CBSE Class 10 Science

Practice Paper 2026-27 (Set 1)

Subject: Science | **Subject Code:** 086 | **Class:** X
Time Allowed: 3 Hours | **Maximum Marks:** 80

Prepared by Sunbeam World School for practice. This is an original practice paper written on the CBSE Class X question paper design for 2026-27. It is not a CBSE board paper and not a CBSE sample question paper. Official past board papers are published on cbse.gov.in and the official sample question paper is on cbseacademic.nic.in.

General Instructions

1. This question paper contains **39 questions**. All questions are compulsory.
2. The paper is divided into **five Sections: A, B, C, D and E**.
3. **Section A** has 20 questions of 1 mark each, including Assertion and Reason questions.
4. **Section B** has 6 questions of 2 marks each.
5. **Section C** has 7 questions of 3 marks each.
6. **Section D** has 3 questions of 5 marks each.
7. **Section E** has 3 case-based questions of 4 marks each.
8. Internal choice is provided in some questions of Sections B, C, D and in all of Section E.
9. Draw neat labelled diagrams wherever required.
10. Use of a calculator is **not** permitted.

Blueprint: Unit-Wise Distribution

Unit	Unit Name	Marks
I	Chemical Substances: Nature and Behaviour	25
II	World of Living	25
III	Natural Phenomena	12
IV	Effects of Current	13
V	Natural Resources	5
	Total	**80**

SECTION A

20 questions of 1 mark each

1. The reaction $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$ is an example of
(a) combination (b) decomposition (c) displacement (d) double displacement

2. The pH of a neutral solution at 25 °C is
(a) 0 (b) 7 (c) 10 (d) 14

3. Which gas is produced when a dilute acid reacts with a metal?
(a) oxygen (b) carbon dioxide (c) hydrogen (d) nitrogen

4. The chemical formula of washing soda is
(a) $NaHCO_3$ (b) $Na_2CO_3 \cdot 10H_2O$ (c) NaOH (d) $CaOCl_2$

5. The number of covalent bonds in a molecule of methane, CH_4, is
(a) 1 (b) 2 (c) 3 (d) 4

6. Which of the following metals is stored under kerosene?
(a) copper (b) sodium (c) gold (d) zinc

7. The site of photosynthesis in a plant cell is the
(a) mitochondrion (b) chloroplast (c) nucleus (d) ribosome

8. Which part of the human brain controls balance and posture?
(a) cerebrum (b) cerebellum (c) medulla (d) pons

9. The functional unit of the kidney is the
(a) neuron (b) nephron (c) alveolus (d) villus

10. In human beings, the sex of a child is determined by
(a) the mother (b) the father (c) both equally (d) neither

11. A plant hormone that promotes the growth of stems is
(a) abscisic acid (b) auxin (c) insulin (d) adrenaline

12. Binary fission is a method of reproduction in
(a) Amoeba (b) Hydra (c) Planaria (d) Rhizopus

13. The image formed by a plane mirror is always

(a) real and inverted (b) virtual and erect (c) real and erect (d) virtual and inverted

14. The focal length of a spherical mirror of radius of curvature 20 cm is
(a) 5 cm (b) 10 cm (c) 20 cm (d) 40 cm

15. The splitting of white light into its component colours is called
(a) reflection (b) refraction (c) dispersion (d) scattering

16. The SI unit of electric resistance is
(a) ampere (b) volt (c) ohm (d) watt

17. Three resistors of 2 Ω, 3 Ω and 5 Ω are joined in series. Their equivalent resistance is
(a) 2 Ω (b) 5 Ω (c) 10 Ω (d) 30 Ω

18. The direction of the magnetic field around a straight current-carrying conductor is given by
(a) Fleming's left-hand rule (b) Fleming's right-hand rule (c) the right-hand thumb rule (d) Lenz's law

19. Assertion and Reason.
Assertion (A): The number of trophic levels in a food chain is usually limited to four or five.
Reason (R): Only about 10 per cent of the energy at one trophic level is transferred to the next.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

20. Assertion and Reason.
Assertion (A): Plastic bags are non-biodegradable waste.
Reason (R): Non-biodegradable substances cannot be broken down by the action of micro-organisms.
(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

SECTION B

6 questions of 2 marks each

21. Balance the following equation and state the type of reaction.
$Fe + H_2O \rightarrow Fe_3O_4 + H_2$

22. Why does a copper vessel lose its shine when exposed to moist air? Write the chemical name of the substance formed.

OR

What is meant by a neutralisation reaction? Give one example with a balanced equation.

23. State two differences between arteries and veins.

24. Why do herbivores have longer small intestines than carnivores? Give two reasons.

OR

Name the two components of blood that help in clotting and in transporting oxygen.

25. A ray of light passes from air into water. State what happens to its speed and to the direction in which it bends, and give the reason.

26. Calculate the current flowing through a resistor of 4 Ω connected across a 12 V battery. State the law used.

SECTION C

7 questions of 3 marks each

27. What is a decomposition reaction? Write one balanced equation each for a decomposition reaction brought about by heat and by electricity.

28. Explain how the activity series of metals is used to predict a displacement reaction. Give one example with a balanced equation.

OR

Describe the process of electrolytic refining of copper with a labelled sketch and name the anode, cathode and electrolyte.

29. Draw a labelled diagram of the human respiratory system showing the trachea, bronchi, lungs and diaphragm.

30. Explain how the process of nutrition in Amoeba differs from that in human beings, under the headings ingestion, digestion and egestion.

31. With the help of a ray diagram, show the image formed by a concave mirror when an object is placed between the pole and the focus. State two characteristics of the image.

32. A household uses an electric heater of 1000 W for 2 hours every day. Calculate the energy consumed in 30 days in kilowatt-hours, and state what is meant by one kilowatt-hour.

33. What is biodegradable waste? Give two examples, and explain one problem caused by the accumulation of non-biodegradable waste.

SECTION D

3 questions of 5 marks each

34. (a) What are the structural features of carbon that give rise to the large number of carbon compounds? **(2)**
(b) Draw the electron dot structure of ethane, C_2H_6. **(1)**
(c) What happens when ethanol reacts with sodium? Write the balanced equation. **(2)**

OR

(a) Define a homologous series and state two of its characteristics. **(3)**
(b) Write the molecular formulae of the first two members of the alkane series. **(2)**

35. (a) Draw a labelled diagram of the human heart. **(3)**
(b) Explain why the separation of oxygenated and deoxygenated blood is important in mammals. **(2)**

OR

(a) Describe the structure and function of a nephron with a labelled diagram. **(3)**
(b) State two situations in which artificial kidney, or dialysis, is used. **(2)**

36. (a) State Ohm's law and draw the circuit diagram used to verify it. **(3)**
(b) Two resistors of 6 Ω and 3 Ω are connected in parallel across a 6 V battery. Calculate the equivalent resistance and the total current drawn. **(2)**

SECTION E

3 case-based questions of 4 marks each

37. Case Study: Acids, Bases and Everyday Life

A student tests four household liquids with universal indicator and records the following pH values.

Liquid	P	Q	R	S
pH	2	7	9	12

(i) Which liquid is the most acidic? **(1)**
(ii) Which liquid is neutral? **(1)**
(iii) Liquid S is used to relieve indigestion caused by excess acid in the stomach. Explain how it works and name the type of reaction involved. **(2)**

OR

(iii) The student adds liquid P to a small piece of zinc. State what is observed and write the balanced chemical equation. **(2)**

38. Case Study: Inheritance in Pea Plants

Mendel crossed a pure tall pea plant with a pure short pea plant. All the plants in the first generation were tall. He then allowed these to self-pollinate.

(i) What trait is shown by all plants of the first generation? **(1)**
(ii) State the ratio of tall to short plants expected in the second generation. **(1)**
(iii) Explain, using the terms dominant and recessive, why no short plants appeared in the first generation. **(2)**

OR

(iii) Draw the cross for the second generation using the symbols T and t, and give the genotypes obtained. **(2)**

39. Case Study: Correcting Defects of Vision

A student is unable to see distant objects clearly but can read a book held close to his eyes without difficulty.

(i) Name the defect of vision the student has. **(1)**
(ii) Name the type of lens used to correct it. **(1)**
(iii) Explain the cause of this defect and show with a ray diagram how the lens corrects it. **(2)**

OR

(iii) The corrective lens prescribed has a focal length of 50 cm. Calculate its power and state its sign. **(2)**

MARKING SCHEME

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Marks are shown in brackets. Award full marks for any other correct answer.

SECTION A (20 × 1 = 20)

Q	Answer	Q	Answer
1	(c) displacement	11	(b) auxin
2	(b) 7	12	(a) Amoeba
3	(c) hydrogen	13	(b) virtual and erect
4	(b) $Na_2CO_3 \cdot 10H_2O$	14	(b) 10 cm
5	(d) 4	15	(c) dispersion
6	(b) sodium	16	(c) ohm
7	(b) chloroplast	17	(c) 10 Ω
8	(b) cerebellum	18	(c) the right-hand thumb rule
9	(b) nephron	19	(a) Both A and R are true and R is the correct explanation of A
10	(b) the father	20	(a) Both A and R are true and R is the correct explanation of A

Working notes for Section A
- Q14: f = R/2 = 20/2 = 10 cm.
- Q17: In series, R = 2 + 3 + 5 = 10 Ω.
- Q10: The mother contributes an X chromosome in every case, while the father contributes either X or Y, so the father determines the sex.

SECTION B (6 × 2 = 12)

21. $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$ **(1)**
It is a displacement reaction, as iron displaces hydrogen from water **(1)**

22. Copper reacts with moist carbon dioxide in air to form a green coating **(1)**
The substance is basic copper carbonate, $CuCO_3 \cdot Cu(OH)_2$ **(1)**

OR

A neutralisation reaction is one in which an acid reacts with a base to give a salt and water **(1)**
$NaOH + HCl \rightarrow NaCl + H_2O$ **(1)**

23. Any two, 1 mark each: arteries carry blood away from the heart while veins carry blood towards it; arteries have thick elastic walls while veins have thin walls; arteries have no valves while veins have valves to prevent backflow **(2)**

24. Herbivores eat plant material containing cellulose, which is harder to digest **(1)**
A longer small intestine allows more time and surface area for the complete digestion and absorption of this food **(1)**

OR

Platelets help in clotting **(1)**; red blood cells, through haemoglobin, transport oxygen **(1)**

25. The speed of light decreases on entering water, which is optically denser **(1)**
The ray bends towards the normal, because light slows down when passing from a rarer to a denser medium **(1)**

26. By Ohm's law, I = V/R **(1)**
I = 12/4 = **3 A (1)**

SECTION C (7 × 3 = 21)

27. A decomposition reaction is one in which a single compound breaks down into two or more simpler substances **(1)**
By heat: $CaCO_3 \rightarrow CaO + CO_2$ (on heating) **(1)**
By electricity: $2H_2O \rightarrow 2H_2 + O_2$ (on passing electricity) **(1)**

28. A more reactive metal displaces a less reactive metal from its salt solution, and the activity series ranks metals by reactivity **(1)**
A metal higher in the series will displace one lower down **(1)**
Example: $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$ **(1)**

OR

Labelled sketch of the electrolytic cell **(1)**
Anode: impure copper; cathode: thin strip of pure copper **(1)**
Electrolyte: acidified copper sulphate solution. Pure copper deposits on the cathode and impurities settle as anode mud **(1)**

29. Correct outline of the respiratory system **(1)**
Trachea and bronchi labelled correctly **(1)**
Lungs and diaphragm labelled correctly **(1)**

30.

Stage	Amoeba	Human beings
Ingestion	Engulfs food using pseudopodia	Takes food in through the mouth

| Digestion | Inside a food vacuole by enzymes | In a specialised alimentary canal |
| Egestion | Undigested matter expelled at any point of the surface | Expelled through the anus |

One mark for each correctly explained stage **(3)**

31. Correct ray diagram with the object between P and F **(1)**
Image shown behind the mirror, formed by producing the reflected rays backwards **(1)**
Characteristics: virtual, erect and enlarged, any two **(1)**

32. Energy per day = 1000 W × 2 h = 2000 Wh = 2 kWh **(1)**
Energy in 30 days = 2 × 30 = **60 kWh (1)**
One kilowatt-hour is the energy consumed by a device of power 1 kW used for 1 hour, and equals 3.6×10^6 J **(1)**

33. Biodegradable waste is waste that can be broken down by micro-organisms into simpler substances **(1)**
Examples: vegetable peels, paper, cow dung, any two **(1)**
Non-biodegradable waste accumulates in the environment, clogs drains, harms animals that swallow it and enters food chains through biomagnification, any one explained **(1)**

SECTION D (3 × 5 = 15)

34. (a) Carbon is tetravalent, so it forms four covalent bonds, and it shows catenation, the ability to bond with other carbon atoms in chains and rings **(2)**
(b) Correct electron dot structure of C_2H_6 showing the C–C bond and six C–H bonds **(1)**
(c) Ethanol reacts with sodium to give sodium ethoxide and hydrogen gas **(1)**
$2C_2H_5OH + 2Na \rightarrow 2C_2H_5ONa + H_2$ **(1)**

OR

(a) A homologous series is a group of organic compounds with the same functional group, in which successive members differ by a CH_2 unit **(1)**; members share similar chemical properties **(1)**; physical properties such as boiling point change gradually along the series **(1)**
(b) CH_4 and C_2H_6 **(2)**

35. (a) Correct diagram of the heart **(1)** with the four chambers labelled **(1)** and the aorta, pulmonary artery and vena cava labelled **(1)**
(b) Mammals are warm-blooded and need a high and steady supply of energy, so keeping oxygenated and deoxygenated blood separate ensures an efficient supply of oxygen to the tissues **(2)**

OR

(a) Correct diagram of the nephron **(1)** with Bowman's capsule, glomerulus and tubule labelled **(1)**; function described as filtration of blood followed by selective reabsorption **(1)**
(b) Any two: kidney failure, severe kidney infection, injury to both kidneys **(2)**

36. (a) Ohm's law states that the current through a conductor is directly proportional to the potential difference across it, provided the temperature and other physical conditions remain constant **(1)**
V = IR **(1)**
Correct circuit diagram with battery, ammeter in series, voltmeter in parallel across the resistor and a rheostat **(1)**
(b) In parallel, 1/R = 1/6 + 1/3 = 3/6, so R = **2 Ω (1)**
Total current I = V/R = 6/2 = **3 A (1)**

SECTION E (3 × 4 = 12)

37. (i) **P**, as it has the lowest pH **(1)**
(ii) **Q**, as pH 7 is neutral **(1)**
(iii) Liquid S is basic and acts as an antacid, neutralising the excess hydrochloric acid in the stomach **(1)**. The reaction involved is neutralisation **(1)**
OR (iii) Bubbles of a colourless gas are seen and the zinc dissolves **(1)**
$Zn + 2HCl \rightarrow ZnCl_2 + H_2$ **(1)**

38. (i) **Tall (1)**
(ii) **3 : 1 (1)**
(iii) The tall trait is dominant and the short trait is recessive **(1)**. In the first generation every plant carries one allele of each type, Tt, and because the dominant allele is expressed, all appear tall **(1)**
OR (iii) Cross Tt × Tt shown correctly **(1)**; genotypes TT, Tt, Tt, tt in the ratio 1 : 2 : 1 **(1)**

39. (i) **Myopia**, or short-sightedness **(1)**
(ii) A **concave** lens, also called a diverging lens **(1)**
(iii) The image of a distant object is formed in front of the retina, because the eyeball is too long or the lens is too curved **(1)**. A concave lens diverges the rays so that the image falls on the retina, shown correctly in the ray diagram **(1)**
OR (iii) f = 50 cm = 0.5 m, so P = 1/f = 1/0.5 = **2 D** in magnitude **(1)**. For a concave corrective lens the power is negative, so **P = −2 D (1)**

End of marking scheme.