General Instructions:
1. The question paper comprises of two Sections, A and B. You are to attempt both the sections.
2. All questions are compulsory
3. All questions of Section-A and all questions of Section-B are to be attempted separately.
4. Question numbers 1 to 3 in Section-A are one mark questions. These are to be answered in one word or in one sentence
5. Question numbers 4 to 6 in Sections-A are two marks questions. These are to be answered in about 30 words each.
6. Question numbers 7 to 18 in Section-A are three marks questions. These are to be answered in about 50 words each.
7. Question numbers 19 to 24 in Section-A are five marks questions. These are to be answered in about 70 words each.
8. Question numbers 25 to 33 in Section-B are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you.
9. Question numbers **34** to **36** in **Section-B** are questions based on practical skills are two marks questions.

### भाग-अ / SECTION-A

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>जब हम साँस बाहर निकालते हैं तो वायु मार्ग निपटते क्यों नहीं होता? When we breathe out, why does the air passage not collapse?</td>
</tr>
<tr>
<td>2</td>
<td>विभवान्तर की SI इकाई लिखिए। Define the SI unit of potential difference.</td>
</tr>
<tr>
<td>3</td>
<td>युरेनियम के एक परमाणु के विखंडन से उत्पन्न होने वाली ऊर्जा की कोयले की ज्वलन प्रक्रिया में कार्बन के अणु द्वारा उत्पन्न ऊर्जा से तुलना किजिए। Compare the energy produced during fission of a uranium atom with the energy produced with due to combustion of a carbon atom from coal.</td>
</tr>
<tr>
<td>4</td>
<td>प्रकाश संश्लेषण प्रक्रिया के लिए, उसमें सम्मिलित सभी पदार्थों की अवस्थाओं के प्रतीकों का उल्लेख करते हुए, संश्लेषित रासायनिक समीकरण लिखिए। इस अभिक्रिया की शर्तों का उल्लेख भी कीजिए। Write a balanced chemical equation for the process of photosynthesis with the state symbols of all the substances involved. Also state the conditions of the reaction.</td>
</tr>
</tbody>
</table>
| 5 | प्रत्येक का एक-एक उदाहरण दीजिए:  
(i) निम्न गलनांक की धातु और ऊच्च गलनांक की अधातु 
(ii) विद्युत की कुचालक धातु और विद्युत की सुचालक अधातु  
Write one example each of a:  
(i) Metal having low melting point and a non-metal having high melting point.  
(ii) Metal which is poor conductor of electricity and a non-metal which is good conductor |
of electricity.

6 тетрика पेशीय संधि का स्वच्छ नामांकित अरेख खोंचिए।

Draw a neat and labelled diagram of neuro-muscular junction.

7 एक रासायनिक यौगिक को जल की स्थायी कठोरता दूर करने के लिये उपयोग में लाया जाता है। इसे बेकिंग सोडा से प्राप्त किया जाता है। यौगिक को पहचान करिये। इसका रासायनिक नाम एवं सूत्र दीजिये। बेकिंग सोडा से इसके निर्माण की रासायनिक समीकरण लिखिये।

A chemical compound is used for removing permanent hardness of water. It is obtained from baking soda. Identify the compound. State its chemical name and formula. Write chemical equations involved in its preparation from baking soda.

8 रासायनिक अभिक्रियाओं में से प्रत्येक के लिये दो प्रश्न लिखिये:

(i) जिंक के दाँतों पर तनु सल्फ़ुराइक अम्ल डाला जाता है।
(ii) लैद नाइट्रेट विलयन में पोटेंशियम आयोडाइड विलयन डाला जाता है।
(iii) एक कठोर कॉच की परखन्ती में लैद नाइट्रेट को देर तक गर्म किया जाता है।

Write two observations each for the following chemical reactions:

(i) Dilute sulphuric acid is poured over zinc granules
(ii) Potassium iodide solution is added to lead nitrate solution
(iii) Lead nitrate is strongly heated in a hard glass test take

9 ऐल्युमिनियम ओक्साइड तथा जिंक ओक्साइड अम्लों तथा श्वासों से अभिक्रिया करके लवण तथा जल उत्पन्न करते हैं। इन ओक्साइडों को क्या कहा जाता है? प्रत्येक घटना में रासायनिक समीकरण लिखिये।

Aluminium oxide and zinc oxide react with both acids as well as bases to produce salts and water. What are these oxides called? Write chemical equations in each case.

10 निम्न के कारण दीजिये:

(i) हम कॉपर सल्फेट विलयन को चौंदी के पात्र में रख सकते हैं लेकिन तोंबे के पात्र में सिल्वर नाइट्रेट विलयन
Give reasons for the following:

(i) We can store copper sulphate solution in a silver vessel but not silver nitrate solution in a copper vessel.

(ii) The reaction of zinc with dilute nitric acid does not produce hydrogen gas.

(iii) Food cans are coated with tin rather than zinc.

11 Write four components necessary for autotrophic nutrition. Mention its by product.

12 Two examples of plant movement are shown below:

(a) State the stimulus which is common for movement in both the cases.

(b) Mention separately for both, whether the movement takes place away or at the point
where stimulus is received.

(c) State one reason for the movement in each case.

13 मानव में दोहरे परिसंचरण का वर्णन कीजिए। इसकी आवश्यकता क्यों है?
Describe double circulation in human beings. Why is it necessary?

14 क्या कोई स्वतंत्रतापूर्वक निर्मित धारावाही परिसारिका किसी भी दिशा में रूक सकती है? अपने उत्तर की पुष्टि कीजिए। क्या होगा यदि परिसारिका में प्रवाहित धारा की दिशा को उन्नतिमक रूप से दिखाई दिया जाए? व्याख्या कीजिए।
Can a freely suspended current carrying solenoid stay in any direction? Justify your answer. What will happen when the direction of current in the solenoid is reversed? Explain.

15 निम्नलिखित की दिशा को निर्धारित करने वाला नियम लिखिए –
(i) सीधे धारावाही चालक के चारों ओर उपनन चुम्बकीय क्षेत्र।
(ii) चुम्बकीय क्षेत्र में क्षेत्र के लम्बवत स्थित सीधे धारावाही चालक पर आवृत्ति बल
(iii) छोट चुम्बक के कारण किसी परिपथ में चुम्बकीय फ्लैक्स में परिवर्तन के कारण प्रेरित धारा।

State the rules to determine the direction of:
(i) the magnetic field produced around a current carrying conductor.
(ii) a force experienced by a straight current carrying conductor placed perpendicular to a uniform magnetic field.
(iii) a current induced in a circuit by changing magnetic flux due to a bar magnet.

16 किसी विद्युत परिपथ में 1 Ω, 2 Ω और 3 Ω के प्रतिरोधक पाश्चात में संयोजित हैं। यदि 1 Ω के प्रतिरोधक से। 1 A की विद्युत धारा प्रवाहित होती है, तो अन्य दो प्रतिरोधकों से प्रवाहित विद्युत धाराएं ज्ञात कीजिए।
Three resistors of 1 Ω, 2 Ω and 3 Ω are connected in parallel in a circuit. If
1 Ω resistor draws a current of 1 A find the current through the other two resistors.

17 'मूर्दा का कहना है कि यदि हम अपने पूर्वजों की भांति रहना प्रारंभ करें तो इससे ऊर्जा तथा हमारे पारितंत्र का संरक्षण होगा।'

(i) क्या आप मूर्दा के कथन से सहमत हैं अथवा नहीं? अपने उत्तर के लिए उचित कारण लिखिए।

(ii) ऊर्जा के किन्हीं दो स्रोतों के नाम लिखिए जिनके उपयोग से हमारे पर्यावरण को कम खतरा है।

(i) 'Mridu says that if we start living as our ancestors, this would conserve energy and our ecosystem.' Do you agree with her or not? Give valid reason for your answer.

(ii) Name any two sources of energy which give less danger to our environment while being used.

18 यदि ऊर्जा को न तो उत्पन्न किया जा सकता है न ही नष्ट किया जा सकता है तो एक उदाहरण द्वारा समझाए कि हमें ऊर्जा स्रोतों की चुनना चाहिए?

If energy can neither be created nor destroyed, explain with an example as to why we should worry about our energy resources?

19 (a) अयस्क के बायु में दहन से प्राप्त तांबा शुद्ध नहीं होता। तांबे के परिक्षण की विधि की व्याख्या कीजिये। विधि का नामकरण चित्र खींचिये।

(b) निम्न अभिक्रियाओं के लिए रासायनिक समीकरण लिखिये:

(i) जिंक सल्फाइड का बायु में दहन।

(ii) जिंक कार्बाइनेट का निस्तापन।

(a) Copper produced by heating the ore in air is not very pure. Describe the method used for refining impure copper. Draw labelled diagram of the process.

(b) Write chemical equations for the reactions taking place when:

(i) Zinc sulphide is heated in air.

(ii) Zinc carbonate is calcined.
(a) The following reactions are observed to occur:

(i) \( \text{CuSO}_4 + \text{Zn} \rightarrow \text{ZnSO}_4 + \text{Cu} \)

(ii) \( 3\text{ZnSO}_4 + 2\text{Al} \rightarrow \text{Al}_2(\text{SO}_4)_3 + 3\text{Zn} \)

(iii) \( 2\text{AgNO}_3 + \text{Cu} \rightarrow \text{Cu(NO}_3)_2 + 2\text{Ag} \)

Arrange \( \text{Cu, Zn, Al} \) and \( \text{Ag} \) in decreasing order of their reactivity.

(b) Write one example each of decomposition reaction carried out with the help of:

(i) electricity (ii) sunlight

(a) Define hormone. Write four characteristics of hormones in humans.

(b) Name the disorder caused by the under following situations:
(i) Under secretion of growth hormone
(ii) Over secretion of growth hormone
(iii) Under secretion of insulin
(iv) Deficiency of iodine

Establish a relationship to determine the equivalent resistance $R$ of a combination of three resistors having resistances $R_1$, $R_2$ and $R_3$ connected in series. Calculate the equivalent resistance of the combination of three resistors of 2 $\Omega$, 3 $\Omega$ and 6 $\Omega$ joined in parallel.

What are magnetic field lines? List three characteristics of these lines. Describe in brief an activity to study the magnetic field lines due to a current flowing in a circular coil.

(a) Describe in brief any three important features of domestic electric supply lines.
(b) List two distinguishing features between overloading and short circuiting in domestic circuits.
Given below are diagrams of three test tubes containing dil. HCl, dil. ethanoic acid and soap solution.

Choose the correct statement:
(a) pH of I is greater than pH of II and III.
(b) pH of III is greater than pH of I and II.
(c) pH of I, II, III is equal.
(d) pH of II is greater than pH of I and III.

A drop of colourless liquid is poured over blue litmus paper and it turns to red. The colourless liquid is:
(a) potassium hydroxide solution
(b) sodium chloride solution
(c) pure water
(d) dilute hydrochloric acid
Which of the following statements are correct?

Aluminium can displace:

(i) Cu from CuSO₄ solution
(ii) Fe from FeSO₄ solution
(iii) Zn from ZnSO₄ solution
(iv) Al from Al₂(SO₄)₃ solution

(a) (i), (ii), (iv)
(b) (i), (ii), (iii)
(c) (ii), (iii), (iv)
(d) (i), (iii), (iv)

On carrying out a displacement reaction, the following observations were made by Nandita.

(i) Formation of Reddish-brown deposit
(ii) Solution turned green.

The reactants she used were:

(a) Copper and zinc sulphate solution
(b) Zinc and copper sulphate solution
(c) Copper and ferrous sulphate solution
(d) Iron and copper sulphate solution
Aluminium sulphate and copper sulphate solutions were taken in two test tubes A and B respectively. A little iron filings were added to both the test tubes. Four students Ram, Jeet, Rita and Anita recorded their observations in the form of a table as given below:

<table>
<thead>
<tr>
<th>Name</th>
<th>Aluminium sulphate Solution[A]</th>
<th>Copper sulphate Solution [B]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ram.</td>
<td>Colourless solution changes to light green</td>
<td>Blue colour of the solution is retained.</td>
</tr>
<tr>
<td>Jeet</td>
<td>Colourless solution changes to light blue</td>
<td>Blue colour of solution changes to green.</td>
</tr>
<tr>
<td>Rita.</td>
<td>No change in colourless solution.</td>
<td>Blue colour of the solution changes to green.</td>
</tr>
<tr>
<td>Anita</td>
<td>No change in colourless solution.</td>
<td>Blue colour fades away.</td>
</tr>
</tbody>
</table>

The correct set of observations have been reported by student:
(a) Jeet  (b) Anita  (c) Rita  (d) Ram.

In a circuit four resistors of 1Ω, 2Ω, 6Ω, 12Ω respectively are connected in series combination. The maximum resistance that can be obtained is:
(a) 21Ω  (b) 18Ω  (c) 6Ω  (d) 4Ω
Six equal resistances are connected between points P, Q and R as shown in figure. Then the net resistance will be minimum between

(a) P and Q  
(b) Q and R  
(c) P and R  
(d) Both between Q & R and P & R

The figures given below illustrate boiling of leaf to remove chlorophyll. This is one of the steps in the experiment to show that light is necessary for photosynthesis.

The figure which shows correct method of boiling is:

(a) I  
(b) II  
(c) III  
(d) IV
33. In an experimental setup to demonstrate that CO₂ is given out during respiration, the KOH solution should be kept in:
(a) the beaker  
(b) the bent tube  
(c) with the seeds in the flask  
(d) in a small test tube in the flask

34. Write the colour of following chemicals:
- Copper sulphate  
- Quick lime  
- Ferrous sulphate  
- Barium chloride

35. A student while verifying Ohm’s law calculated the value of resistance of the resistor for each set of observation. However, the values of resistance were slightly different from the actual value. Is his experiment wrong? Justify your answer.

36. To prepare a clear temporary mount of the petunia leaf peel showing stomata, from which part of the leaf the students should get the peel and why?