

IMMANUEL HIGH SCHOOL

Nagavara, Bangalore – 560045

SA-1 MOCK / MODEL QUESTION PAPERS

SCIENCE — CLASS X (SSLC)

2025–26

Prepared as per the KSEAB SA-1 Blueprint & DSERT Lesson Based Assessment (LBA)
Portions covered — Physics: Electricity, Magnetic Effects of Electric Current • Chemistry: Chemical Reactions and Equations, Acids Bases and Salts • Biology: Life Processes, Control and Coordination

SA-1 BLUEPRINT — SCIENCE (CLASS X)

80 Marks • 38 Questions • 3 Hours 15 Minutes (as per KSEAB pattern, Subject Code 83E)

Chapter	MCQ (1 m)	VSA (1 m)	SA (2 m)	LA (3 m)	LA (4 m)	LA (5 m)	Total Marks
PHYSICS							
1. Electricity	2	2	1	2	1	0	16
2. Magnetic Effects of Electric Current	1	1	2	2	1	1	21
CHEMISTRY							
3. Chemical Reactions and Equations	1	1	1	1	0	0	7
4. Acids, Bases and Salts	2	1	2	1	1	0	14
BIOLOGY							
5. Life Processes	1	2	1	2	1	0	15
6. Control and Coordination	1	1	1	1	0	0	7
TOTAL	8	8	8	9	4	1	80

PREPARATION NOTE FOR TEACHERS

SA-1 Blueprint basis:

The blueprint follows the KSEAB SSLC Science pattern (Subject Code 83E): 38 questions totalling 80 marks, in the same structure used for the annual paper — 8 MCQ (1 mark) + 8 Very Short Answer (1 mark); 8 Short Answer (2 marks); 9 Long Answer (3 marks); 4 Long Answer (4 marks) + 1 Long Answer (5 marks). The paper is organised into three sections — Physics, Chemistry and Biology — with questions from each subject appearing together within every part. Chapter-wise weightage for the 6 SA-1 chapters has been reconstructed proportionally from KSEAB's published annual Science blueprint (Electricity 7, Magnetic Effects 6, Chemical Reactions 4, Acids/Bases/Salts 6, Life Processes 6, Control & Coordination 5 out of the full 80), scaled up so these six chapters alone total 80 marks for the SA-1 exam — keeping Electricity and Magnetic Effects of Electric Current as the highest-weighted chapters, consistent with their standing in the full-year blueprint.

Alignment with DSERT Lesson Based Assessment (LBA):

Both model papers mirror the DSERT LBA question style for these six chapters — concept-recall one-mark questions (SI units, definitions, naming enzymes/hormones/pigments), rule-and-diagram questions (Fleming's rules, field-line patterns), and application-based numericals on resistance/power, matching the competency-based LBA question bank used in chapter-wise unit tests through the term.

Coverage note:

1. Electricity — Ohm's law, series/parallel combination of resistors, factors affecting resistance, electric power and heating effect (Joule's law), numericals on cost of electrical energy.
2. Magnetic Effects of Electric Current — magnetic field due to a straight conductor/circular loop/solenoid, Fleming's Left- and Right-Hand Rules, force on a current-carrying conductor, and the flagship long-answer questions: electric motor and AC generator (construction, working, principle, diagram).
3. Chemical Reactions and Equations — balancing equations, types of reactions (combination, decomposition, displacement, double displacement), corrosion and rancidity.
4. Acids, Bases and Salts — pH scale and its everyday importance, neutralisation, common salt and its industrial derivatives (baking soda, washing soda, bleaching powder, Plaster of Paris), water of crystallisation.
5. Life Processes — nutrition (photosynthesis, human digestion), respiration, transportation (double circulation, blood vessels), excretion (nephron, human excretory system).
6. Control and Coordination — neuron structure, reflex arc, human brain (forebrain/midbrain/hindbrain), plant hormones and tropic movements, animal endocrine hormones.

Note: As with the Mathematics blueprint, KSEAB's exact year-specific SA-1 chapter-wise weightage sheet for Science is circulated to schools through Block/Cluster offices and is not consistently available on the public KSEAB website. The distribution above has been reconstructed from KSEAB's published annual Science blueprint proportions, cross-checked against recent 83E model/mid-term papers. Please verify against your school's official SA-1 circular before final printing.



SUMMATIVE ASSESSMENT – 1 (2025–26) — MODEL PAPER 1

SCIENCE — CLASS X (SSLC)

(As per KSEAB SA-1 Blueprint, Subject Code 83E — DSERT LBA aligned)

Time: 3 hours 15 minutes

Max. Marks: 80

General Instructions:

1. This question paper is divided into three sections: Physics, Chemistry and Biology, arranged within Parts A, B, C and D.
2. All questions are compulsory. Internal choice (OR) is provided in a few 4 and 5-mark questions as indicated.
3. Draw neat, labelled diagrams wherever necessary.
4. Write balanced chemical equations wherever required.
5. Write the question numbers correctly as given in the question paper while answering.

PART – A (I. Multiple Choice Questions) Answer all the questions by choosing the correct option. $8 \times 1 = 8$

1. **[Physics]** The SI unit of electrical resistance is [1]
(A) Ohm
(B) Ampere
(C) Volt
(D) Watt
2. **[Physics]** Two resistors of 2Ω and 3Ω are connected in series. The equivalent resistance of the combination is [1]
(A) 1.2Ω
(B) 5Ω
(C) 6Ω
(D) 0.83Ω
3. **[Physics]** The device used to convert mechanical energy into electrical energy is a/an [1]
(A) Electric motor
(B) Electric generator
(C) Transformer
(D) Galvanometer
4. **[Chemistry]** The chemical formula of quicklime is [1]
(A) CaCO_3
(B) CaO
(C) Ca(OH)_2
(D) CaSO_4
5. **[Chemistry]** The pH of a neutral solution is [1]
(A) 0
(B) 7
(C) 14
(D) 1
6. **[Chemistry]** The gas evolved when a reactive metal reacts with a dilute acid is [1]
(A) Oxygen

- (B) Carbon dioxide
- (C) Hydrogen
- (D) Nitrogen

7. **[Biology]** The functional and structural unit of the kidney is the [1]

- (A) Neuron
- (B) Nephron
- (C) Alveolus
- (D) Nephridia

8. **[Biology]** The microscopic gap between two adjacent neurons is called a [1]

- (A) Axon
- (B) Dendrite
- (C) Synapse
- (D) Node of Ranvier

PART – A (II. Very Short Answer Type Questions) Answer all the questions. $8 \times 1 = 8$

9. **[Physics]** Write the SI unit of electric power. [1]

10. **[Physics]** Write the formula relating electric power (P), potential difference (V) and current (I). [1]

11. **[Physics]** Name the rule used to find the direction of the magnetic field around a straight current-carrying conductor. [1]

12. **[Chemistry]** Write a balanced chemical equation for the combination reaction between hydrogen gas and oxygen gas to form water. [1]

13. **[Chemistry]** Name the acid present in curd. [1]

14. **[Biology]** Name the pigment in green plants that absorbs light energy for photosynthesis. [1]

15. **[Biology]** Write the word equation for aerobic respiration in living organisms. [1]

16. **[Biology]** Name the hormone secreted by the thyroid gland. [1]

PART – B (III. Short Answer Type Questions) Answer all the questions. $8 \times 2 = 16$

17. **[Physics]** State Ohm's law and write its mathematical expression. [2]

18. **[Physics]** Draw the pattern of magnetic field lines around a straight conductor carrying current, and state one property of the field lines. [2]

19. **[Physics]** State Fleming's Left-Hand Rule and mention its use. [2]

20. **[Chemistry]** Balance the following chemical equation: $\text{Fe} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + \text{H}_2$ [2]

21. **[Chemistry]** Why does an aqueous solution of an acid conduct electricity? [2]

22. **[Chemistry]** Write the chemical name and formula of baking soda. Mention one of its uses. [2]

23. **[Biology]** Name the parts of the human alimentary canal in the correct order, from mouth to anus. [2]

24. **[Biology]** What is a reflex action? Give one example. [2]

PART – C (IV. Long Answer Type Questions) Answer all the questions. $9 \times 3 = 27$

25. **[Physics]** Three resistors of 4Ω , 6Ω and 12Ω are connected in parallel. Find the equivalent resistance of the combination. [3]

26. **[Physics]** State the factors on which the resistance of a conductor depends, and explain any two. [3]

27. **[Physics]** With a labelled diagram, explain the working principle of an electric motor. [3]

28. **[Physics]** State the rule used to determine the direction of the force experienced by a current-carrying conductor placed in a magnetic field, and explain it with a diagram. [3]

29. **[Chemistry]** What is corrosion? Explain with an example and state one method to prevent it. [3]

30. [Chemistry] Explain the preparation, chemical formula and one use of washing soda. [3]

31. [Biology] Explain the process of double circulation in human beings. [3]

OR

31 OR. [Biology] Describe the structure and function of a nephron. [3]

32. [Biology] Explain the mechanism of a reflex arc with a labelled diagram. [3]

33. [Biology] Explain the process of photosynthesis, giving the balanced chemical equation and the factors necessary for it. [3]

PART – D (V. Long Answer Type Questions) Answer all the questions. $4 \times 4 = 16$

34. [Physics] Two electric lamps, one rated 100 W, 220 V and the other 60 W, 220 V, are connected in parallel to the electric mains. Find the current drawn by each lamp and the total current drawn from the mains. [4]

OR

34 OR. [Physics] Calculate the amount of heat generated while transferring 96,000 coulombs of charge in one hour through a potential difference of 50 V. [4]

35. [Physics] Draw a labelled diagram of a domestic electric circuit and explain the function of a fuse and earthing in it. [4]

36. [Chemistry] What is water of crystallisation? Explain, giving the example of gypsum and Plaster of Paris (their formulae and the reaction connecting them). [4]

OR

36 OR. [Chemistry] Explain the pH scale and its importance in (i) our digestive system, (ii) plants and animals, (iii) prevention of tooth decay. [4]

37. [Biology] Explain, with a labelled diagram, the structure of the human excretory system and the process of urine formation. [4]

PART – D (VI. Long Answer Type Question) $1 \times 5 = 5$

38. [Physics] State the principle, and explain with a labelled diagram, the construction and working of an AC electric generator. [5]

OR

38 OR. [Physics] State the principle, and explain with a labelled diagram, the construction and working of an electric motor. [5]

SUMMATIVE ASSESSMENT – 1 (2025–26) — MODEL PAPER 2

SCIENCE — CLASS X (SSLC)

(As per KSEAB SA-1 Blueprint, Subject Code 83E — DSERT LBA aligned)

Time: 3 hours 15 minutes

Max. Marks: 80

General Instructions:

1. This question paper is divided into three sections: Physics, Chemistry and Biology, arranged within Parts A, B, C and D.
2. All questions are compulsory. Internal choice (OR) is provided in a few 4 and 5-mark questions as indicated.
3. Draw neat, labelled diagrams wherever necessary.
4. Write balanced chemical equations wherever required.
5. Write the question numbers correctly as given in the question paper while answering.

PART – A (I. Multiple Choice Questions) Answer all the questions by choosing the correct option. $8 \times 1 = 8$

1. **[Physics]** The commercial unit of electrical energy is [1]
(A) Joule
(B) Watt
(C) Kilowatt-hour
(D) Ohm
2. **[Physics]** Which of the following materials has the highest resistivity? [1]
(A) Copper
(B) Silver
(C) Nichrome
(D) Aluminium
3. **[Physics]** Fleming's Left-Hand Rule is used to find the direction of [1]
(A) Induced current
(B) Magnetic field
(C) Force on a current-carrying conductor
(D) Electric current
4. **[Chemistry]** The reaction $2\text{AgCl} \rightarrow 2\text{Ag} + \text{Cl}_2$ (carried out in sunlight) is an example of a [1]
(A) Combination reaction
(B) Decomposition reaction
(C) Displacement reaction
(D) Neutralisation reaction
5. **[Chemistry]** Milk of magnesia is generally used to cure [1]
(A) Tooth decay
(B) Acidity/indigestion
(C) Osteoporosis
(D) Baldness
6. **[Chemistry]** A salt formed from a strong acid and a weak base gives an aqueous solution that is [1]
(A) Neutral

- (B) Acidic
- (C) Basic
- (D) Amphoteric

7. **[Biology]** The green pigment present in leaves that traps solar energy for photosynthesis is [1]

- (A) Haemoglobin
- (B) Chlorophyll
- (C) Melanin
- (D) Xanthophyll

8. **[Biology]** The plant hormone mainly responsible for cell elongation is [1]

- (A) Cytokinin
- (B) Auxin
- (C) Absciscic acid
- (D) Gibberellin

PART – A (II. Very Short Answer Type Questions) Answer all the questions. $8 \times 1 = 8$

9. **[Physics]** Define the resistivity of a material. [1]

10. **[Physics]** Write the formula for the heat produced in a resistor when a current I flows through it for time t . [1]

11. **[Physics]** Name the device that works on the principle of electromagnetic induction and converts mechanical energy into electrical energy. [1]

12. **[Chemistry]** What is a precipitation reaction? Give one example. [1]

13. **[Chemistry]** Name the olfactory indicator that loses its smell in a basic solution. [1]

14. **[Biology]** Name the enzyme present in saliva and state the food component it acts upon. [1]

15. **[Biology]** Name the two types of conducting tissue found in plants. [1]

16. **[Biology]** Name the part of the human brain that controls involuntary actions such as heartbeat and breathing. [1]

PART – B (III. Short Answer Type Questions) Answer all the questions. $8 \times 2 = 16$

17. **[Physics]** Why is tungsten used almost exclusively for the filament of electric bulbs? [2]

18. **[Physics]** Name the rule used to find the direction of induced current in a conductor moving inside a magnetic field, and state the rule. [2]

19. **[Physics]** What is a solenoid? State one property of the magnetic field produced by a current-carrying solenoid. [2]

20. **[Chemistry]** Distinguish between an exothermic reaction and an endothermic reaction, with one example each. [2]

21. **[Chemistry]** What happens when a solution of an acid is mixed with a solution of a base? Name the reaction and write a chemical equation. [2]

22. **[Chemistry]** Write the chemical name, formula, and one use of Plaster of Paris. [2]

23. **[Biology]** What is transpiration? State one of its functions in plants. [2]

24. **[Biology]** Distinguish between a reflex action and a walking movement, on the basis of the nature of nervous control. [2]

PART – C (IV. Long Answer Type Questions) Answer all the questions. $9 \times 3 = 27$

25. **[Physics]** Two resistors of resistance 5Ω and 10Ω are connected (i) in series and (ii) in parallel, to a battery of 6 V. Find the equivalent resistance in each case. [3]

26. **[Physics]** Derive the expression for the equivalent resistance when three resistors R_1 , R_2 and R_3 are connected in series. [3]

27. **[Physics]** Draw the pattern of magnetic field lines produced by a current-carrying circular loop, and mention any two factors on which the strength of the field depends. [3]
28. **[Physics]** With a labelled diagram, explain how the pattern of the magnetic field is produced by a current-carrying solenoid, and compare it to that of a bar magnet. [3]
29. **[Chemistry]** What is rancidity? Suggest two methods used to prevent rancidity in food items. [3]
30. **[Chemistry]** Explain the importance of pH in our daily life, with reference to the digestive system, plants and animals, and tooth decay. [3]
31. **[Biology]** Explain the process of nutrition in Amoeba with a labelled diagram. [3]

OR

- 31 OR. **[Biology]** Briefly explain the human digestive process from ingestion to egestion. [3]
32. **[Biology]** With a labelled diagram, describe the structure of the human heart. [3]
33. **[Biology]** Explain any three types of tropic movements shown by plants, with examples. [3]

PART – D (V. Long Answer Type Questions) Answer all the questions. $4 \times 4 = 16$

34. **[Physics]** A copper wire has a diameter of 0.5 mm and a resistivity of $1.6 \times 10^{-8} \Omega\text{m}$. What length of this wire is required to produce a resistance of 10Ω ? How much does the resistance change if the diameter of the wire is doubled, keeping the length the same? [4]

OR

- 34 OR. **[Physics]** An electric iron of resistance 20Ω draws a current of 5A. Calculate the heat developed in 30 seconds, and the cost of using it for 2 hours a day for 30 days if the rate is ₹6 per unit. [4]
35. **[Physics]** Explain, with a diagram, the force experienced by a current-carrying conductor placed in a magnetic field ($F = BIL$), and mention any two of its applications. [4]
36. **[Chemistry]** What are strong and weak acids and bases? Explain with reference to their pH values, and give one example of each. [4]

OR

- 36 OR. **[Chemistry]** Explain how soaps and detergents are related to acids, bases and salts. Distinguish between a soap and a detergent. [4]
37. **[Biology]** Explain the process of excretion in human beings with a labelled diagram of the excretory system. [4]

PART – D (VI. Long Answer Type Question) $1 \times 5 = 5$

38. **[Physics]** State the principle, and explain with a labelled diagram, the construction and working of a simple electric motor. [5]

OR

- 38 OR. **[Physics]** State the principle, and explain with a labelled diagram, the construction and working of an AC generator. [5]