

PRACTICE WORKBOOK

CLASS 12

Physics

Six original teaching units pair physical models with worked calculations and explanatory practice. Selected topics support further study without replacing the full school course.

**6 practice units****36 tasks with answer guidance**

Name / नाम: _____

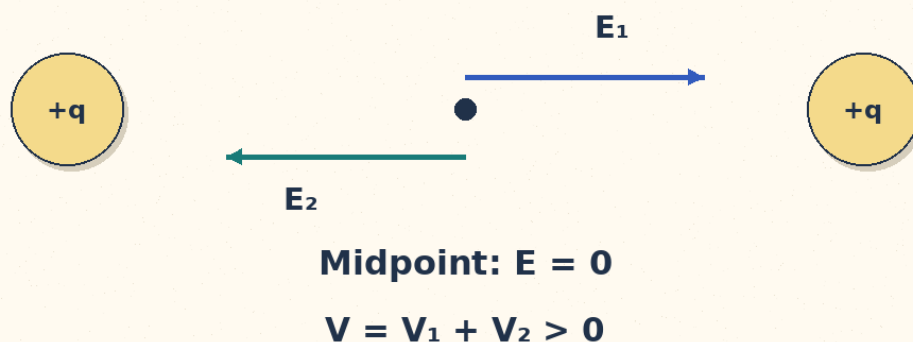
Original selected-topic practice. Use alongside school lessons and the prescribed textbook. The contents define this book's scope.

UNIT 01 · LOOK & EXPLAIN

Charge field: force, potential and capacitance

Two equal positive charges: midpoint reasoning

The vector electric fields cancel; the scalar potentials add



Both charges are positive and equal; the midpoint is equidistant from them.

Use the labels and worked example to explain the idea. The diagram is schematic unless a scale is given.

Look, annotate and explain

Identify the parts or values that matter. Add a label or annotation to show a connection. Explain how the diagram supports the worked example, then use it with the practice on the next page.

UNIT 01 · APPLY & EXPLAIN

Charge field: force, potential and capacitance

4. A capacitor holds charge magnitude $12\ \mu\text{C}$ at $6\ \text{V}$. Find capacitance. [2 marks]

5. Find energy stored in a $4\ \mu\text{F}$ capacitor at $10\ \text{V}$. [2 marks]

6. An isolated charged ideal parallel-plate capacitor has its plate separation doubled. Describe changes in C , Q , V and U . [4 marks]

Show your thinking with a drawing, diagram or explanation.

Pause & reflect

What can I explain now? What will I try again?

☐ I tried ☐ I explained ☐ I checked



UNIT 01 · ANSWER GUIDANCE

Charge field: force, potential and capacitance

1. $F = k|q_1q_2|/r^2 = 1.8 \text{ N}$. Unlike charges attract.
2. $F = qE = -6 \times 10^{-4} \text{ N}$ in the right-positive convention: magnitude $6 \times 10^{-4} \text{ N}$ leftward.
3. The equal and opposite fields cancel, giving zero field. Both potentials are positive and add, so the potential is positive and nonzero.
4. $C = Q/V = 12/6 = 2 \mu\text{F}$.
5. $U = \frac{1}{2}CV^2 = \frac{1}{2} \times 4 \times 10^{-6} \times 100 = 2.0 \times 10^{-4} \text{ J}$.
6. C halves because $C \propto 1/d$; Q stays fixed because it is isolated. $V = Q/C$ doubles and $U = Q^2/(2C)$ doubles, with mechanical work supplied to separate the plates.

Teaching note

Add electric fields with directions; add potentials as signed scalars.

Curriculum reference: https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart2/Physics_SecP2_2026-27.pdf

Selected units; outcomes are publisher-defined. Practical, project and prescribed literature requirements must also be studied through school.