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Revised Multicolour Edition Based on **CCE Pattern**
As per NCERT/CBSE Syllabus

Science for Tenth Class

Part - I

Physics

Containing answers to NCERT book questions and value-based questions

LAKHMIR SINGH
MANJIT KAUR

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This book has been revised according to the CCE pattern of school education based on NCERT syllabus prescribed by the Central Board of Secondary Education (CBSE) for Class X

Science for Tenth Class

(Part – 1)

PHYSICS

As per NCERT/CBSE Syllabus
(Based on CCE Pattern of School Education)

Containing answers to NCERT book questions and value-based questions

LAKHMIR SINGH

And

MANJIT KAUR

This Book Belongs to :

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LAKHMIR SINGH did his M.Sc. from Delhi University in 1969. Since then he has been teaching in Dyal Singh College of Delhi University, Delhi. He started writing books in 1980. Lakhmir Singh believes that book writing is just like classroom teaching. Though a book can never replace a teacher but it should make the student feel the presence of a teacher. Keeping this in view, he writes books in such a style that students never get bored reading his books. Lakhmir Singh has written more than 15 books so far on all the science subjects: Physics, Chemistry and Biology. He believes in writing quality books. He does not believe in quantity.

MANJIT KAUR did her B.Sc., B.Ed. from Delhi University in 1970. Since then she has been teaching in a reputed school of Directorate of Education, Delhi. Manjit Kaur is such a popular science teacher that all the students want to join those classes which she teaches in the school. She has a vast experience of teaching science to school children, and she knows the problems faced by the children in the study of science. Manjit Kaur has put all her teaching experience into the writing of science books. She has co-authored more than 15 books alongwith her husband, Lakhmir Singh.

It is the team-work of Lakhmir Singh and Manjit Kaur which has given some of the most popular books in the history of science education in India. Lakhmir Singh and Manjit Kaur both write exclusively for the most reputed, respected and largest publishing house of India : S.Chand and Company Pvt. Ltd.

AN OPEN LETTER

Dear Friend,

We would like to talk to you for a few minutes, just to give you an idea of some of the special features of this book. Before we go further, let us tell you that this book has been revised according to the NCERT syllabus prescribed by the Central Board of Secondary Education (CBSE) based on new "Continuous and Comprehensive Evaluation" (CCE) pattern of school education. Just like our earlier books, we have written this book in such a simple style that even the weak students will be able to understand physics very easily. Believe us, while writing this book, we have considered ourselves to be the students of Class X and tried to make things as simple as possible.

The most important feature of this revised edition of the book is that we have included a large variety of different types of questions as required by CCE for assessing the learning abilities of the students. This book contains :

(*i*) Very short answer type questions (including true-false type questions and fill in the blanks type questions),

(*ii*) Short answer type questions,

(*iii*) Long answer type questions (or Essay type questions),

(*iv*) Multiple choice questions (MCQs) based on theory,

(*v*) Questions based on high order thinking skills (HOTS),

(*vi*) Multiple choice questions (MCQs) based on practical skills in science,

(*vii*) NCERT book questions and exercises (with answers), and

(*viii*) Value based questions (with answers).

Please note that answers have also been given for the various types of questions, wherever required. All these features will make this book even more useful to the students as well as the teachers. "A picture can say a thousand words". Keeping this in mind, a large number of coloured pictures and sketches of various scientific processes, procedures, appliances, manufacturing plants and everyday situations involving principles of physics have been given in this revised edition of the book. This will help the students to understand the various concepts of physics clearly. It will also tell them how physics is applied in the real situations in homes, transport and industry.

Other Books by Lakhmir Singh and Manjit Kaur

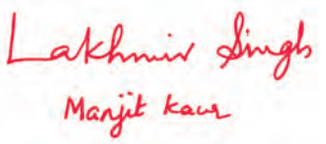
1. Awareness Science for Sixth Class
2. Awareness Science for Seventh Class
3. Awareness Science for Eighth Class
4. Science for Ninth Class (Part 1) PHYSICS
5. Science for Ninth Class (Part 2) CHEMISTRY
6. Science for Tenth Class (Part 2) CHEMISTRY
7. Science for Tenth Class (Part 3) BIOLOGY
8. Rapid Revision in Science (A Question-Answer Book for Class X)
9. Science for Ninth Class (J & K Edition)
10. Science for Tenth Class (J & K Edition)
11. Science for Ninth Class (Hindi Edition) : PHYSICS and CHEMISTRY
12. Science for Tenth Class (Hindi Edition) : PHYSICS, CHEMISTRY and BIOLOGY
13. Saral Vigyan (A Question-Answer Science Book in Hindi for Class X)

We are sure you will agree with us that the facts and formulae of physics are just the same in all the books, the difference lies in the method of presenting these facts to the students. In this book, the various topics of physics have been explained in such a simple way that while reading this book, a student will feel as if a teacher is sitting by his side and explaining the various things to him. We are sure that after reading this book, the students will develop a special interest in physics and they would like to study physics in higher classes as well.

We think that the real judges of a book are the teachers concerned and the students for whom it is meant. So, we request our teacher friends as well as the students to point out our mistakes, if any, and send their comments and suggestions for the further improvement of this book.

Wishing you a great success,

Yours sincerely,



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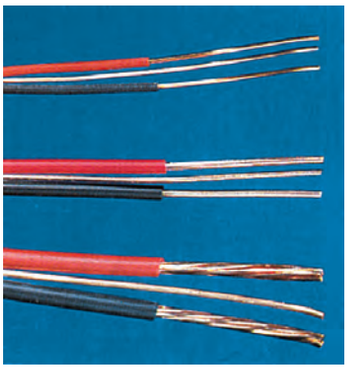

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LATEST CBSE SYLLABUS, CLASS 10 SCIENCE
(PHYSICS PART)

FIRST TERM
(April to September)

Electricity : Electric current ; Potential difference and electric current ; Ohm's law ; Resistance ; Resistivity ; Factors on which the resistance of a conductor depends ; Series combination of resistors, parallel combination of resistors, and its applications in daily life ; Heating effect of electric current and its applications in daily life ; Electric power ; Inter-relation between *P, V, I* and *R*

Magnetic effect of current : Magnetic field, field lines, field due to a current-carrying conductor, field due to a current-carrying coil or solenoid ; Force on current-carrying conductor, Fleming's left-hand rule ; Electromagnetic induction, Induced potential difference, Induced current, Fleming's right-hand rule ; Direct current ; Alternating current ; Frequency of AC ; Advantage of AC over DC ; Domestic electric circuits

Sources of energy : Different forms of energy ; Conventional and non-conventional sources of energy ; Fossil fuels, solar energy, biogas, wind, water and tidal energy ; Nuclear energy ; Renewable versus non-renewable sources of energy

SECOND TERM
(October to March)

Light : Reflection of light at curved surfaces ; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length ; Mirror formula (Derivation not required) ; Magnification ; Refraction : Laws of refraction, refractive index ; Refraction of light by spherical lenses ; Image formed by spherical lenses ; Lens formula (Derivation not required) ; Magnification ; Power of a lens ; Functioning of lens in a human eye ; Defects of vision and their correction ; Applications of spherical mirrors and lenses ; Refraction of light through a prism ; Dispersion of light, scattering of light, applications in daily life

CHAPTER

1

Electricity

Electricity is an important source of energy in the modern times. Electricity is used in our homes, in industry and in transport. For example, electricity is used in our homes for lighting, operating fans and heating purposes (see Figure 1). In industry, electricity is used to run various types of machines, and in transport sector electricity is being used to pull electric trains. In this chapter, we will discuss electric potential, electric current, electric power and the heating effect of electric current. In order to understand electricity, we should first know something about the electric charges. These are discussed below.

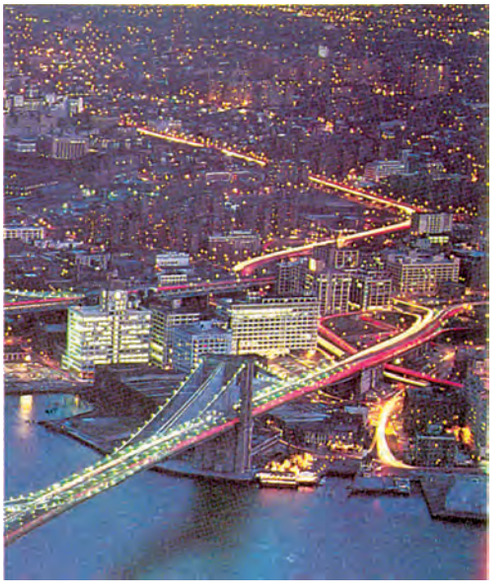


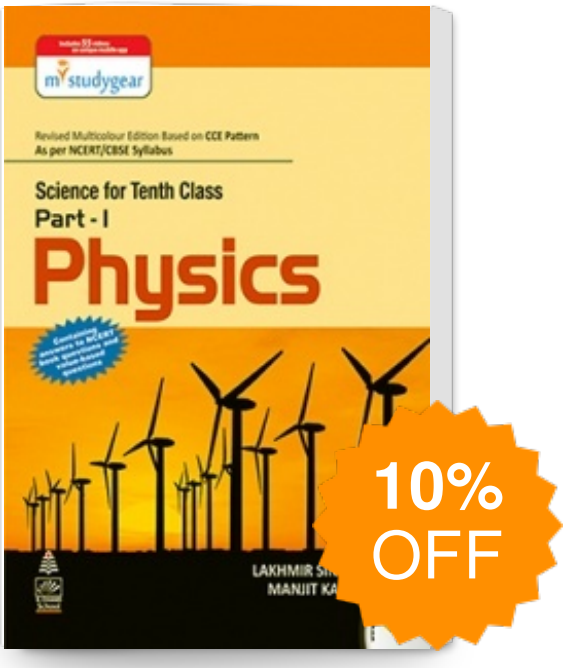
Figure 1. Can you imagine life without electricity ? What would this city look like at night if there was no electricity ?

If we bring a plastic comb near some very tiny pieces of paper, it will not have any effect on them. If, however, the comb is first rubbed with dry hair and then brought near the tiny pieces of paper, we find that the comb now attracts the pieces of paper towards itself. These observations are explained by saying that initially the comb is electrically neutral so it has no effect on the tiny pieces of paper. When the comb is rubbed with dry hair, then it gets electric charge. This electrically charged comb exerts an electric force on the tiny pieces of paper and attracts them. Similarly, a glass rod rubbed with silk cloth ; and an ebonite rod rubbed with woollen cloth also acquire the ability to attract small pieces of paper and are said to have electric charge.

Types of Electric Charges

It has been found by experiments that there are two types of electric charges : *positive* charges and *negative* charges. By convention, the charge acquired by a glass rod (rubbed with a silk cloth) is called positive charge and the charge acquired by an ebonite rod (rubbed with a woollen cloth) is called negative charge. An important property of electric charges is that :

Science for Tenth Class Part 1 Physics



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