

II PUC

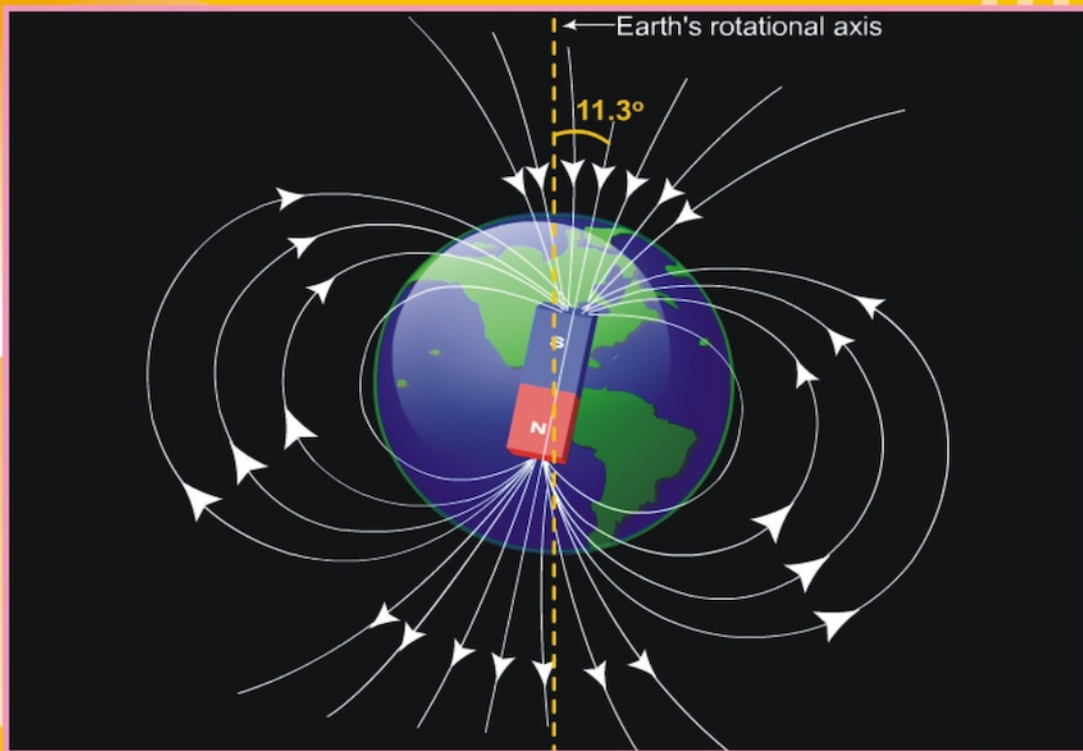
As per New Syllabus

EXPERT

PHYSICS

REFRESHER COURSE

For II PUC, DEPARTMENT OF PU EDUCATION, KARNATAKA



Part- 4

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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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CHAPTER – 4

MOVING CHARGES AND MAGNETISM

Q. Who discovered magnetic effect of electric current?

Ans: Oersted

Q. What is the source of magnetic field?

Ans: A moving charge is the source of magnetic field

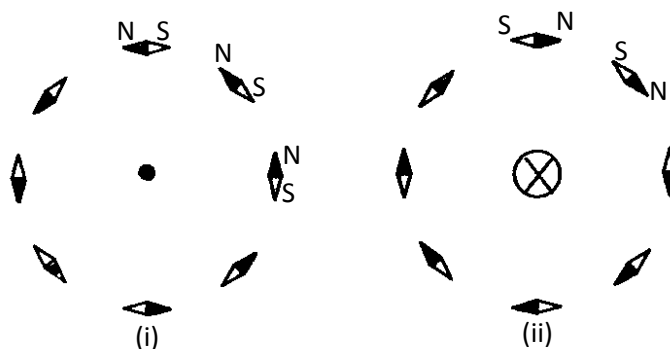
Q. What is magnetic effect of electric current?

Ans: An electric current through a conductor produces a magnetic field in the region surrounding the conductor. This effect is known as magnetic effect of electric current

Note:

- In 1820 Danish physicist H.C. Oersted observed that a current in a straight wire caused a noticeable deflection in a nearby magnetic compass needle. He also found that alignment of the needle is tangential to an imaginary circle which has straight wire as its centre and has its plane perpendicular to the wire. It is noticeable when the current is large and needle is close to the wire. Reversing the direction of the current reverses the orientation of the needle.

Iron filings sprinkled around the wire arrange themselves in concentric circles with wire as the centre. From the above observations Oersted concluded that moving charge or current produces a magnetic field, which can be called as magnetic effect of current.



Magnetic field due to a straight wire carrying current

(i) when current emerges out of the plane of the paper

(ii) when current moves into the plane of the paper

- The space around a magnet or around a current carrying conductor in which the magnetic effects are experienced is known as the region of magnetic field. The strength of the magnetic field is called **magnetic field strength** or **magnetic induction** or **magnetic flux density**. It is a vector quantity represented by B . Its SI unit is **tesla (T)**.