CENTRAL BOARD OF SECONDARY EDUCATION

CBSE 2026-27

Science

Subject Code: 086 | Class X

Marking Scheme – Sample Question Paper – Set 1

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]**

(a) Carbon dioxide gains hydrogen, while water loses electrons. [1]

Q2. **[1]**

(c) R [1]

Q3. **[1]**

(c) Posture and balance [1]

Q4. **[1]**

(c) (i) and (iii) [1]

Q5. **[1]**

(d) 1 : 2 : 1 [1]

Q6. **[1]**

(c) CFCs; Ozone [1]

Q7. **[1]**

(a) Glucose and salts [1]

Q8. **[1]**

(d) [1]

Q9. **[1]**

(a) [1]

Q10. **[2]**

(i) Cerebellum; (ii) medulla; (iii) cerebrum; (iv) medulla. (0.5 each) [2]

OR

Auxins are synthesised at the shoot tip (growing apex) and young leaves. [$\frac{1}{2}$]
Shoot for (i) and (ii); root for (iii). [1$\frac{1}{2}$]

Q11. **[2]**

The nucleus divides into two. [$\frac{1}{2}$]
The two nuclei move to opposite ends of the cell. [$\frac{1}{2}$]
The cytoplasm divides and a new cell membrane forms, giving two cells. [$\frac{1}{2}$]
Two daughter amoebae separate and grow independently. [$\frac{1}{2}$]

OR

Process: budding. [$\frac{1}{2}$]
A small bud arises on the parent cell; the nucleus divides and one daughter nucleus moves into the bud. [1]
The bud grows and separates from the parent cell to form a new yeast cell. [$\frac{1}{2}$]

Q12. **[2]**

DDT, a non-biodegradable pesticide, enters the food chain at the first trophic level (plankton). [$\frac{1}{2}$]
It accumulates progressively at each trophic level (biological magnification). [1]
The hawk, at the highest trophic level, has the highest level of DDT. [$\frac{1}{2}$]

OR

A (energy lost at the producer level) is larger than C and E. [$\frac{1}{2}$]
B (producers to deer) is larger than D (deer to tiger). [$\frac{1}{2}$]
Only about 10% of energy is transferred to the next level, so energy available falls at each step (10% law). [1]

Q13. **[3]**

Adrenaline, secreted by the adrenal gland (medulla). [1]
Increases heart beat and breathing rate, so more oxygen and glucose reach the muscles. [1]
Pupils dilate and blood glucose is raised for quick energy. [1]

OR

Pituitary gland. [1]
Dwarfism in children (under-secretion). [1]
Gigantism (over-secretion in childhood). [1]

Q14. **[3]**

The head piece regrows the missing tail, the middle piece regrows both head and tail, and the tail piece regrows a head. [1]
Process: regeneration. Hydra is another organism showing regeneration. [1]
Labelled diagrams showing the three developing individuals. [1]

OR

Spores are formed in sporangia at the tips of the hyphae. [1]
When the sporangia burst, the spores are released and carried by air. [1]
Each spore that lands on a suitable medium grows into a new mould. [1]

Q15. **[4]**

(i) Self-pollination: pollen lands on the stigma of the same flower or plant; cross-pollination: pollen comes from a different plant. [1]
(ii) Petals; they wither and fall off after fertilisation. [1]
(iii) Fertilisation is the fusion of male and female gametes to form a zygote. [1]
The ovule develops into a seed and the ovary develops into a fruit. [1]

OR

Plumule is the future shoot; radicle is the future root. [1]
Cotyledon stores food for the growing embryo. [1]

Q16. **[5]**

Medulla oblongata: controls blood pressure, salivation and vomiting. [1]
Cerebellum: controls precision of voluntary movements and balance. [1]
Both lie in the hind-brain. [1]
Overproduction of growth hormone in childhood leads to gigantism. [1]
Underproduction of growth hormone in childhood leads to dwarfism. [1]

OR

Nervous control is fast; hormonal control is slow. [1]
Nervous response is short-lived; hormonal response is long-lasting. [1]
Nerve impulses travel along nerve fibres to specific targets; hormones reach all cells through blood, acting on target cells. [1]
Auxins accumulate on the shaded side of the shoot. [1]
Cells on the shaded side elongate more, so the shoot bends towards light. [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]**

(c) Carbon dioxide; it turns lime water milky [1]

Q18. **[1]**

(d) Oxalic acid [1]

Q19. **[1]**

(b) Colourless [1]

Q20. **[1]**

(a) Sodium [1]

Q21. **[1]**

(a) Ca^{2+} and Mg^{2+} ions in hard water react with soap forming insoluble compounds, whereas detergents do not form such insoluble salts. [1]

Q22. **[1]**

(a) 6 [1]

Q23. **[1]**

(a) 2, 4 [1]

Q24. **[1]**

(d) [1]

Q25. **[2]**

Yellow precipitate of lead iodide is formed. [$\frac{1}{2}$]
Double displacement (precipitation) reaction. [$\frac{1}{2}$]
$2\,KI + Pb(NO_3)_2 \longrightarrow PbI_2\downarrow + 2\,KNO_3$ [1]

OR

Copper(II) oxide, CuO, is formed by reaction with oxygen of air. [1]
Passing hydrogen gas over the heated CuO reduces it back to copper. [1]

Q26. **[3]**

Stomach: digestion of food takes place at an acidic pH, because the stomach produces hydrochloric acid. [1]
Mouth: tooth decay begins when pH falls below 5.5; toothpaste, which is basic, neutralises the acid. [1]
Soil and plants: crops grow best at a particular pH, so farmers add lime or manure to correct soil pH. [1]

OR

Neutralisation is the reaction of an acid with a base to give a salt and water. [1]
$HCl + NaOH \longrightarrow NaCl + H_2O$ [1]
Milk of magnesia (a base) neutralises excess acid in the stomach. [1]

Q27. **[3]**

The reaction is highly exothermic and the heat produced melts the metal (thermite reaction). [1]
Aluminium is oxidised; manganese dioxide (Mn in MnO_2) is reduced. [1]
Aluminium is placed above manganese and iron in the reactivity series, so it reduces their oxides and releases a large amount of heat. [1]

Q28. **[4]**

(i) Groups A and B have pH less than 7 (acidic); Group C has pH greater than 7 (basic), except sodium chloride, which is neutral. [1]
(ii) Using pH paper or universal indicator; using a pH meter. [1]
(iii) Lemon juice contains acids (citric acid) which react with the basic copper compound (tarnish) and dissolve it. [1]

The tarnish is removed and the copper vessel looks shiny again. [1]

OR

At pH 7, the concentrations of H+ (H3O+) and OH- ions are equal, so the solution is neutral. [1]
Pure water and sodium chloride solution are examples of neutral substances. [1]

Q29. **[5]**

Gastric juice (pH 1) is strongly acidic and milk of magnesia (pH 10) is basic. [1]
Brine (pH 7) is neutral and aqueous NaOH (pH 13) is strongly basic. [1]
$2\,NaHCO_3 \xrightarrow{\Delta} Na_2CO_3 + H_2O + CO_2$: heating releases carbon dioxide, which expands and makes the cake soft and spongy. [1]
The mixture is basic (mild base), and the cake batter rises on heating. [1]
Any other use of baking soda: as an antacid or in soda-acid fire extinguishers. [1]

OR

Sample B (pH 2, reddish-pink) has the highest H+ concentration. [1]
Decreasing order of pH: C (10.5) > A (7) > D (6) > B (2). [1]
It absorbs moisture from air: $(CaSO_4)_2 \cdot H_2O + 3\,H_2O \longrightarrow 2\,(CaSO_4 \cdot 2\,H_2O)$; the gypsum formed sets hard. [1]
Plaster of Paris loses its setting property once it has reformed gypsum. [1]
Used to make toys, moulds, casts for fractured bones, or decorative items. [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]**

(b) Parallel to the incident ray but laterally displaced [1]

Q31. **[1]**

(b) pupils take time to adjust [1]

Q32. **[1]**

(b) [1]

Q33. **[2]**

Each part has resistance $R/3$, since resistance is proportional to length. [1]
In parallel $1/R_p = 3/R + 3/R + 3/R = 9/R$, so $R_p = R/9$ (the ratio $R_p : R$ is $1 : 9$). [1]

OR

Electric power is the rate of consumption of electric energy (work done per unit time), $P = VI$. [1]
Power is 1 W when 1 J of electrical energy is consumed per second, i.e. when a current of 1 A flows at a potential difference of 1 V. [1]

Q34. **[2]**

Screen at 20 cm from the mirror: $\frac{1}{v} = \frac{1}{f} - \frac{1}{u} = -\frac{1}{20}$, so $v = -20$ cm (object at C) [1]
Image is real, inverted and of the same size as the flame (2 cm) [1]

OR

Lens should be moved towards the screen [1]
A distant object forms its image at the focus, which is closer to the lens than the image of the candle; so the lens-to-screen distance must reduce to f [1]

Q35. **[3]**

In hypermetropia a person sees distant objects clearly but nearby objects are blurred; in myopia nearby objects are clear while distant objects are blurred. [1]
(i) Hypermetropia; (ii) cause: eyeball too short, or the focal length of the eye lens is too long. [1]

(iii) No. A concave lens would diverge the rays further and push the image even farther behind the retina; a convex lens is needed to converge the rays onto the retina. [1]

OR

Causes: (i) excessive curvature of the eye lens; (ii) elongation of the eyeball. [1]
Corrected by a concave (diverging) lens of suitable power. [1]
The defect described is hypermetropia (far-sightedness), in which near objects are blurred and distant objects are clear. [1]

Q36. [3]

Parallel pair: $R_p = 8 \times 8/16 = 4\,\Omega$, so total $R = 4 + 4 = 8\,\Omega$. [1]
For the $4\,\Omega$ resistor, $I^2 \times 4 \leq 16$ gives $I \leq 2$ A. [1]
Each $8\,\Omega$ branch then carries 1 A (8 W, safe), so the maximum current is 2 A. [1]

OR

Resistance of the parallel pair is $4\,\Omega$. [1]
Potential difference $V = IR = 2 \times 4$. [1]
$V = 8$ V. [1]

Q37. [3]

Overloading: the circuit draws more current than its safe limit because too much current flows through the wires. [1]
Causes: too many appliances connected to one socket, or several high-power appliances used together. [1]
Prevention: do not connect too many appliances to one socket; use separate circuits and a fuse of correct rating. [1]

OR

A fuse of correct rating melts at the safe current, protecting the wires from overheating. [1½]
Overloading is a large but finite excess current; a short circuit gives an extremely large current because the resistance is almost zero. [1½]

Q38. [4]

(i) Dispersion of light. [1]
(ii) White light is a mixture of seven colours with different wavelengths; glass has a different refractive index (speed) for each, so each colour bends through a different angle and the colours fan out into a band. [1]
(iii) Two identical prisms are placed with their refracting edges opposite (second prism inverted); the dispersed beam from the first passes through the second. [1]
The second prism produces an equal and opposite deviation for each colour, recombining them: the emergent beam is white. (Labelled diagram.) [1]

OR

Diagram: sunlight entering a spherical raindrop, refracting and dispersing, internally reflecting at the back of the drop, and refracting again on emerging towards the observer. [1]
Red emerges at about 42 degrees and violet at about 40 degrees to the incident direction; red appears at the top of the rainbow. [1]

Q39. [5]

Power of accommodation is the ability of the eye lens to change its focal length to focus objects at different distances on the retina; the ciliary muscles are responsible for it. [1]
The defect is myopia (short-sightedness). [1]
Causes: (i) excessive curvature of the eye lens; (ii) elongation of the eyeball. [1]
Correction: a concave lens of suitable power; ray diagram showing the concave lens diverging rays from distant objects so the image forms on the retina. [1]
From the back seat (far from the board) the rays are nearly parallel and converge in front of the retina, giving a blurred image; from the front seat the rays are more divergent and the image is closer to the retina, so it is less blurred. [1]

OR

(i) Diagram: rays from a nearby object converge behind the retina; (ii) diagram: convex lens before the eye converging the rays onto the retina. [2]
Causes: (i) eyeball too short; (ii) focal length of the eye lens too long. [1]
For the lens: $u = -25$ cm, $v = -50$ cm; $\frac{1}{f} = \frac{1}{-50} - \frac{1}{-25} = \frac{1}{50}$, so $f = +50$ cm $= +0.5$ m. [1]
$P = \frac{1}{f} = \frac{1}{0.5\,\text{m}} = +2.0$ D (convex lens). [1]

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