CO_2$

6

A student makes an electric circuit using an LED, a battery and connecting wires. The student notices that the LED does not glow. He replaces the distilled water with a salt solution and observes that the LED glows. How does the salt solution help the LED to glow?

1

(A) Salt solution is covalent in nature and conducts electricity.

(B) Salt solution has a low melting point which allows the current to flow through it.

(C) Salt solution has a high boiling point which allows the flow of current in the circuit without getting hot.

(D) Salt solution contain ions which makes it conductive and allows the electricity to flow through it.

7

What happens when calcium is treated with water?

1

(i) It does not react with water

(ii) It reacts violently with water

(iii) It reacts less violently with water

(iv) Bubbles of hydrogen gas formed stick to the surface of calcium

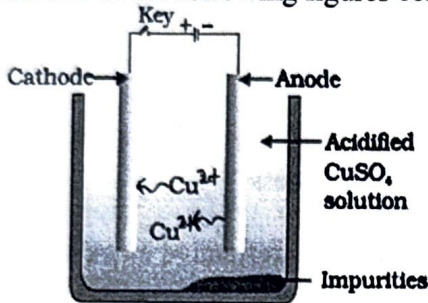
(A) (i) and (iv)

(B) (ii) and (iii)

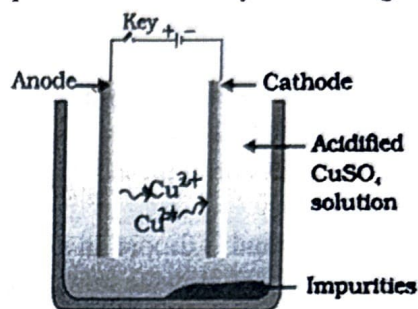
(C) (i) and (ii)

(D) (iii) and (iv)

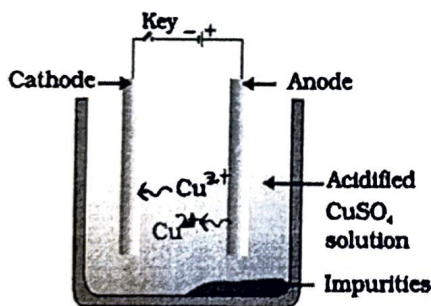
8 Which one of the following figures correctly describes the process of electrolytic refining? 1



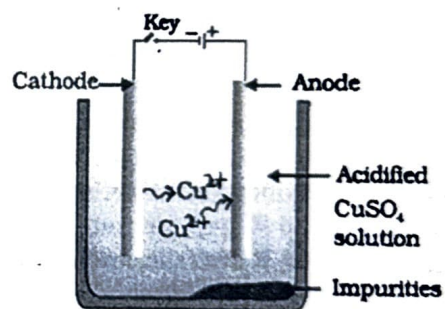
(a)



(b)



(c)



(d)

9 Oxygenated blood comes from lungs into 1

(A) thin-walled left auricle

(B) thick-walled left ventricle

(C) thin-walled right auricle

(D) thick-walled right ventricle

10 In an aquatic food chain, accumulation of non-biodegradable pesticides like DDT in increasing amount at each trophic level is known as 1

(A) accumulation

(B) biomagnification

(C) eutrophication

(D) pollution

- 11 Plastic carry bags should not be used because  
 (A) they are not very durable  
 (B) they are made of toxic material  
 (C) they are made of material which is non-biodegradable  
 (D) they are made of biodegradable material.
- 12 The correct sequence of sexual reproduction to occur in plants is 1  
 (A) pollination, fertilization, embryo, seedling.  
 (B) pollination, fertilization, seedling, embryo.  
 (C) embryo, pollination, fertilization, seedling.  
 (D) pollination, embryo, seedling, fertilization.
- 13 For the ideal use of a dentist's mirror of focal length 3cm, the distance of the tooth from the mirror can be 1  
 (A) 9 cm (B) 3 cm (C) 6 cm (D) 2 cm
- 14 Thin strips of black paint are made on the surface of a convex lens of focal length 20cm to catch the image of a white horse. The image will be: 1  
 (A) a zebra with black stripes (B) a horse of black stripes  
 (C) a horse of less brightness (D) a zebra of less brightness
- 15 A piece of diamond is dipped in a liquid of refractive index 1.2. If the refractive index of diamond is 2.42, what is the refractive index of diamond wrt the liquid? 1  
 (A) 0.5 (B) 1.2 (C) 2.02 (D) 2.42
- 16 An elderly man has to keep a newspaper at arm's length from his eyes to read it. Which defect of vision is he most likely suffering from? 1  
 (A) Myopia (B) Astigmatism (C) Cataract (D) Presbyopia

**Q. no 17 to 20 are Assertion - Reasoning based questions. These 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

- 17 Assertion: For distant objects, converging power of the eye lens decreases. 1  
 Reason: Ciliary muscles relax and the focal length of the lens increases.
- 18 Assertion: Aluminium is more reactive than iron, yet it is corroded less than iron. 1  
 Reason: Aluminium is covered with a strong layer of Aluminium oxide which protects the metal from further corrosion.
- 19 Assertion: Trachea does not collapse even when there is no air in it. 1  
 Reason: The upper end of the trachea has a voice box called larynx.
- 20 Assertion: Phototropism in plants is caused due to unequal distribution of auxin. 1  
 Reason: The plant bending towards light has more elongated cells on the illuminated side.

## SECTION – B

Q. no. 21 to 26 are very short answer questions.

- 21 (a) How is the amount of urine produced regulated? 2
- (b) Though plants have lower metabolic rate than the animals, many types of waste are generated during their body functions. Name any two ways the plants get rid of their waste.
- OR**
- Explain with the help of a diagram how amoeba takes its nutrition. Also mention the mode of nutrition.
- 22 You have touched a hot object. Represent diagrammatically the path that leads to a response. 2  
What is this type of response called?
- 23 (a) Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one 2  
reason for this.
- (b) Draw a longitudinal section of a bisexual flower and label the following  
(i) the pollen grain, (ii) the part which forms the fruit
- 24 Why is Plaster of Paris stored in a moisture proof container? Explain with the help of a 2  
chemical equation.
- 25 A ray of light incident at an angle of  $35^\circ$  on one face of a glass slab, after refraction strikes the 2  
opposite face of the slab before emerging out into air making an angle of  $40^\circ$  with the normal.  
Draw a labeled diagram to show the path of this ray. What will be the values of angle of  
refraction and angle of emergence?
- OR**
- Rays of violet, yellow and red colour are incident on a glass slab. Which of the three will  
suffer (a) maximum (b) minimum, lateral displacement? Justify your answer.
- 26 On a summer day, Rhea observed that clouds were white while the sky was blue. Explain her 2  
observation?

## SECTION - C

Q.no. 27 to 33 are short answer questions.

- 27 Calculate the focal length and nature of a spherical mirror which forms a  $1/3$  times magnified 3  
erect image of an object placed 18 cm in front of it?
- 28 Draw a well labeled ray diagram to show image formation in a convex lens when object is 3  
placed within the focal length of the lens.  
How will the image change if the lower half of the lens is covered with black paper?
- 29 When we look at objects through the air above a very hot surface/ fire, the objects appear to 3  
flicker. Explain why.
- 30 Complete the missing components/variables given as x and y in the following reactions. 3
- (a)  $\text{Pb}(\text{NO}_3)_2$  (aqueous) +  $2\text{KI}$ (aqueous)  $\rightarrow$   $\text{PbI}_2$  (x) +  $2\text{KNO}_3$  (y)
- (b)  $\text{Cu}$ (solid) +  $2\text{AgNO}_3$  (aqueous)  $\rightarrow$  x (aqueous) + y (solid)
- (c)  $\text{Zn}$ (solid) +  $\text{H}_2\text{SO}_4$  (aqueous)  $\rightarrow$   $\text{ZnSO}_4$ (x) +  $\text{H}_2$ (y)

- 31 A compound X on electrolysis in aqueous solution produces a strong base Y along with two gases A and B. B is used in the manufacture of bleaching powder. Identify X, Y, A and B. Write chemical equation. 3

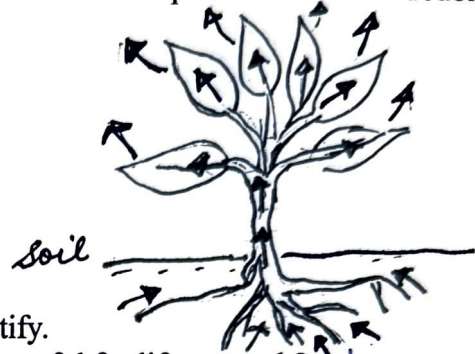
OR

A substance 'X' used in the kitchen for making tasty crispy pakoras and is also an ingredient of antacid. (i) Name the substance and chemical formula of 'X'. (ii) How does 'X' help to make cakes and bread soft and spongy. Explain with a chemical equation (iii) Is the pH value of solution of 'X' is lesser than or greater than 7.0? Why?

- 32 (a) Both birds and mammals possess 'double circulation'. Explain the term 'double circulation' and mention how it helps them? 3

(b) The figure given alongside has been drawn to explain an important phenomenon of plants.

- (i) Name the phenomenon.  
(ii) Explain its importance



- 33 (a) 'A food chain cannot have more than six steps.' Justify. 3  
(b) How is depletion of ozone layer in the atmosphere harmful for life on earth?  
(c) In the following food chain, 5J of energy is available to man. How much energy is available at the producer level?  
Plant → Sheep → Man

### SECTION – D

Q.no. 34 to 36 are Long answer questions.

- 34 (a) The human brain is the main coordinating centre, and thus has to be highly protected. Briefly mention two ways the brain is protected. 5  
(b) (i) Why is the use of iodised salt advisable?  
(ii) Pituitary gland is called the endocrine master gland. Justify the statement.  
(iii) The timing and quantity of hormones secreted are regulated in the human body. Explain.

OR

a) Draw a neat well labelled diagram of a neuron and label the parts (i) where information is acquired (ii) where the information must be converted into a chemical signal for onward transmission (iii) through which information travels as an electrical impulse.

b) State two differences between the movement of the leaves of a sensitive plant and the movement of a tendril towards a support.

c) A doctor advised a patient to take a sugar free diet and controlled dose of insulin. Name the disease he is suffering from. Mention one reason for the advice given by the doctor. *diabetes*

- 35 (a) Explain the formation of ionic compound  $MgCl_2$  with electron dot structure. Would it have low melting and boiling points? Justify your answer. 5  
b) What are amphoteric oxides? Support your answer with chemical equations.

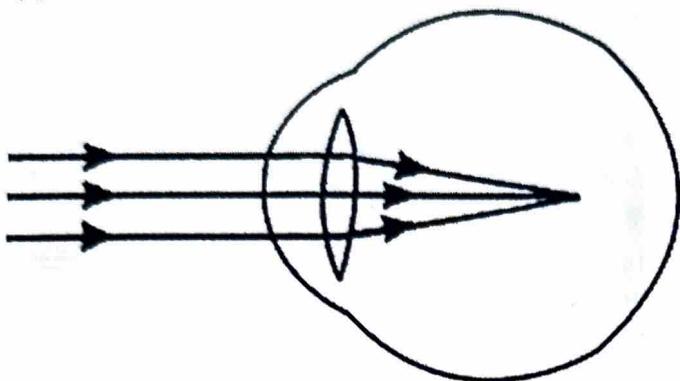
OR

(a) Write the steps involved in the extraction of pure metals in middle of the activity series from carbonate ores.

(b) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations.

36 (a) Draw a well labelled diagram to show refraction of a ray of light as it passes through a glass prism. 5

(b) Observe the given figure and answer the questions that follow:



(i) Identify the defect shown and name the lens used to correct it.

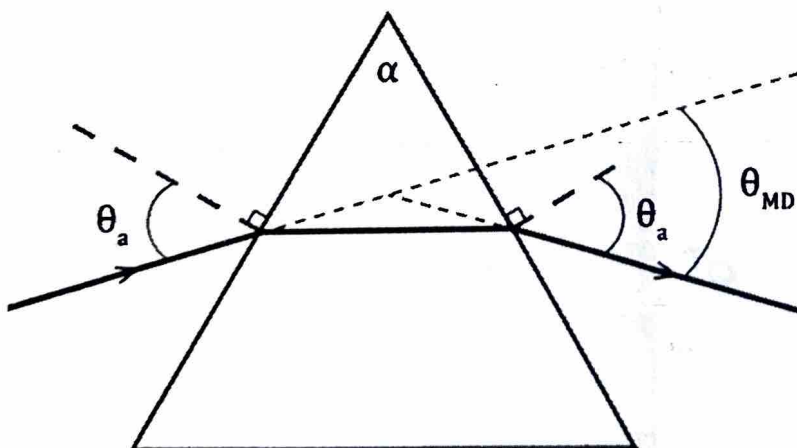
(ii) Draw a suitable ray diagram to show corrected eye.

(iii) State two causes that lead to the defect shown.

OR

(a) Why do we have two eyes instead of one?

(b) Observe the figure and state the value of angle of emergence and angle of prism given that  $\alpha = 60^\circ$  and  $\theta_{MD} = 36^\circ$ . Justify your answer.



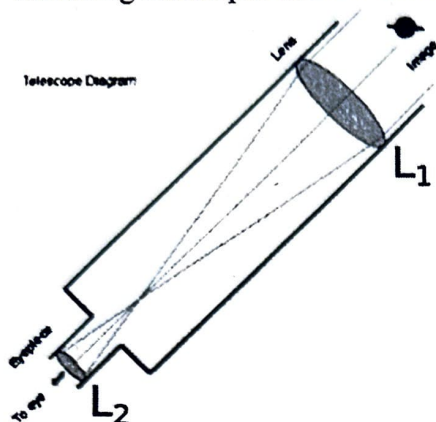
SECTION - E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts.  
Internal choice is provided in one of these sub-parts.

37 Read the passage and answer the questions that follow:

4

Sumati wanted to see the stars of the night sky. She knows that she needs a telescope to see those distant stars. She finds out that the telescopes, which are made of lenses, are called refracting telescopes and the ones which are made of mirrors are called reflecting telescopes.



So, she decided to make a refracting telescope. She bought two lenses,  $L_1$  and  $L_2$ , out of which  $L_1$  was bigger and  $L_2$  was smaller. The larger lens gathers and bends the light, while the smaller lens magnifies the image. Big, thick lenses are more powerful. So, to see far away, she needed a big powerful lens. Unfortunately, she realized that a big lens is very heavy. Heavy lenses are hard to make and difficult to hold in the right place. Also, since the light is passing through the lens, the surface of the lens has to be extremely smooth. Any flaws in the lens will change the image. It would be like looking through a dirty window.

- (a) Based on the diagram shown, what kind of lens would Sumati need to make the telescope?  
 (b) If the powers of the lenses  $L_1$  and  $L_2$  are in the ratio of 4:1, what would be the ratio of the focal length of  $L_1$  and  $L_2$ ?  
 (c) Sumati did some preliminary experiment with the lenses and found that the magnification of the eyepiece ( $L_2$ ) is 3. If in her experiment with  $L_2$  she found an image 24 cm from the lens, at what distance did she put the object?

OR

- (c) Sumati bought not-so-thick lenses for the telescope and polished them. Would she have any advantage with her choice of lenses?

38 Vegetative propagation refers to the development of new plants from vegetative parts (roots, 4

stems or leaves) of an existing plant. It is generally preferred for growing those plants which cannot produce their seeds or those which produce non-viable seeds (or seeds with prolonged period of dormancy). It is cheaper, easier and more rapid method of propagation in plants than growing plants from their seeds.

- (a) Which parts become a new plant in vegetative propagation?  
 (b) State the method used for growing jasmine plants.  
 (c) State two advantages of vegetative propagation.

OR

- (c) Name the most suitable method of raising a banana plant. Is this reproduction method sexual or asexual?

Q.39

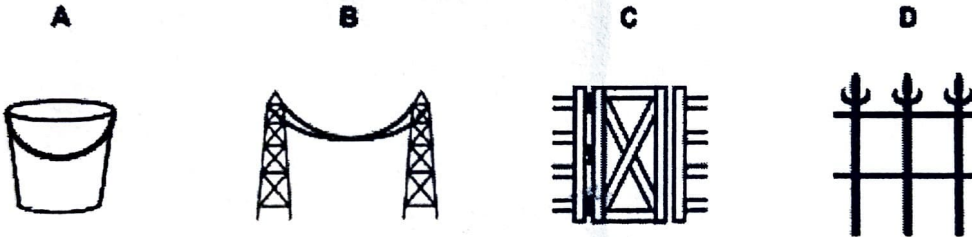
Two students decided to investigate the effect of water and air on iron objects under identical experimental conditions. They measured the mass of each object before placing it partially immersed in 10 ml of water. After a few days, the objects were removed, dried and their masses were measured. The table shows their results.

Student	Object	Mass of Object before Rusting in g	Mass of the coated object in g
A	Nail	3.0	3.15
B	Thin plate	6.0	6.33

- (a) What might be the reason for the varied observations of the two students?  
 (b) In another set up the students coated iron nails with zinc metal and noted that iron nails coated do not rust. They also observed that zinc initially acts as a physical barrier, but an extra advantage of using zinc is that it continues to prevent rusting even if the layer of zinc is damaged. Name this process of rust prevention and give any two other methods to prevent rusting.

OR

- (b) In which of the following applications of Iron, rusting will occur most and why?



- A. Iron bucket electroplated with zinc  
 B. Electricity cables having iron wires covered with aluminium  
 C. Iron hinges on a gate  
 D- Painted iron fence