

CLASS

10



PHYSICS
WALLAH

CBSE

15

15

SAMPLE
QUESTION
PAPERS

WITH CHEAT SHEETS
TO REVISE YOUR CONCEPTS

SCIENCE



WITH CBSE SQP, APQ & 2024 SOLVED PAPER

ADHERED TO COMPETENCY BASED LEARNING

2025
EXAMINATION

How to Rock Your Board Exams?



Admit Card: Double-check your admit card before heading to the exam center.



Stationery: Bring pens, pencils, erasers, sharpeners, ruler, and a geometry box. Ensure working pens with sufficient ink and carry spares.



Water bottle and wrist watch: Bring a transparent water bottle for hydration and a wrist watch to monitor time; avoid digital watches which may not be permitted.



Arrive Early at the Examination Center: Arrive before your admit card's reporting time for smooth security checks and room location.



Read the Instructions carefully: Read the instructions of the paper carefully to know the format, marking and special guidelines. Ask the invigilator for any doubts about instructions.



Manage your Time: Assign time for each section/question based on allotted marks and adhere to it for effective time management.



Don't Panic: If you find the paper difficult, remember that everyone else is likely feeling the same way. Stay focused, do your best, and don't let anxiety take over.



Start with your Strengths: Start with your strongest section/question to boost confidence for tougher parts.



Answer clearly and neatly: Write neatly, use headings, subheadings, and bullets for clarity and fetching more marks. Start with margins on both sides. This sets a structured format for your answers.



Don't spend too much time on one question: If a question is challenging or time-consuming, move on and revisit it later if possible. Avoid getting stuck on a single question.



Use of HB pencil: HB pencils produce a relatively dark and easily readable mark. Try to use HB pencils while making diagrams in the exam.



Attempt all questions: Even if unsure, attempt all questions; there is no negative marking in CBSE exams.

SELF ASSESSMENT SHEET

Self-assessment plays a crucial role in exam preparation and offers several advantages:

- Enhanced Self-awareness:** Self-assessment sheets help students gain a deeper understanding of their strengths and weaknesses across various subjects. Specific feedback on their performance provides valuable insights into areas of excellence and those that require improvement.
- Focused Study:** These sheets provide clear guidance to students on where to direct their efforts. Identifying which questions to review, reattempt, or practice allows for more efficient and purposeful study sessions.
- Targeted Improvement:** By categorizing questions into different categories (e.g., Easy, Revise, Reattempt), students can concentrate on areas that require the most attention. This targeted approach can result in significant improvements in their comprehension and performance.
- Motivation:** Self-assessment sheets serve as a source of motivation for students. Observing their progress and understanding the steps needed for improvement can boost their motivation to work harder and achieve better results.
- Reduced Exam Anxiety:** Having a clear understanding of their preparation progress helps reduce exam-related anxiety. Students feel more confident when they know what aspects to focus on, leading to a calmer and more effective exam experience.
- Time Management:** Self-assessment sheets aid students in managing their study time more effectively. They can allocate more time to areas requiring extensive revision or reattempt while spending less time on topics they have already mastered.

Self evaluation Instruction: After completing the test, evaluate it using the provided explanations. Use only a pencil to mark the evaluations (allowing for revisions and reattempts). Record the marks obtained in the Marks section and provide remarks in the Remarks column.

Remarks abbreviations:

- Easy (E):** Use for questions that you should find straightforward, indicating a good understanding and correct answers.
- Revise (R):** Assign to questions where your response contains minor errors or gaps in understanding, suggesting the need for topic review.
- Reattempt (RA):** Use for questions with incorrect responses, significant misconceptions, or a lack of understanding. Students receiving this remark should revisit the topic thoroughly, seek additional help if necessary, and attempt similar questions to enhance their grasp of the concept.

Chapter-wise Weightage & Trend analysis

CBSE PAST 5 YEARS PAPERS

CHAPTERS	SCIENCE								
	2020		2021	2022		2023		2024	
	DL	ODL		DL	ODL	DL	ODL	DL	ODL
Chemical Reactions and Equations	5	7		-	-	8	6	7	7
Acids, Bases and Salts	5	5		-	-	8	10	4	5
Metals and Non-metals	5	5		-	-	4	6	8	7
Carbon and its Compounds	5	7		5	5	7	6	6	6
Periodic Classification of Elements (<i>Rationalised</i>)	5	5		5	5	-	-	-	-
Life Processes	5	8		-	-	10	10	5	8
Control and Coordination	3	4		-	-	3	1	6	6
How do Organisms Reproduce?	7	5		6	7	6	5	6	10
Heredity and Evolution (<i>Some portion is Rationalised</i>)	8	6		7	6	6	6	6	1
Light - Reflection and Refraction	9	11		-	-	12	9	7	10
The Human Eye and the Colourful World (<i>Some portion is Rationalised</i>)	3	4		-	-	2	5	5	2
Electricity (<i>Some portion is Rationalised</i>)	7	8		6	6	11	8	7	8
Magnetic Effects of Electric Current (<i>Some portion is Rationalised</i>)	6	2		6	6	5	5	6	8
Sources of Energy (<i>Rationalised</i>)	1	4		-	-	-	-	-	-
Our Environment	4	3		5	5	5	5	4	5
Sustainable Management of Natural Resources (<i>Rationalised</i>)	2	1		-	-	-	-	-	-

Exam not Conducted

*The marks allotment mentioned above is chapter-wise and includes internal choice questions as well. Therefore, the total might not match the Maximum Marks of the respective Previous Year Paper. Here, DL is Delhi, ODL is Outside Delhi.

Comparative Analysis

CBSE SQP 2023-24 vs. Past Year Paper 2023 vs. 2024 Paper

CHAPTERS	Sample Question Paper 2023-24		2023 Paper		2024 Paper	
	Question Typology	Total Marks	Question Typology	Total Marks	Question Typology	Total Marks
Chemical Reactions and Equations	1 MCQ , 1A/R, 1 VSA	4	3 MCQ, 1 SA	6	1 SA, 1 VSA, 2 MCQ	7
Acids, Bases and Salts	1 MCQ , 1 LA	5	3 MCQ, 2 VSA, 1 SA	10	1 Case Base + 1 MCQ	5
Metals and Non-metals	5 MCQ, 2 SA	11	1 MCQ, 1 A/R, 1 CASE-BASED	6	3 MCQ, 1 A/R, 1 SA	7
Carbon and its Compounds	1 LA, 1 LA, 1 CASE-BASED	10	1 MCQ, 1 LA	6	1 MCQ, 1 LA	6
Life Processes	2 MCQs, 1 VSA	4	2 MCQs, 1 A/R, 2 VSA, 1 SA	10	2 MCQ, 1 SA	5
Control and Coordination	1 MCQ, 1 SA, 1 LA	9	1 MCQ	1	1 MCQ, 1 LA	6
How do Organisms Reproduce?	1 MCQ, 1 AR, 1 VSA, 1 LA	9	1 LA	5	1 MCQ, 1 A/R, 1 VSA, 1 SA, 1 Case Based	11
Heredity	1 MCQ, 1 SA, 1 CASE-BASED	8	1 MCQ, 1 A/R, 1 CASE-BASED	6	1 MCQ	1
Light - Reflection and Refraction	1 MCQs, 1 SA, 1 LA, 1 VSA	11	1 SA, 2 CASE-BASED	9	1 MCQ, 1 A/R, 1 SA	5
The Human Eye and the Colourful World	1 MCQ	1	2 VSA, 1 SA	5	1 MCQ, 1 A/R	2
Electricity	2 SA,1 CASE-BASED, 1 VSA	12	3 MCQ, 1 LA	8	2 MCQ, 1 VSA, 1 case base	8
Magnetic Effects of Electric Current	OR 1 VSA AND 1 A/R	2	1 MCQ,1 AR, 1 SA	5	1 MCQ, 1 A/R, 1 SA	5
Our Environment	2 MCQs, 1 AR, 1 VSA	5	1 VSA, 1 SA	5	1 VSA, 1 SA	5

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Upcoming CBSE
SQPs/APQs can
be accessed
through this QR



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V. CBSE Solved Paper 2024

CHAPTER-1

CHEMICAL REACTIONS AND EQUATIONS

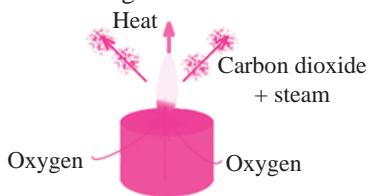
To Access One Shot Revision
Video Scan This QR Code



Real Life Applications And Mnemonics

REAL LIFE APPLICATIONS

1. Cooking involves many physical and chemical changes such as heating, boiling, frying, baking, and fermentation.
2. Photosynthesis is considered as a chemical change that takes place in plants where sunlight gets converted into energy through a series of chemical reactions.
3. Burning of candles involves a chemical change where the wax of the candle reacts with oxygen in the air to produce carbon dioxide and water vapour, releasing energy in the form of heat and light.



4. Digestion is an example of a chemical reaction in which enzymes break down food molecules into smaller, more easily absorbed molecules. This process involves the release of energy, a change in color and texture, and the formation of new substances.
5. In agriculture, balancing chemical equations to produce fertilizers, which are used to improve crop yield. The balanced equation helps in determining the exact amount of nutrients needed for plant growth.
6. Coal burns in air to form carbon dioxide and water. This is an example of a combination reaction.
7. Formation of rust on the surface of iron objects is a redox reaction between iron and oxygen in an environment having water.



8. The Statue of Liberty has been turned green over the years due to corrosion of the Cu metal from which it is made up of.



MNEMONICS

1. To remember chemical change characteristics, mnemonics PROD can be used which means:
 - P-Production of new substance
 - R- Release of gas
 - O-Observed energy change
 - D- Dramatic change in properties
2. MAD HOP can be used to remember which species to balance first in chemical reaction.
MAD stands for Metal, Acid, and then Diatomic, while HOP stands for Hydrogen, Oxygen, and Polyatomic.
3. Redox reaction involves oxidation and reduction simultaneously. In order to remember the terms oxidation and reduction, given below mnemonics can be used.

LEO the lion says GER
↓ ↓
L-Loss of G-Gain of
E-Electrons is E-Electrons is
O-Oxidation R-Reduction

4. To remember the factors contribute to rancidity, FAO can be used.
FAO: This mnemonic stands for the factors that contribute to rancidity, including fatty acids, Air, and Oxygen

CHEMICAL EQUATIONS

- It is the representation of chemical reaction in symbols and it needs to be balanced.
- E.g.: $Mg(s) + O_2(g) \rightarrow 2MgO(s)$

Represented as

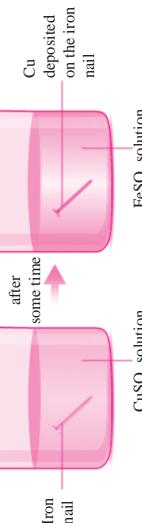
CHARACTERISTICS

- Evolution of gas
- E.g.: $CaCO_3(s) \xrightarrow{\text{heat}} CaO(s) + CO_2(g)$
- Change in temperature
- E.g.: $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq) + \text{Heat}$
- Change in state
- E.g.: $NH_3(g) + HCl(g) \rightleftharpoons NH_4Cl(s)$
- Formation of precipitate
- E.g.: $2KI(aq) + Pb(NO_3)_2(aq) \rightarrow 2KNO_3(aq) + PbI_2(s)$ (Yellow ppt)

CHEMICAL REACTIONS

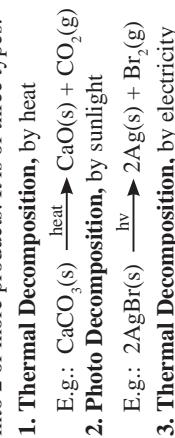
EFFECTS OF OXIDATION

- Corrosion: Degradation of metals, E.g.: $Rust: Fe_2O_3 \cdot xH_2O$



- (b) Rancidity:** Oxidation of foods containing oils and fats.
- Preventions
 - BHA and BHT chemicals
 - Nitrogen gas
 - Refrigeration

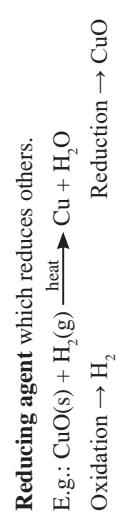
- Combination reaction: When 2 or more element combines to form single product
- E.g.: $2Na(s) + Cl_2(g) \rightarrow 2NaCl(s)$
- Decomposition reaction: Single reactant breaks down into 2 or more products. It is of three types:
 - Thermal Decomposition, by heat
 - Photo Decomposition, by sunlight
 - Thermal Decomposition, by electricity



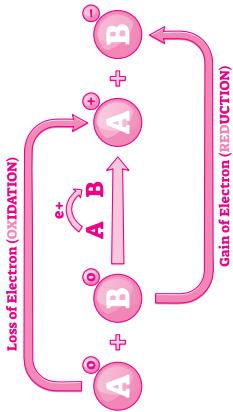
- Single displacement reaction: More reactive element displaces less reactive elements from its salt solutions.
- E.g.: $Fe(s) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$
- Double displacement reaction: Exchange of ion takes place.
- E.g.: $Na_2SO_4(aq) + BaCl_2(aq) \rightarrow 2NaCl(aq) + BaSO_4(aq)$

Redox Reactions

- Oxidation: (a) Addition of O_2 (b) Removal of H_2
- Reducing: (a) Addition of H_2 (b) Removal of O_2
- Oxidising agent which oxidises others.
- Reducing agent which reduces others.



REDOX REACTION



CBSE Solved Paper 2024

In Exams Guru's Ink

Time allowed : 3 hours

Maximum Marks : 80

GENERAL INSTRUCTIONS:

Read the following instructions very carefully and strictly follow them:

- (i) This question paper comprises **39** questions. All questions are compulsory.
- (ii) This question paper is divided into **FIVE** sections viz. Section **A, B, C, D** and **E**.
- (iii) In Section **A** - question number **1** to **20** are Multiple Choice Questions (MCQs) carrying **1** mark each.
- (iv) In Section **B** - question number **21** to **26** are Very Short Answer (VSA) type questions carrying **2** marks each. Answer to these questions should be in the range of **30** to **50** words.
- (v) In Section **C** - question number **27** to **33** are Short Answer (SA) type questions carrying **3** marks each. Answer to these questions should be in the range of **50** to **80** words.
- (vi) In Section **D** - question number **34** to **36** are Long Answer (LA) type questions carrying **5** marks each. Answer to these questions should be in the range of **80** to **120** words.
- (vii) In Section **E** - question number **37** to **39** are of 3 source-based/case-based units of assessment carrying **4** marks each with sub-parts.
- (viii) There is no overall choice. However, an internal choice has been provided in some Sections. Only one of the alternatives has to be attempted in such questions.

SECTION - A

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

1. Consider the following statements about homologous series of carbon compounds:

- A. All succeeding members differ by $-\text{CH}_2$ unit.
- B. Melting point and boiling point increases with increasing molecular mass.
- C. The difference in molecular masses between two successive members is 16 u.
- D. C_2H_2 and C_2H_4 are NOT the successive members of alkyne series.

The correct statements are-

(a) (A) and (B) (b) (B) and (C) (c) (A) and (C) (d) (C) and (D)

1. (a)

In a homologous series, the difference in molecular masses between two successive members is $14u$ (not $16u$). C_2H_2 and C_3H_4 are the successive members of the alkyne series as they differ by the $-CH_2$ unit and corresponds to the same general formula of alkynes series.

10. Which of the following statement(s) is (are) true about human heart?

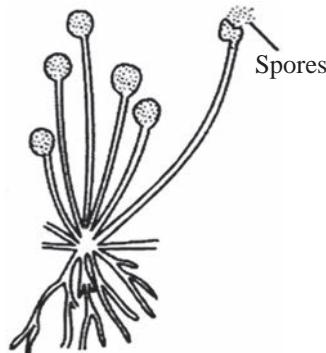
(A) Right atrium receives oxygenated blood from lungs through pulmonary artery.
(B) Left atrium transfers oxygenated blood to left ventricle which sends it to various parts of the body.
(C) Right atrium receives deoxygenated blood through vena cava from upper and lower body.
(D) Left atrium transfers oxygenated blood to aorta which sends it to different parts of the body.
(a) (A) (b) (A) and (D) (c) (B) and (C) (d) (B) and (D)

10.(c) The incorrect statements are :

(a) The right atrium receives deoxygenated blood through the vena cava, not oxygenated blood from the pulmonary artery.

(b) The left atrium transfers oxygenated blood to the left ventricle, which then sends it to the aorta, not directly from the left atrium to the aorta.

11. Which one of the following organism is represented by this diagram?



(a) *Spirogyra* (b) *Planaria* (c) Yeast (d) *Rhizopus*

11.(d) The diagram shows a sporangium with spores, characteristics of Rhizopus, a type of fungus, commonly known as bread mold.

12. A cross made between two pea plants produces 50% tall and 50% short pea plants. The gene combination of the parental pea plants must be

(a) Tt and Tt (b) TT and Tt (c) Tt and tt (d) TT and tt

CBSE SAMPLE QUESTION PAPER

(Issued by CBSE on 31st March, 2023)

Class-X Session: 2023-24

SCIENCE (086)

Time allowed : 3 hours

Maximum Marks : 80

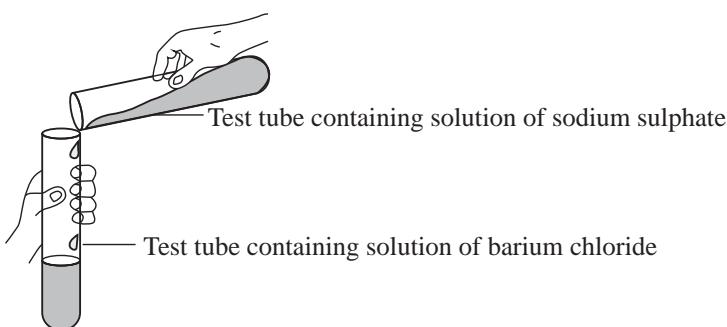
GENERAL INSTRUCTIONS:

- (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. Answer to these questions should be in the range of 80 to 120 words.
- (vii) Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION - A

Select and write the most appropriate option out of the four options given for each of the question 1 – 20. There is no negative mark for incorrect response.

1.



Identify the product which represents the solid state in the above reaction.

(a) Barium chloride (b) Barium sulphate (c) Sodium chloride (d) Sodium sulphate

Sol. (b) Barium sulphate

(1 M)

2. The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is

(a) Blue (b) Colourless (c) Dirty green (d) Reddish Brown

Sol. (b) Colourless

(1 M)

CBSE SAMPLE QUESTION PAPER

(Issued by CBSE on 08th September, 2023)

(ADDITIONAL PRACTICE QUESTIONS)

Class-X Session: 2023-24 SCIENCE (086)

Time Allowed : 3 hours

Maximum 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.
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- (vii) Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION - A

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. A single displacement reaction is represented below. $PQ + R \rightarrow PR + Q$

Which of the following is true about the reactants and products?

Option	Type of ion of R in product	Stability of PR as compared to PQ
A	cation	more stable
B	cation	less stable
C	anion	more stable
D	anion	less stable

(a) A

(b) B

(c) C

(d) D

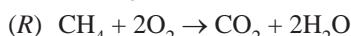
Sol. (c) C

(1 M)

2. Some types of chemical reactions are listed below.

- decomposition - combination - displacement - double displacement

Which two of the following chemical reactions are of the SAME type?



(a) P and Q

(b) Q and R

(c) R and S

(d) P and S

Sol. (d) P and S

(1 M)

Candidates must write the Q.P. Code on the title page of the answer book.

SAMPLE QUESTION PAPER- I

SCIENCE

Time allowed : 3 hours

Maximum Marks : 80

NOTE:

- (i) Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- (ii) Please check that this question paper contains **39** questions.
- (iii) Please write down the Serial Number of the question in the answer-book before attempting it.
- (iv) 15 minute time has been allotted to read this question paper. The students will read the question paper only and will not write any answer on the answer-book during this period.

GENERAL INSTRUCTIONS:

Read the following instructions carefully and strictly follow them:

- (i) This question paper consists of **39** questions. **All** questions are compulsory.
- (ii) Question paper is divided into **FIVE** sections viz. Section **A, B, C, D** and **E**.
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- (iv) In Section **B** - question number **21** to **26** are Very Short Answer (VSA) type questions carrying **2** marks each. Answer to these questions should be in the range of **30** to **50** words.
- (v) In Section **C** - question number **27** to **33** are Short Answer (SA) type questions carrying **3** marks each. Answer to these questions should be in the range of **50** to **80** words.
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- (vii) In Section **E** - question number **37** to **39** are of **3** source-based/case-based units of assessment carrying **4** marks each with sub-parts.
- (viii) There is no overall choice. However, an internal choice has been provided in some Sections.

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. Metal oxides are basic in nature. But some metal oxides, such as aluminium oxide, zinc oxide, etc., show both acidic as well as basic behaviour. Such metal oxides which react with both acids as well as bases to produce salts and water are known as amphoteric oxides. Most metal oxides are insoluble in water but some of these dissolve in water to form alkalis.

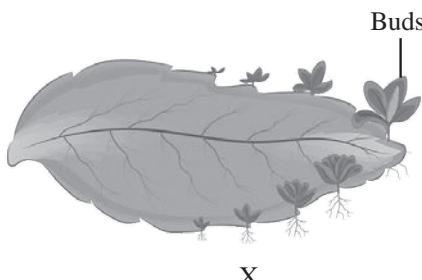
(a) Write reactions of amphoteric oxide with both acid and base. 1

(b) Why is potassium and sodium kept under the kerosene oil? 2

OR

(b) Name two oxide which are soluble in water and form alkalis? Write reactions also. 2

38. Radhika is an avid gardener who has a wide variety of flowering plants in her garden. One day, some mischievous children entered her garden and plucked a leaf X from some of the plants and scattering them around the garden. A few days later, Radhika noticed that new buds were sprouting from the leaves that had fallen on the ground.



(a) Explain the process involved in the sprouting of new buds from leaf X. 2

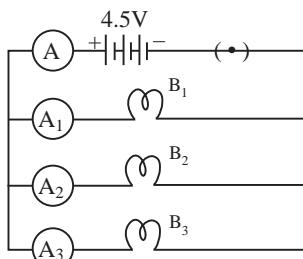
(b) Discuss the significance of leaf X in the propagation of flowering plants. How can this natural process be advantageous for gardeners? 1

(c) In the case of the money plant, which plant part has the ability to reproduce through a process similar to that observed with leaf X? 1

OR

(c) Explain how the process adopted by leaf X contributes to genetic diversity. 1

39. Study the circuit shown in which three identical bulbs B_1 , B_1 , and B_3 are connected in parallel with a battery of 4.5V and answer the following questions.



(a) What will happen to the glow of the other two bulbs if the bulb B_3 gets fused? 1

(b) If the wattage of each bulb is 1.5W, how much readings will the ammeter A show when all the three bulbs glow simultaneously. 1

(c) Find the total resistance of the circuit. 2

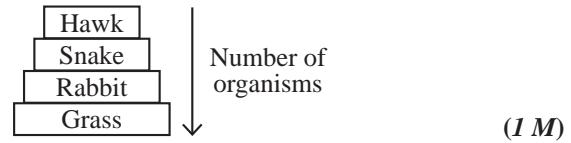
OR

(c) How many resistors of $88\ \Omega$ are connected in parallel to carry 10 A current on a 220 V line? 2

SAMPLE QUESTION PAPER-I

(Explanations)

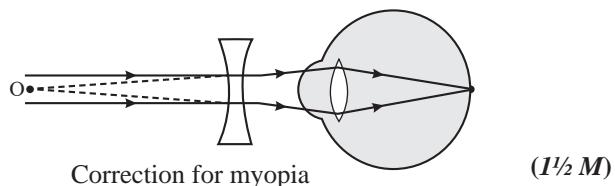
1. (c) During a physical change, the arrangement of particles can change but no new substance will be formed. So, according to the law of conservation of mass, total mass remains constant. **(1 M)**
2. (c) Arsenic is a metalloid which exhibits the properties of both metals and non-metals. **(1 M)**
3. (d) Detergents are more suitable for washing delicate fabrics because they are milder and do not form scum in hard water. Soaps, on the other hand, can be harsh on delicate fabrics and forms scum in hard water, reducing their effectiveness. **(1 M)**
4. (b) The name of this acid is hydrochloric acid. **(1 M)**
5. (b) Copper is found in its native or free state in nature, meaning it occurs in its elemental form without being chemically combined with other elements. **(1 M)**
6. (a) Iron (III) chloride (FeCl_3) reacts with sodium hydroxide (NaOH) is a double displacement reaction to form iron(III) hydroxide (Fe(OH)_3) as a yellowish brown precipitate and sodium chloride (NaCl). **(1 M)**
7. (a) The pH range of an acidic solution is from <7 . **(1 M)**
8. (a) A represents the spinal cord. It is the primary control centre for the reflex behaviour. **(1 M)**
9. (c) The following events occur during photosynthesis–
 - (i) Absorption of light energy by chlorophyll.
 - (ii) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen.
 - (iii) Reduction of carbon dioxide to carbohydrates. **(1 M)**
10. (b) Stomata are tiny pores present on the surface of the leaves. Massive amounts of gaseous exchange takes place in the leaves through these pores for the purpose of photosynthesis. **(1 M)**
11. (b) The number of organisms at any trophic level depends upon the amount of food and energy at the previous level. Therefore, the most food chains will have higher number of organisms at the producer level and the number decreases at each successive level.



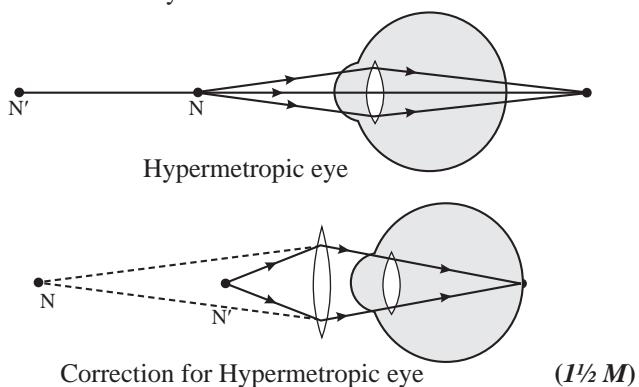
Nailing the Right Answer

Use diagrams or flowcharts to visually represent trophic levels. This can make the concept more engaging and easier to understand.

12. (c) When iodine solution is added to rice water, the solution turns blue black because of the presence of starch. This indicates that rice water contains starch. **(1 M)**
13. (b) The nature of the image depends on the position of the object. **(1 M)**
14. (b) According to the lens formula, $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
$$\frac{1}{f} = \frac{1}{60} + \frac{1}{30}$$
Simplifying further, we get:
$$\frac{1}{f} = \frac{1+2}{60} = \frac{3}{60} \Rightarrow \frac{1}{f} = \frac{1}{20}$$
Therefore, the focal length (f) of the convex lens is 20 cm. **(1 M)**
15. (d) Sexual reproduction introduces genetic variation in a population by combining genetic material from two individuals, resulting in offspring with unique combinations of traits. **(1 M)**
16. (c) In ecological systems, energy transfer between trophic levels is relatively inefficient, with only 10% of the energy moving from one level to the next due to losses in metabolic processes and heat production. Thus, the wolves would have only 100 units of energy. **(1 M)**
17. (c) Cu(I) gets reduced while sulphur gets oxidised. Hence, Cu(I) acts as the oxidising agent while S in Cu_2S as reducing agent. **(1 M)**
18. (a) The uterus prepares itself every month to receive a fertilised egg. Thus its lining becomes thick and spongy. This would be required for nourishing the



To correct hypermetropia, a convex lens is used, which cause light to converge before it enters the eye. This helps to compensate for the insufficient curvature of the cornea or shortening of the eyeball, allowing light to focus directly on the retina.



Nailing the Right Answer

- Explain the structure of the human eye, including the cornea, lens, iris, pupil, and retina.
- Describe the functioning of the human eye, including how light is focused onto the retina and the role of rods, cones, and the fovea.
- Explain how we are able to see nearby and distant objects by discussing the process of accommodation and the role of the ciliary muscles.

37. (a) It shows the increase in an hydroxide ion concentration $[\text{OH}^-]$ which means the higher the pH value, stronger will be the base. (1 M)

(b) Milk of magnesia is basic in nature. Its pH is around 10. (1 M)

(c) All living beings on this earth are pH sensitive which means their body work on normal pH. (1 M)

For plants, the pH range is 6 to 8. (½ M)
For Human beings, pH range is 7 to 7.8. (½ M)

OR

(c) pH values can vary from 0 to 14.
For acidic solution, pH = 0 to 6.9

For basic solution, pH = 7.1 to 14

For neutral, pH = 7

(1 M)

Now, pH of X is 4 which is less than 7, so, the nature of this solution is acidic. (½ M)

pH of Y is greater than 7, so, the nature of this solution is basic. (½ M)

38. (a) The possible genotypes of the parent plants are YY (purebred yellow seeds) and yy (purebred green seeds), representing homozygous dominant and homozygous recessive genotypes, respectively. (1 M)

(b) F_1 generation resulting from this cross, will have the genotype Yy (heterozygous). The F_1 generation will exhibit the phenotype of dominant trait, which is yellow seed color. (1 M)

(c) When two F_1 plants are crossed, the expected genotypic ratio in the F_2 generation is 1 YY : 2 Yy : 1 yy. This follows a 1:2:1 ratio according to Mendel's law of segregation. The phenotypic ratio in the F_2 generation is expected to be 3 yellow seeds : 1 green seed. (2 M)

OR

(c) The principle of dominance states that in a heterozygous individual (Yy), only the dominant allele (Y) is expressed in the phenotype, masking the expression of the recessive allele (y). In this monohybrid cross, yellow seed color is dominant over green seed color. Therefore, all the F_1 offspring will have yellow seeds, even though they carry one dominant and one recessive allele. (2 M)

Mistakes 101 : What not to do!

Students might not accurately apply Mendel's law of segregation and provide incorrect ratios for the genotypes and phenotypes in the F_2 generation.

Nailing the Right Answer

- Demonstrate your understanding of Mendel's laws, such as the law of dominance and the law of segregation, while explaining the possible genotypes and phenotypes of the parent plants and the F_1 and F_2 generations.
- Practice cross by taking different examples and write the stages in proper sequence.

Handwritten Explanations

Sample Question
Paper - 3



SCAN ME!

Sample Question
Paper - 4



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SAMPLE
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TO REVISE YOUR CONCEPTS

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yes I DO NOPE

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