

Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (Second Year)

Subject: Geology

Paper Code: GEC-103

Paper Title: Earth's Dynamics and Structural Geology

Unit: I

Module Name: Convection in the Earth's core and production of its magnetic field

Module No: 13

Name of the Presenter: Aliston D'Souza

NOTES:

CONVECTION IN THE EARTH'S CORE AND PRODUCTION OF ITS MAGNETIC FIELD

The Earth's main magnetic field is generated within its molten iron Core through a combination of thermal (convection) movement, the Earth's daily rotation, and electrical currents within the fluid iron rich outer core. These elements form a dynamo that sustain' a magnetic field that is similar to that of a bar magnet slightly inclined to a line that joins the North and South Geographic Poles.

Convection of molten iron, within the outer liquid core, along with a Coriolis Effect caused by the overall planetary rotation tends to organize "electric currents" in rolls aligned along the north-south polar axis. When a conducting fluid flows across existing magnetic field, electric currents are induced, which in turn creates another magnetic field. Magnetic field reinforces the Original magnetic field; a dynamo is created which sustains itself. This is called the "Dynamo Theory" and it explains how the earth's magnetic field is sustained.