CENTRAL BOARD OF SECONDARY EDUCATION

CBSE 2026-27

Science

Subject Code: 086 | Class X

Marking Scheme – Sample Question Paper – Set 6

Time Allowed: 3 Hours **Maximum Marks: 80**

General Instructions

1. This question paper comprises 39 questions. All questions are compulsory.
2. The question paper is divided into three sections: Section A (Biology), Section B (Chemistry) and Section C (Physics).
3. Section A – Questions No. 1 to 16: Q. Nos. 1 to 7 are Multiple Choice Questions of 1 mark each; Q. Nos. 8 and 9 are Assertion–Reason based questions of 1 mark each; Q. Nos. 10 to 12 are Very Short Answer questions of 2 marks each; Q. Nos. 13 and 14 are Short Answer questions of 3 marks each; Q. No. 15 is a case/source-based question of 4 marks and Q. No. 16 is a Long Answer question of 5 marks.
4. Section B – Questions No. 17 to 29: Q. Nos. 17 to 23 are Multiple Choice Questions of 1 mark each; Q. No. 24 is an Assertion–Reason based question of 1 mark; Q. No. 25 is a Very Short Answer question of 2 marks; Q. Nos. 26 and 27 are Short Answer questions of 3 marks each; Q. No. 28 is a case/source-based question of 4 marks and Q. No. 29 is a Long Answer question of 5 marks.
5. Section C – Questions No. 30 to 39: Q. Nos. 30 and 31 are Multiple Choice Questions of 1 mark each; Q. No. 32 is an Assertion–Reason based question of 1 mark; Q. Nos. 33 and 34 are Very Short Answer questions of 2 marks each; Q. Nos. 35 to 37 are Short Answer questions of 3 marks each; Q. No. 38 is a case/source-based question of 4 marks and Q. No. 39 is a Long Answer question of 5 marks.
6. There is no overall choice. However, an internal choice has been provided in some questions. Only one of the alternatives has to be attempted in such questions.
7. Use of calculators is not permitted.

Exam Pattern

Section	Type of Questions	No. of Qs	Marks each	Total Marks
A	Biology (Q1–16): MCQ (7), Assertion–Reason (2), VSA (3), SA (2), Case-based (1), LA (1)	16	–	30
B	Chemistry (Q17–29): MCQ (7), Assertion–Reason (1), VSA (1), SA (2), Case-based (1), LA (1)	13	–	25
C	Physics (Q30–39): MCQ (2), Assertion–Reason (1), VSA (2), SA (3), Case-based (1), LA (1)	10	–	25
	Total	**39**		**80**

Unit-wise Weightage of Marks

Unit	Unit Name	Chapter	Marks
I	Chemical Substances – Nature and Behaviour	Chemical Reactions and Equations; Acids, Bases and Salts; Metals and Non-metals; Carbon and its Compounds	25

Unit	Unit Name	Chapter	Marks
II	World of Living	Life Processes; Control and Coordination; How do Organisms Reproduce?; Heredity	25
III	Natural Phenomena	Light – Reflection and Refraction; The Human Eye and the Colourful World	12
IV	Effects of Current	Electricity; Magnetic Effects of Electric Current	13
V	Natural Resources	Our Environment	5
	Total		**80**

SECTION – A

Section A (Biology) consists of 16 questions: Q. Nos. 1–7 MCQs, 8–9 Assertion–Reason, 10–12 Very Short Answer, 13–14 Short Answer, 15 Case-based and 16 Long Answer.

Q1. **[1]**

(c) Use of plastic as packaging material [1]

Q2. **[1]**

(d) Thin walled capillaries richly supplied with blood [1]

Q3. **[1]**

(b) They selectively filter toxic substances through their leaves. [1]

Q4. **[1]**

(b) Yeast, mushroom, bread mould [1]

Q5. **[1]**

(a) Promote cell division. [1]

Q6. **[1]**

(c) Asexual reproduction by breaking up of Spirogyra filaments into smaller parts [1]

Q7. **[1]**

(c) Growth hormones under the influence of the enzymes coded by a gene. [1]

Q8. **[1]**

(a) [1]

Q9. **[1]**

(a) [1]

Q10. **[2]**

Dendrite: receives stimuli and carries impulses towards the cell body. [1]
Axon: carries impulses away from the cell body to the axon end. [1]

Q11. **[2]**

(a) Bread mould (Rhizopus); it reproduces by spore formation. [1]
(b) Vegetative part: hyphae; reproductive part: sporangia. [1]

OR

Field A: self-pollination, so pollen from the same plant is used and parental traits are preserved. [1]
Field B: cross-pollination, so genetic material from different plants recombines, causing variation. [1]

Q12. **[2]**

Its decomposition is slow when it is accumulated, producing foul smell and gases. [1]
It becomes a breeding ground for germs and creates unhygienic conditions. [1]

Q13. **[3]**

Information is communicated by electrical-chemical signals passing from cell to cell. [1]
Change in turgor pressure: cells lose or gain water and change shape, causing the movement. [1]
Touch-me-not movement is nastic (non-directional); tendril coiling is directional (thigmotropism). [1]

OR

The nerve impulse reaching the muscle changes the shape of the muscle cells. [1]
Special contractile proteins in muscle cells change their shape and arrangement in response to the nerve impulse. [1]
New arrangement of the proteins shortens the muscle cells, so the muscle contracts. [1]

Q14. **[3]**

Sexually transmitted (viral) disease. [1]
Causative organism: HIV (human immunodeficiency virus). [1]
Value: social responsibility and awareness about public health. [1]

Q15. **[4]**

(i) Whether the child inherits an X or a Y chromosome from the father (XX girl, XY boy). [1]
(ii) The X and Y chromosomes differ in size and shape; the Y chromosome is smaller. [1]
(iii) Snails: sex can change with environmental conditions. [1]
Turtles and crocodiles: the temperature during egg development decides the sex. [1]

OR

50%, because each child inherits either an X or a Y chromosome from the father with equal chance. [1]
The mother can give only X, so the sex depends on the chromosome from the father. [1]

Q16. **[5]**

Left atrium and left ventricle contain oxygenated blood. [1]
Right atrium and right ventricle contain deoxygenated blood. [1]
Flow chart: right atrium → right ventricle → pulmonary artery → lungs. [1]
Lungs → pulmonary vein → left atrium → left ventricle → aorta → body tissues. [1]
Body tissues → vena cava → right atrium, completing the double circulation. [1]

OR

Destarch two potted plants by keeping them in the dark for 72 hours. [1]
Place KOH, which absorbs CO2, in one set-up and none in the other; make both airtight and keep them in light for several hours. [1]
Perform the iodine test on a leaf from each plant. [1]
Observation: the leaf from the set-up without KOH turns blue-black; the leaf from the KOH set-up does not. [1]
Conclusion: carbon dioxide is essential for photosynthesis. [1]

SECTION – B

Section B (Chemistry) consists of 13 questions: Q. Nos. 17–23 MCQs, 24 Assertion–Reason, 25 Very Short Answer, 26–27 Short Answer, 28 Case-based and 29 Long Answer.

Q17. **[1]**

(a) Propanol [1]

Q18. **[1]**

(c) 2, 2, 4 [1]

Q19. **[1]**

(c) X - Hydrochloric acid, Y - Carbon dioxide [1]

Q20. **[1]**

(a) Less than 7 [1]

Q21. **[1]**

(c) Na_2ZnO_2 [1]

Q22. **[1]**

(a) Lithium [1]

Q23. **[1]**

(b) $-CO-$ [1]

Q24. **[1]**

(a) [1]

Q25. **[2]**

Carbon has a small atomic size, so it forms strong and stable C-C bonds and shows extensive catenation. [1]
Silicon is larger in size; its Si-Si bonds are weaker, so catenation is limited and it forms fewer compounds. [1]

Q26. **[3]**

(a) The drink contains dissolved ions that carry current; coconut oil is covalent and has no ions. [1]
(b) Sea water contains dissolved salts (electrolytes) that speed up rusting. [1]
(c) Aluminium forms a thin, protective layer of aluminium oxide on its surface. [1]

OR

Roasting: a sulphide ore is heated in excess air and sulphur is removed as SO_2, e.g. $2\,ZnS + 3\,O_2 \longrightarrow 2\,ZnO + 2\,SO_2$. [1]
Calcination: a carbonate ore is heated in limited air and carbon dioxide is removed, e.g. $ZnCO_3 \longrightarrow ZnO + CO_2$. [1]
The metal oxide is reduced by heating with carbon: $ZnO + C \longrightarrow Zn + CO$. [1]

Q27. **[3]**

(a) Three isomers: but-1-ene, but-2-ene and 2-methylpropene; electron dot structure of 2-methylpropene shows the central C bonded to two CH_3 groups and one H by single bonds and double-bonded to CH_2. [2]
(b) They differ by one $-CH_2-$ unit (14 u) and have the same general formula C_nH_{2n} (same functional group), hence homologues. [1]

OR

(a) Ethanol C_2H_5OH; electron dot structure with C-C, C-O, O-H and C-H shared electron pairs. [2]
(b) CH_3OH (methanol) and C_3H_7OH (propanol). [1]

Q28. **[4]**

(i) Mg (2,8,2) loses two electrons to form Mg^{2+}. [$\frac{1}{2}$]
Each Cl (2,8,7) gains one electron to form Cl^-, giving MgCl2. [$\frac{1}{2}$]
(ii) They are generally soluble in water. [$\frac{1}{2}$]
They conduct electricity in the molten or aqueous state. [$\frac{1}{2}$]
(iii) Na (2,8,1) loses its one valence electron to acquire the stable 2,8 configuration of neon. [1]
Cl gains this electron to acquire 2,8,8; both ions attain a stable octet. [1]

OR

In the solid state the ions are held in fixed positions and cannot move. [1]
At the cathode hydrogen gas is evolved: $2\,H_2O + 2\,e^- \longrightarrow H_2 + 2\,OH^-$. [1]

Q29. **[5]**

Metal X is zinc (Zn), occurring as zinc blende (ZnS). [1]
The ore is concentrated by froth floatation and then roasted: $2\,ZnS + 3\,O_2 \longrightarrow 2\,ZnO + 2\,SO_2$. [1]
The oxide is reduced by carbon: $ZnO + C \longrightarrow Zn + CO$. [1]
Impure zinc is refined by electrolytic refining. [1]
Zinc lies in the middle of the reactivity series, so it can be reduced by carbon. [1]

OR

Al2O3 reacts with both acids and bases. [1]
Iron displaces copper from copper sulphate forming pale green ferrous sulphate. [1]
Nitric acid is a strong oxidising agent; it oxidises the hydrogen produced to water. [1]
Calcium is highly reactive and readily combines with air and moisture. [1]

Sodium and potassium react vigorously with air and moisture, so they are kept under kerosene. [1]

SECTION – C

Section C (Physics) consists of 10 questions: Q. Nos. 30–31 MCQs, 32 Assertion–Reason, 33–34 Very Short Answer, 35–37 Short Answer, 38 Case-based and 39 Long Answer.

Q30. **[1]**

(c) Between the focus and the centre of curvature [1]

Q31. **[1]**

(c) Optical centre [1]

Q32. **[1]**

(d) [1]

Q33. **[2]**

(a) Concave mirror; $f = 35 - 15 = 20$ cm [1]
(b) A distant object is effectively at infinity, so its image forms at the focus, 20 cm from the mirror [1]

Q34. **[2]**

The earth wire gives a low-resistance path for leakage current to flow to the earth, preventing electric shock. [1]
Short circuit: the live and neutral wires touch directly, the resistance becomes very low and a very large current flows. [1]

OR

If the insulation fails, the live wire touches the body; the earth wire carries this current to the earth. [1]
The body is kept at zero potential, so the user does not get an electric shock. [1]

Q35. **[3]**

Area $A = \pi(0.1 \times 10^{-3})^2 = 3.14 \times 10^{-8}\,\text{m}^2$. [1]
Length $l = RA/\rho = 14 \times 3.14 \times 10^{-8}/(1.6 \times 10^{-8}) \approx 27.5\,\text{m}$. [1]
Doubling the diameter makes A four times, so R becomes $14/4 = 3.5\,\Omega$; the resistance decreases by $10.5\,\Omega$. [1]

OR

The graph of V against I is a straight line passing through the origin. [1]
Resistance $R = V/I = 6.0/2.0 = 3\,\Omega$ (the slope of the graph). [1]
Check: $1.2/0.4 = 3\,\Omega$, the same at every point, so Ohm's law is obeyed. [1]

Q36. **[3]**

The field of the wire becomes weaker with distance from it, so the needle deflects less. [1]
Increase the current, for example by using a stronger battery. [1]
Reversing the battery reverses the current, so the direction of the field reverses (right-hand thumb rule). [1]

OR

The student is correct: the field is stronger where the field lines are closer together, that is, at X. [1]
Field lines emerge from the north pole, enter the south pole outside the magnet, and their arrows are marked accordingly. [2]

Q37. **[3]**

(i) $m = 1 + \frac{D}{f} = 1 + \frac{25}{5} = 6$ (image formed at least distance of distinct vision) [2]
(ii) Object placed between the optical centre and the focus [1]

Q38. **[4]**

(i) (a) The lamps Y ($12\,\Omega$) glow. (b) The lamps X ($4\,\Omega$) glow. **[1]**
(ii) Each lamp is connected directly across the 12 V battery, so the potential difference is 12 V. **[1]**
(iii) (a) $I = 12/12 = 1$ A. **[1]**
(b) $I = 12/4 = 3$ A. **[1]**

OR

For the $4\,\Omega$ lamp $P = V^2/R = 144/4 = 36$ W. **[1]**
For the $12\,\Omega$ lamp $P = 144/12 = 12$ W; so the $4\,\Omega$ lamp has the higher power. **[1]**

Q39. [5]

(i) $P = I^2R$: $I^2 = 81/100$, so $I = 0.9$ A. **[1]**
(ii) Parallel resistance $R_p = 25 \times 25/50 = 12.5\,\Omega$; $V_2 = 0.9 \times 12.5 = 11.25$ V. **[2]**
(iii) Total $R = 100 + 12.5 = 112.5\,\Omega$; $V_1 = 0.9 \times 112.5 = 101.25$ V. **[2]**

OR

(i) Heat in $6\,\Omega$: $H_1 = V^2t/R_1 = 24^2 \times 300/6 = 28\,800$ J. **[1]**
(i) Heat in $12\,\Omega$: $H_2 = 14\,400$ J; total $= 43\,200$ J $= 43.2$ kJ. **[1]**
(ii) Power in $6\,\Omega$ is $576/6 = 96$ W and in $12\,\Omega$ is $576/12 = 48$ W. **[2]**
(ii) Both are below the 100 W rating, so it is safe to use them. **[1]**

***** END OF PAPER *****