

II PUC

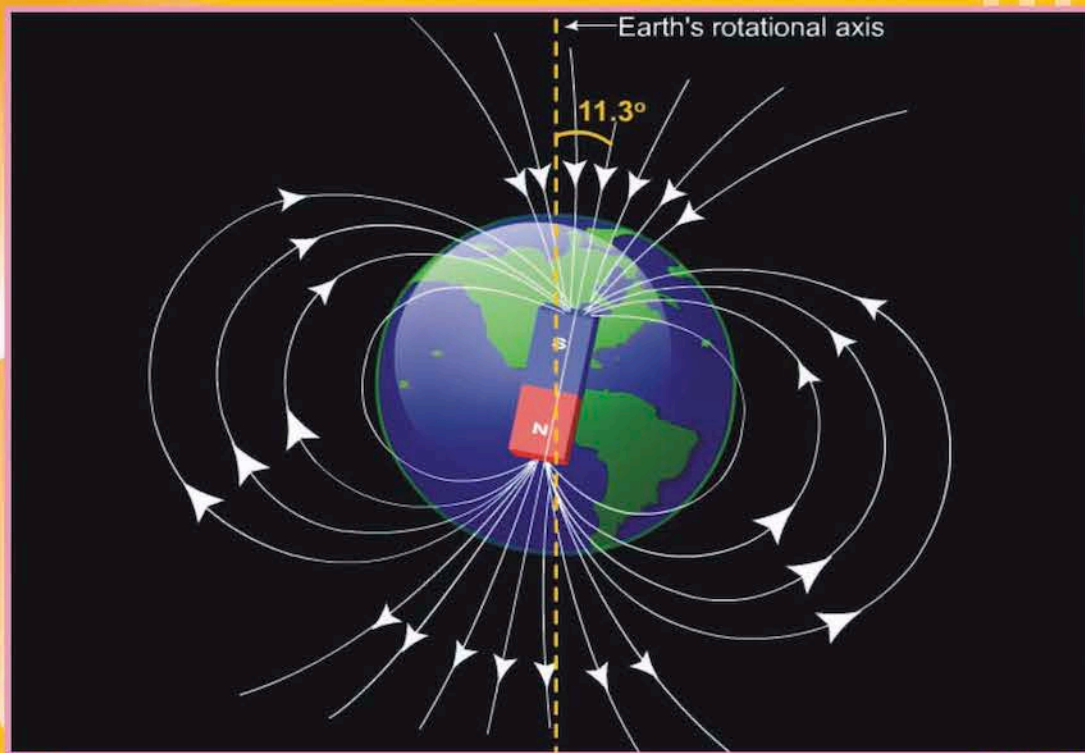
As per New Syllabus

EXPERT

PHYSICS

REFRESHER COURSE

For II PUC, DEPARTMENT OF PU EDUCATION, KARNATAKA



Part- 1

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PHYSICS

Volume Two: New syllabus

THIRD EDITION

REFRESHER COURSE

FOR PUC – II

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FOREWORD

Dear readers,

For me and EXEPRT, it is an eve of gaiety and splendor to bring to stands the Second Edition of our book 'A Refresher Course in Physics' for the students of Second year PU (Karnataka Board). This pioneering work is the result of the collective and dedicated efforts by the best minds in the field of college education.

This book is an ensemble of pearls of wisdom picked carefully by EXPERT from the various oceans of knowledge, unmatched in quality and style. It shall beyond doubt prove a shot in the arm as far as the scoring of students is considered.

The Third edition of this book has been put to print as hands on approach to solve the difficulties faced by students while preparing for II PU Board examination. Utmost care is taken to ensure that their hard work gets translated into full success. Optimal use of experience and knowledge has been made to ensure that the book is an unfailing and indispensable companion to students as well as teachers. I am confident that any student who makes use of this book is most likely to get 100/100 in the Board Exam.

I hope that all P U teachers and in particular, the students who aim high and earnestly desire to achieve cent percent success will make best use of this book and join the league of excellence.

I heartily thank Prof. Harish Bhat, Prof. Vadiraj Rao, Prof. Vijeth Nayak S. R and Prof. Prashanth Rao whose names are synonymous with classes of quality; for the painstaking effort they have put in as authors.

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Q. What is electrostatics?

Ans: The study of phenomena associated with electric charges at rest is called electrostatics.

OR

Electrostatics deals with the study of forces, fields and potentials due to static charges.

Note:

1. Quantisation of charge was first suggested by the experimental laws of electrolysis discovered by Faraday.
2. Quantisation of charge was experimentally proved by Millikan in 1912.
3. Benjamin Franklin (American Scientist) classified the charges into positive and negative.
4. Charge is that property associated with a particle due to which it interacts with other particles having same property or Fundamental property of matter due to which electrical and other related effects are produced in the matter.
5. The charge on an electron, $e = -1.6 \times 10^{-19}\text{C}$
6. The charge on a proton, $e = +1.6 \times 10^{-19}\text{C}$
7. Mass of an electron $m_e = 9.1 \times 10^{-31}\text{ kg}$
8. Magnitude of charge on electron or proton is known as **elementary charge**. This is the least amount of charge which can be added or removed from a body.

Q. What is a test charge?

Ans: Test charge is the one whose presence will not affect the already existing electric field.

Q. What are the two types of charges?

Ans: Positive and negative.

Q. What is the SI unit of charge?

[March 2014]

Ans: coulomb (C)

Q. What are conductors, insulators and semiconductors? Give examples.

Ans: Substances, which allow charges to flow through them, are called conductors.

E.g. Metals, Alloys, graphite, impure water, acids, alkalis etc.

Substances having electrical properties between those of conductors and insulators are called semiconductors. E.g. Silicon, Germanium, Carbon.

Substances, which do not allow charges to flow through them, are called insulators or dielectrics. E.g. Paper, Rubber, silk, Wood, plastic, Mica etc.