



SHAPING FUTURES, BUILDING LEGACIES

**ST KABIR
PUBLIC SCHOOL**

SECTOR 26, CHANDIGARH. 160019

**MID TERM EXAMINATION (2025-26)**

Bakhuva

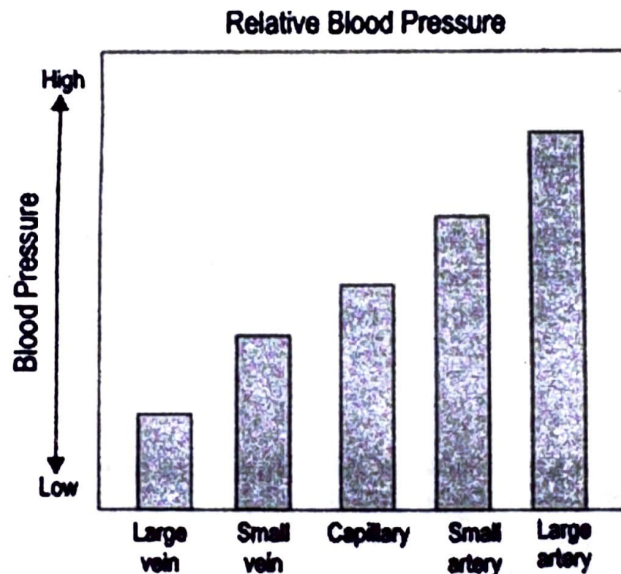
Class- X**Subject- SCIENCE (086)****Duration- 3 Hrs.****Max. Marks -80****General Instructions:**

(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.

(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.

SECTION-A

1. If the producers in an ecosystem receive 10,000 joules of energy from the sun, how much energy will be available to the primary consumers? (1)
A. 1 joule
B. 100 joules
C. 1,000 joules
D. 10,000 joules
2. The blood pressure in the different arteries and veins in the body is not the same. The pressure is higher in arteries closer to the heart and lower in veins which are far away from the heart. This is shown in the graph below. Which of these statements is likely to be correct about these types of blood vessels? (1)



- A. Blood will flow out fastest if a LARGE VEIN is accidentally cut.
B. LARGE ARTERIES will have the thickest and most muscular walls.
C. When the blood leaves the heart, it first enters CAPILLARIES.
D. A SMALL ARTERY is likely to get divided into many LARGE ARTERIES.
3. Sumit was playing a game where he and his friends turned round and round several times. Sumit felt dizzy and out of balance at the end of the game. Which part of his brain will help him to regain balance and stand straight again? (1)
A. medulla oblongata B. spinal cord C. cerebellum D. cerebrum

4. Which of the following BEST represents the correct sequence of the stimulus-response mechanism in the human body? (1)

- A. Receptor → Effector → Sensory neuron → Brain → Motor neuron → Response
- B. Stimulus → Receptor → Sensory neuron → Brain/spinal cord → Motor neuron → Effector → Response
- C. Stimulus → Effector → Brain → Sensory neuron → Motor neuron → Response
- D. Receptor → Stimulus → Brain → Effector → Sensory neuron → Response

5. A food vacuole is formed between which two stages in the process of digestion in amoeba? (1)

- A. digestion and egestion
- B. digestion and release of energy
- C. food engulfment and digestion
- D. food sensing and food engulfment

6. Given below is some information about budding. Which of them is/are FALSE? (1)

- P) Only single-celled organisms reproduce through budding.
- Q) The parent nucleus splits into two daughter nuclei.
- R) Buds are the ingrowths that live forever inside the parent cell.

- A. only Q
- B. only P and Q
- C. only P and R
- D. all - P, Q and R

7. Which of the following best explains how CFCs contribute to ozone layer depletion? (1)

- A. CFCs trap heat in the atmosphere, increasing global temperatures.
- B. CFCs form clouds that block sunlight, reducing photosynthesis.
- C. CFCs release chlorine atoms that break down ozone molecules in the stratosphere.
- D. CFCs react with ozone to form harmful carbon monoxide.

The following two questions no.8 and 9 consist of two statements – Assertion (A) and Reason (R).

Answer these questions by 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.

8. **Assertion (A):** Regeneration is a type of asexual reproduction seen in organisms like Planaria. (1)
Reason (R): In regeneration, a new organism develops from a broken body part of the parent.

9. **Assertion (A):** In some plants, leaves droop or close in response to touch. (1)
Reason (R): All responses displayed by plants due to external stimuli are affected by the direction of stimuli.

10. How do tendrils find support to climb? Explain the phenomenon involved. (1)

11. *"Although the human heart is made of muscle tissue, it does not fatigue like skeletal muscles, even after constant pumping throughout life. It functions as a double pump and is myogenic in nature. The heart's four-chambered structure and the separation of its right and left sides by the septum allow it to function as two coordinated pumps"* (1)
What is meant by double circulation in humans? Support your answer with a well labelled flow chart.

12. Attempt either option A or B (2)

A. A gardener wants to grow several identical rose plants quickly without using seeds. Which method of reproduction should the gardener use? Explain the method briefly and name one more plants that can be grown this way.

OR

B. What is the effect of DNA copying, which is not perfectly accurate, on the reproduction process? How does the amount of DNA remain constant, though each new generation is a combination of DNA copies of two individuals?

13. A person suffers a brain injury and loses the ability to interpret sensations like touch, temperature, and pain. (3)

i) Which part of the brain is likely affected?

ii) What is the main function of this region?

iii) How would damage to this part affect daily life?

14. i) We do not clean ponds or lakes but an aquarium needs to be cleaned regularly. Why? (3)

ii) Why should biodegradable and non- biodegradable waste be discarded in two separate bins?

iii) Why is the flow of energy in an ecosystem unidirectional, while the flow of nutrients is cyclic?

15. Tanya covered the flowers of a Hibiscus plant with a paper bag before they bloomed and left another group of flowers uncovered. Later, she observed that seeds developed only in the uncovered flowers. Her teacher explained that pollination and fertilisation are both necessary for seed formation and that flowering plants show a unique feature called double fertilisation. (4)

Answer the following:

Attempt either subpart C or D

A. What type of pollination occurred in the uncovered flowers?

B. Define double fertilisation and list its two steps.

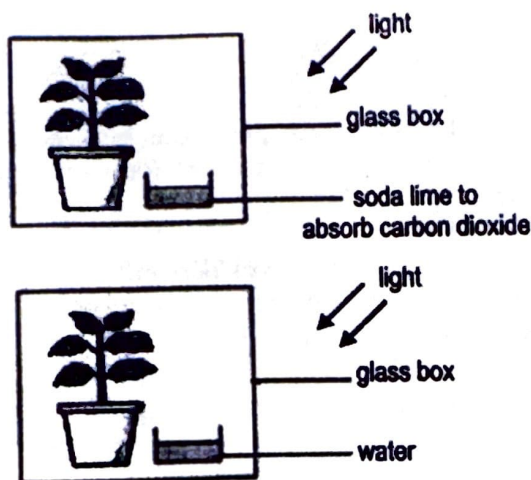
C. Why are two male gametes required for fertilisation in flowering plants?

OR

D. How does pollination lead to fertilisation in flowering plants?

16. Attempt either option A or B. (5)

A. 1) Jaspreet conducted an experiment to study photosynthesis using two plant set-ups. She ensured that both plants received the same amount of water daily and monitored their growth regularly. In one set-up, she placed soda lime near the plant inside a sealed container.



Based on this setup, answer the following:

- What was Jaspreet most likely trying to investigate through her experiment?
- What role does soda lime play in this experiment?

2. The kidneys filter about **150–180 litres** of glomerular filtrate each day, but only **1.5–1.8 litres of urine** is excreted. This large difference is due to the reabsorption of water by the nephron.

i) Based on this information, identify the part(s) of the nephron where water reabsorption primarily occurs. Support your answer with a diagram.

ii) Explain why this process of reabsorption is important for the body.

OR

B. 1. Riya was learning about breathing in humans. While practicing deep breathing during a yoga session, she noticed that her chest expanded when she breathed in and contracted when she breathed out.

Based on this observation:

- Describe the state of the lungs and diaphragm during inhalation.
- Describe the state of the lungs and diaphragm during exhalation.

2. Ankit sealed a healthy potted plant inside an airtight transparent jar and placed it in a sunny spot. After 24 hours, he tested the air inside the jar and found increased oxygen and decreased carbon dioxide levels.

- Which biological process in plants explains this observation?
- Would you expect the same result if the plant was kept in the dark instead of sunlight? Why or why not?
- Explain how respiration in plants is still taking place in both light and dark conditions.

SECTION - B

17. When magnesium ribbon is burnt in air, a white ash is formed. The ash is:

- Magnesium oxide, basic in nature
- Magnesium oxide, acidic in nature
- Magnesium hydroxide, neutral
- Magnesium sulphate, basic

(1)

18. A metal X is heated in the presence of oxygen to form a black coloured compound Y. When Y is treated with hydrogen gas, X is regenerated. The black compound Y is most likely: (1)

A. CuCO_3
B. CuO
C. FeO
D. Fe_2O_3

19. A student performed an experiment by adding small pieces of four different metals — P, Q, R, and S — into separate test tubes containing zinc sulphate solution. Only metals R and S showed visible reaction (displacement). (1)

Based on this, which of the following conclusions is correct?

- A. P and Q are more reactive than zinc
B. R and S are less reactive than zinc
C. R and S are more reactive than zinc
D. Zinc is the most reactive of all four metals

20. A student dipped red and blue litmus papers in four solutions labeled W, X, Y, and Z. The observations are shown below: (1)

Solution	Red Litmus	Blue Litmus
W	No change	Turns red
X	Turns blue	No change
Y	No change	No change
Z	Turns blue	Turns red

Which of the following statements is correct?

- A. W is basic, X is acidic, Y is neutral, Z is amphoteric
B. W is acidic, X is neutral, Y is basic, Z is a buffer
C. W is acidic, X is basic, Y is neutral, Z is both acidic and basic
D. W is acidic, X is basic, Y is neutral, Z is an indicator

21. Listed here is the reactivity of certain metals:

(1)

Metal	Reaction with air	Reaction with water	Reaction with dilute acids
W	Does not oxidise or burn	No reaction	No reaction
X	Burns vigorously to form an oxide	Reacts on heating	Reacts to produce hydrogen
Y	Burns to form an oxide	Reacts on heating	Reacts to produce hydrogen
Z	No reaction	Does not dissolve or reacts	No reaction

Which of the above metals are likely to be obtained in their pure states from the Earth's crust?

- A. W and X
- B. X and Y
- C. X and Z
- D. W and Z

22. A student was asked to compare the conductivity of two solutions:

(1)

Solution A: Dilute hydrochloric acid

Solution B: Dilute acetic acid

He set up identical circuits for both and noted that the bulb glowed brighter with Solution A than with Solution B.

What is the most appropriate explanation for this observation?

- A. Acetic acid is a strong acid and completely ionises in water.
- B. Hydrochloric acid produces more ions in solution than acetic acid.
- C. Hydrochloric acid is non-electrolytic, but acetic acid is electrolytic.
- D. Acetic acid has a lower boiling point than hydrochloric acid.

23. Which of the following statements are correct about non-metals?

(1)

- (i) They are good conductors of electricity
- (ii) They are generally brittle
- (iii) They gain electrons to form anions
- (iv) They react with dilute acids to release hydrogen gas

Choose the correct option.

- A. (ii) and (iii)
- B. (i) and (iv)
- C. (i), (ii), and (iii)
- D. (ii), (iii), and (iv)

Question no.24 consists of two statements – Assertion (A) and Reason (R). Answer these questions by 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

24. **Assertion (A):** The pH of pure water increases when a pinch of sodium bicarbonate is dissolved in it. (1)

Reason (R): Sodium bicarbonate is used in baking as a leavening agent.

25. Name the acid and the base from which the salt Na_2SO_4 is formed. Also write the balanced chemical equation for its formation. (2)

26. During a lab activity, a student adds water to quicklime and observes a vigorous reaction accompanied by hissing and release of heat. (3)

a) Write the balanced chemical equation for the reaction.

b) Identify the type of reaction.

c) What is the chemical nature of the product formed and one real-life application of this reaction?

27. **Attempt either option A or B.** (3)

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

OR

B. Plaster of Paris is widely used in medical and construction fields.

(i) Write the chemical formula of Plaster of Paris and mention how it is obtained from gypsum.

(ii) Why should Plaster of Paris be stored in a moisture-proof container?

(iii) Mention one use each in the field of medicine and construction.

- 28 Ravi investigates the corrosion of three different metals: Copper, Iron, and Lead. He exposes each to different atmospheric conditions for two weeks and observes the changes: (4)

TABLE 1

Condition	Copper	Iron	Lead
Appearance at start	Shiny brown	Shiny silver	Shiny silver
Damp oxygen	Green patches on surface	Orange-brown patches	Dull and silvery
Damp acidic air	Thick green layer	Many orange-brown flakes	Black layer
Damp nitrogen	Shiny brown	Shiny silver	Shiny silver

He also conducted an experiment to study the corrosion resistance of different metals and alloys. He exposed equal-sized clean metal strips to moist air for 10 days and recorded the percentage of mass lost due to corrosion. The metals included pure iron, galvanised iron, stainless steel, and brass. The data collected is given below:

TABLE 2

Material	Composition	Mass Loss Due to Corrosion (%)
Pure Iron	Iron (Fe)	12.0%
Galvanised Iron	Iron coated with Zinc	1.8%
Stainless Steel	Iron + Chromium + Nickel	0.5%
Brass	Copper + Zinc	0.9%

Based on the above information, answer the following questions-

A. Ravi observed that iron formed many orange-brown flakes in acidic air. What do these flakes indicate? Why does iron form orange-brown flakes in damp oxygen and acidic air, while it remains shiny in damp nitrogen?

B. Copper develops green patches and a thick green layer. Name the likely compound formed. What kind of reaction is this—combination, displacement, or double displacement?

Attempt either C or D

C. If a coastal bridge were to be built, which material would you choose from the table no.2 for structural parts exposed to air and moisture? Justify your answer considering both corrosion data and practical cost factors.

OR

D. State any two advantages of alloying (other than increasing resistance to corrosion). Support your answer with suitable examples.

29.

Attempt either option A or B

(5)

A.(i) Calcium and oxygen combine to form an ionic compound. What is the formula of the compound formed? Show its formation by transfer of electrons. In which state it conducts electricity and why?

ii) What is thermite reaction? Give its application.

OR

B. Different ores of the same metal may require different methods of extraction.

i) Give an example of one such metal with two different ores. Name these ores.

ii) Explain the extraction method for each ore with the help of chemical equations.

SECTION -C

30.

A ray of red light and a ray of green light are incident at the same angle on a rectangular glass slab. After passing through the slab, both rays emerge parallel to the incident ray, but they are found to be separated laterally.

(1)

Which of the following best explains the reason for the separation between the red and green emergent rays?

- A. Green light travels faster in glass than red light, so it bends less.
- B. Red light has higher energy than green light, so it bends more.
- C. Green light has a shorter wavelength and bends more in glass than red light.
- D. Both rays bend equally, but green light reflects inside the slab causing separation.

31.

The focal length of the eye lens increases when eye muscles,

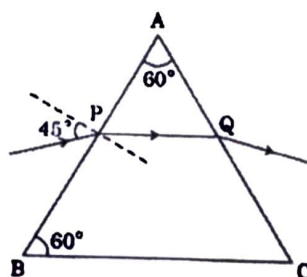
(1)

- A. are relaxed and lens becomes thinner.
- B. contract and lens becomes thicker.
- C. are relaxed and lens becomes thicker.
- D. contract and lens become thinner.

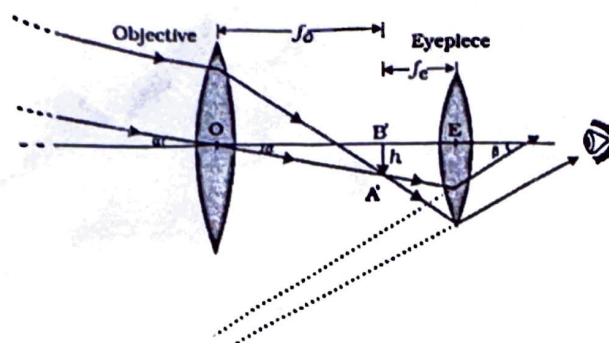
Question no.32. consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

- 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.

32. **Assertion:** Human beings have stereoscopic vision. (1)
Reason: Human beings have two eyes.
33. The absolute refractive indices of benzene and kerosene are 1.50 and 1.44 respectively. What is the refractive index of benzene w.r.t kerosene? (2)
34. Explain the following observation(s) with a suitable reason. (2)
Attempt either option A or B
 A. The Sun appears reddish at dawn and white at noon.
 B. Objects appear distorted when seen through the air above a campfire.
35. An object is placed at a distance of 30cm from a convex mirror producing a magnification of $\frac{1}{2}$. Where should the object be placed to get a magnification of $\frac{1}{3}$? (3)
36. A thin converging lens forms a (i) real magnified image, and (ii) virtual magnified image of an object placed in front of it. Write the position of the object in each case. Draw labelled ray diagrams to show the formation of image in each case. (3)
37. The angle of incidence for a ray of light at a refracting surface of a prism is 45° . The angle of prism is 60° . Find the angle of emergence and angle of minimum deviation if the ray refracts as shown below. (3)



38. A telescope provides angular magnification of distant objects using a combination of two lenses- objective and eyepiece. The objective has a large focal length and much larger aperture than the eyepiece. Light from a distant object enters the objective and a real image is formed at its second focus. The eyepiece magnifies this image producing a final inverted image as shown in the figure below. (4)



The magnifying power of a compound microscope 'm' is the ratio of focal length of the objective to that of the eyepiece. $m = f_o / f_e$. Refracting microscopes can be used both for terrestrial and astronomical observations.

A. The giant refracting telescope at an observatory has an objective lens of focal length 15m. If the eyepiece of focal length 1cm is used, what is the magnifying power of the telescope?

B. How will the magnification be affected if the eyepiece is replaced with a thicker lens?

Attempt either subpart C or D

C. Two thin lenses of power +3.5D and -2.5D are placed in contact. Find the power and focal length of the lens combination.

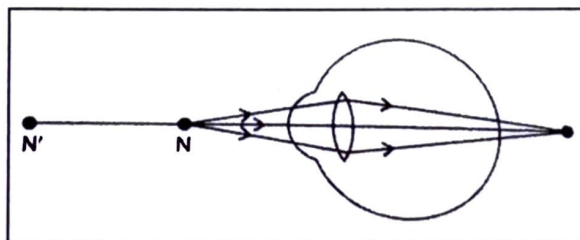
D. What modification in the design would you make if you wanted the final image to be erect?

39. **Attempt either A or B**

(5)

A. (a) What happens to the image distance in the eyes when the distance of the object is increased gradually from about 5m to 500m from the eyes? Name and explain the role of the part of the human eye responsible for it in this case.

(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

B. (a) The far point of a myopic person is 2.0m in front of the eye. What is the nature, focal length and power of the lens required to correct the defect?

(b) Name the part of the eye:

- (i) where maximum refraction of light occurs.
- (ii) that functions as the screen.
- (iii) where most distinct images are formed.
- (iv) responsible for change in size of pupil of eye.

AR Bhatia
22/8/25

Chirpa
22/8/25

Seema
22.08.25

Komal
22.8.25