CENTRAL BOARD OF SECONDARY EDUCATION

CBSE 2026-27

Science

Subject Code: 086 | Class X

Marking Scheme – Sample Question Paper – Set 8

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]**

(b) Trypsin [1]

Q2. **[1]**

(b) Villi and microvilli [1]

Q3. **[1]**

(d) Axonal end of one neuron to dendritic end of another neuron. [1]

Q4. **[1]**

(c) They will not produce any seeds or fruits. [1]

Q5. **[1]**

(a) a functional segment of DNA that carries information for a particular trait [1]

Q6. **[1]**

(d) Cropland ecosystem [1]

Q7. **[1]**

(b) Stomach and anus [1]

Q8. **[1]**

(d) [1]

Q9. **[1]**

(a) [1]

Q10. **[2]**

Non-biodegradable pesticides persist in soil and water, polluting them and killing non-target organisms. [1]
They accumulate through food chains (biomagnification) and reduce soil fertility by harming beneficial microbes. [1]

Q11. **[2]**

Dominant trait: expressed in the F_1 (in the heterozygous condition), e.g. tallness. [1]
Recessive trait: expressed only in the homozygous condition, e.g. dwarfness (tt). [1]

OR

Two pairs of contrasting traits are inherited independently of each other; the alleles of one gene segregate independently of the alleles of another. [1]
Example: RRYY $\times$ rryy gives F_2 plants with new combinations, round green and wrinkled yellow. [1]

Q12. **[2]**

Chlorophyll absorbs light; water is split and oxygen released; carbon dioxide is reduced to glucose (any two steps in sequence). [1]
Desert plants take in CO2 at night and store it as an acid, keeping stomata closed during the day to reduce water loss. [1]

OR

Salivary amylase converts starch into maltose; pepsin digests proteins into peptides in the stomach. [1]
Trypsin digests proteins into amino acids and lipase digests fats into fatty acids and glycerol in the small intestine. [1]

Q13. **[3]**

Pure contrasting parents (e.g. tall and dwarf) gave only one trait in F_1; that trait is dominant. [1]
The other trait reappeared in F_2 in about 25% of plants; it is therefore recessive. [1]
The recessive trait is expressed only in its pure (homozygous) form, while the dominant trait is expressed in both pure and hybrid forms. [1]

OR

Cross PP × pp gives gametes P and p; all F_1 plants are Pp. [1]
Selfing Pp × Pp gives F_2 genotypes PP : Pp : pp = 1 : 2 : 1. [1]
Visible characters: all F_1 plants are purple; F_2 shows purple : white = 3 : 1. [1]

Q14. **[3]**

The ozone layer shields the earth from harmful UV radiation, whose excess causes skin cancer. [1]
Its cause is synthetic chemicals such as CFCs, used as refrigerants and in fire extinguishers. [1]
Many countries signed the Montreal Protocol under UNEP to freeze and then reduce the production of CFCs. [1]

Q15. **[4]**

(i) Boiled egg; digestion starts in the stomach by pepsin secreted by the gastric glands. [1]
(ii) In the mouth, by salivary amylase secreted by the salivary glands. [1]
(iii) The small intestine. [1]
Digested food is absorbed through the villi into the blood capillaries and lacteals. [1]

OR

Eggs contain fats; bile emulsifies the fats into small droplets. [1]
Lipase in the small intestine digests fats into fatty acids and glycerol. [1]

Q16. **[5]**

(a) Sperm production is affected because the scrotum keeps the testes at the lower temperature needed; male infertility may result. [1]
(b) Sperms cannot be transported, so the man becomes infertile. [1]
(c) Sperms receive no nutrient-rich fluid and no transport medium, so their survival and transport are poor. [1]
(d) The uterine lining breaks down and is shed as menstruation. [1]
(e) The embryo gets poor nutrition and oxygen, so growth is affected and pregnancy may be lost. [1]

OR

(a) Sperms pass from the testis to the epididymis, where they mature. [1]
(a) They then travel through the vas deferens. [1]
(a) They enter the urethra and leave the body. [1]
(b) The placenta supplies glucose and oxygen from maternal blood and removes wastes from the embryo. [1]
(b) It connects to the embryo through the umbilical cord. [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) Salt and water is formed [1]

Q18. **[1]**

(b) A, C and F [1]

Q19. **[1]**

(b) Calcium and magnesium [1]

Q20. **[1]**

(c) Brass and Bronze [1]

Q21. **[1]**

(c) Q and S [1]

Q22. **[1]**

(b) Ethanoic acid [1]

Q23. **[1]**

(b) Al_2O_3 and MgO [1]

Q24. **[1]**

(d) [1]

Q25. **[2]**

Solution M, because red colour indicates a lower pH (acidic), which means more H+ ions. [1]
Neutral salt; the acid and base neutralise each other, so the mixture has pH near 7 (green). [1]

Q26. **[3]**

On heating, copper turns black, forming copper(II) oxide: $2\,Cu + O_2 \xrightarrow{\Delta} 2\,CuO$. [1]
On passing hydrogen, black CuO turns reddish-brown as copper is formed: $CuO + H_2 \longrightarrow Cu + H_2O$. [1]
Names and colours: copper(II) oxide is black; copper is reddish-brown. [1]

OR

Decomposition reaction. [1]
$2\,FeSO_4 \xrightarrow{\Delta} Fe_2O_3 + SO_2 + SO_3$ [1]
Endothermic: heat is absorbed to break down the crystals. [1]

Q27. **[3]**

A bee sting is acidic and is neutralised by a mild base, baking soda; a wasp sting is alkaline and is neutralised by a weak acid, vinegar. [1]
Quicklime (a base) neutralises the acidity of soil and makes it suitable for crops. [1]
Marble is calcium carbonate, which is attacked by acid rain, so basic chemicals are used to protect it. [1]

Q28. **[4]**

(i) $Fe + CuSO_4 \longrightarrow FeSO_4 + Cu$ [1]
(ii) Displacement reaction; iron is less reactive than zinc, so it cannot displace zinc from zinc sulphate. [1]
(iii) Iron is more reactive than copper but less reactive than zinc. [1]
Reactivity order: Zn > Fe > Cu. [1]

OR

No, copper cannot displace iron. [1]
Copper is less reactive than iron. [1]

Q29. **[5]**

Oxidation is gain of oxygen or loss of electrons; reduction is loss of oxygen or gain of electrons. [1]
Oxidising agent is CuO; reducing agent is H2. [1]
Substance oxidised is H2 (to H2O); substance reduced is CuO (to Cu). [1]
Rusting (corrosion) of iron, which forms hydrated iron(III) oxide. [1]
$4\,Fe + 3\,O_2 + xH_2O \longrightarrow 2\,Fe_2O_3 \cdot xH_2O$ [1]

OR

Sodium loses one electron to form Na+ (oxidation). [1]
Chlorine gains one electron to form Cl- (reduction). [1]
Sodium is the reducing agent; chlorine is the oxidising agent. [1]

The ions Na+ and Cl- attract to form the ionic compound NaCl. [1]
The reaction is both redox and a combination reaction. [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) bent towards the base of the prism [1]

Q31. **[1]**

(c) Ammeter in series and voltmeter in parallel [1]

Q32. **[1]**

(b) [1]

Q33. **[2]**

A rainbow appears after rainfall (when raindrops are present in the air) and when the Sun shines from behind the observer; it is seen in the part of the sky opposite the Sun. [1]
Correct labelled diagram: water droplets refract and disperse sunlight, reflect it internally, and refract it again on emerging. [1]

OR

Scattering is the deflection of light by fine particles (atoms/molecules, droplets, dust) in all directions. [1]
Air molecules scatter shorter (blue) wavelengths much more than longer wavelengths, so the scattered blue light reaches our eyes from all directions and the sky appears blue. [1]

Q34. **[2]**

$1\,\text{kWh} = 1\,\text{kW} \times 1\,\text{h} = 1000\,\text{W} \times 3600\,\text{s}$. [1]
$1\,\text{kWh} = 3.6 \times 10^6\,\text{J}$. [1]

OR

(a) When 1 J of work is done in moving 1 C of charge between the two points. [1]
(b) At constant temperature the current through a conductor is directly proportional to the potential difference across its ends, $V \propto I$. [1]

Q35. **[3]**

(i) $\frac{1}{v} = \frac{1}{f} - \frac{1}{u} = -\frac{1}{12} + \frac{1}{18}$, so $v = -36$ cm: image 36 cm in front of the mirror [1½]
(ii) $m = -\frac{v}{u} = -2$, so image height is 6 cm, inverted [1½]

OR

Power is the reciprocal of focal length in metres; unit dioptre [1]
P = +10 D; convex lens [1]
$v = +20$ cm (real image, other side) so $m = \frac{v}{u} = -1$: magnification is negative [1]

Q36. **[3]**

Scattering is the deflection of light by particles (molecules, fine droplets, dust) in many different directions after it strikes them. [1]
In reflection, light striking a surface bounces back into the same medium in a definite direction (angle of incidence equals angle of reflection). [1]
In scattering, the particles absorb and re-radiate light in all directions, and the intensity depends on the particle size and the wavelength of light; there is no fixed direction as in reflection. [1]

OR

(i) Very fine particles (smaller than the wavelength of light) scatter light of shorter wavelengths more strongly; hence the blue colour of the sky (blue scattered more than red). [1½]

(ii) Very large particles (larger than the wavelength, e.g. water droplets in clouds) scatter all colours almost equally, so the scattered light appears white. [1½]

Q37. **[3]**

(a) A cell or battery maintains a constant potential difference; a rheostat changes the current. [1]
(b) Resistance $R = 110/5 = 22\,\Omega$. [1]
$I = 220/22 = 10$ A. [1]

OR

Ammeter, connected in series with the component. [1]
A voltmeter must draw negligible current from the circuit, so it needs a high resistance. [1]
A voltmeter is connected in parallel across the component. [1]

Q38. **[4]**

(i) Convex (converging) lens [1]
(ii) The convex lens forms a real, inverted image on the screen, so an upside-down slide gives an erect image [1]
(iii) $\frac{1}{v} = \frac{1}{f} + \frac{1}{u} = \frac{1}{20} - \frac{1}{21} = \frac{1}{420}$ [1]
$v = +420$ cm: the screen should be 4.2 m from the lens [1]

OR

Slide placed between F and 2F; two rays from the tip; real, inverted and enlarged image on the screen [1]
Labels for object, lens, F, 2F and screen [1]

Q39. **[5]**

(i) Converging (convex) lens: the image is real, inverted and diminished [1]
(i) $|v| = \frac{|u|}{2}$ and $\frac{1}{f} = \frac{1}{|v|} + \frac{1}{|u|}$ with $f = 6$ cm give $|u| = 18$ cm and $|v| = 9$ cm [2]
(i) Ray diagram: ray through the optical centre is undeviated; ray parallel to the axis passes through the focus [1]
(ii) The beam passes through the optical centre of the lens, which does not deviate it [1]

OR

(i) $n = \frac{c}{v} = \frac{c}{c/2} = 2$ [1]
(ii)(1) $n_1 > n_2$: ray bends towards the normal on entering the slab and away on leaving; emergent ray parallel to incident ray, laterally displaced [1]
(ii)(2) $n_1 = n_2$: no bending at either surface; ray passes straight through [1]
(ii)(3) $n_1 < n_2$: ray bends away from the normal on entering and towards the normal on leaving; emergent ray parallel to incident ray [1]
Ray diagrams for the three cases, labelled with normal and angles [1]

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