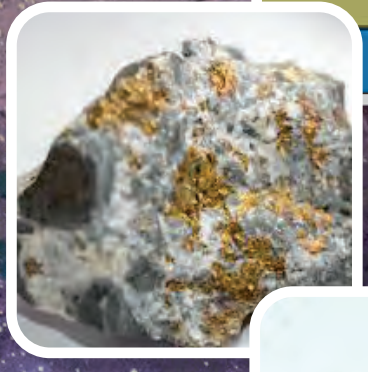
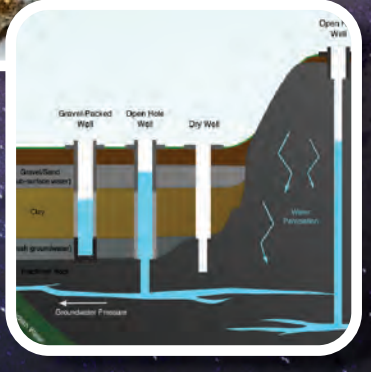
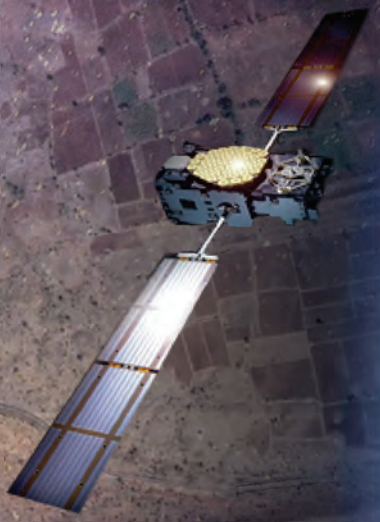
EARTH'S DYNAMICS







GEOLOGY

STANDARD TWELVE

The Coordination Committee formed by GR No. Abhyas - 2116/(Pra.Kra.43/16) SD - 4 Dated 25.4.2016 has given approval to prescribe this textbook in its meeting held on 30.1.2020 and it has been decided to implement it from academic year 2020-21.

GEOLOGY

STANDARD TWELVE

N8P5X4

Download DIKSHA App on your smartphone. If you scan the Q.R. Code on this page of your textbook, you will be able to access full text and the audio-visual study material relevant to each lesson provided as teaching and learning aids.

2020

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The Constitution of India

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhu-Gujarāta-Marāthā
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,
Jaya jaya jaya, jaya hē.

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Preface

Dear Students,

Heartfelt congratulations and welcome to standard XII !

Your study of the geology so far, has enriched you with knowledge about the fascinating world of minerals, formed on and within our planet earth, the processes that lead to their formation and to the creation and evolution of the magnificent landforms from the lofty Himalayas to the deep ocean trenches. In your previous studies of the subject, as a part of geography during your school years and as a separate subject of geology in your XI standard, you have been introduced to the basic ideas about the various geological processes.

This new edition of the book presents an extended view of the subject from an earth and planetary sciences point of view. The various applied aspects of the subject of geology have been presented to interesting and thought provoking writings on hydrogeology, economic mineral deposits and geohazards. The science of data collection and interpretation of satellite data has also been introduced. It gives me immense satisfaction and pleasure to present this new edition of class XII text book.

Just like the XI standard text book, this book too is an accessible and comprehensive guide to the important topics in geology, more so from an applied science point of view. The topics are illustrated with examples and case studies from India in general and the state of Maharashtra in particular. The book also includes numerous thought provoking activities and questions.

Studying and understanding the dynamics of our planet, its resources, even the play of internal forces and surface atmospheric phenomena which sometimes cause loss of human lives and property, will surely lead to the formation of an aware and sensitive citizen, who is equipped to work towards the betterment of the planet. You are encouraged to use the QR code and links given within the text for achieving a better understanding the various topics. This book is sure to cause many students to take up earth science as a lifelong career.

(Vivek Gosavi)
Director
Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune

Pune
Date: 21 February 2020
Bhartiya Saur : 2 Phalguna 1941

STD. XI Geology

Learning Outcomes

- The goal of this book is to introduce students with fundamental knowledge of diverse applied fields in geology like hydrogeology, palaeontology, stratigraphy, petrology, geohazards and structural geology and remote sensing.
- In addition, the analytical exercises incorporated within the text will imbibe the habit of scientific and analytical thinking in the learner.
- Understand the origin and classification of the common rocks found on the earth's surface.
- Know the processes involved in the formation of various surface landforms due to the interaction of the earths internal forces with the crustal layers.
- Identify the common rocks and their underlying processes of formation.
- Understand the science of palaeontology and fossil formation.
- Collect, illustrate and analyse basic geological information from the field.
- Interpret geological maps and construct cross sections.
- Develop and aptitude for detailed understanding of rocks and structures.
- Communicate observations and interpretation in a geological report.

- For Teachers -

You have been teaching earth sciences in general and geology specifically, and as experienced mentors, we all know that the subject of geology is interdisciplinary and hence teaching geology is a challenging task that needs integration of both theoretical and practical aspects. As the field of earth sciences has seen a continuous evolution in the accepted theories and due to the improved technologies, leading to better understanding of natural phenomena, the need to update and upgrade the first edition of the book published in 2012 was felt necessary. In this context, following guidelines should be strictly adhered to, to improve the overall teaching of the subject.

- Please refer to Science and Geography textbooks from standard V to standard X before using this textbook.
- It is expected that the teacher and student is well versed with the topics and subject matter dealt with in the new edition of the Std. XI textbook, published in 2019.
- To begin with, get familiar with the textbook yourself and enhance the subject by referencing and cross referencing the concepts, adding case studies and updating new information.
- Plan carefully and independently for the teaching of the content and supervising activities in each chapter.
- The present book has been prepared for constructive and activity-based teaching.
- The teaching learning interactions, processes and participation of all students is very necessary and so is your active guidance.
- Use geological aids for appropriate understanding of the concepts.
- Some chapters may be difficult to follow and therefore you are expected to utilize the allotted number of periods fully. Do not finish the chapter in a hurry.
- Major concepts of geology are complex and need deep understanding. Hence, encourage group work putting in collective efforts. This will help the students to assimilate the content without feeling the 'burden of learning'.
- Facilitate peer learning as much as possible by frequently reorganizing the class structure.
- Please do not teach the lessons in the book by just reading them aloud.
- Follow the order of the chapters as given in the content as the concepts have been introduced in a sequence to facilitate knowledge building.
- USE the highlighted boxed in texts titled 'Do you know?' for adding value and joy to the process of understanding the subject.
- The contents of 'DO You Know?' are NOT to be used for evaluation.
- Use QR Code given in the textbook. Some weblinks have been given at the end of the book.
- Teacher as well as students are expected to use these references. These references will surely help to explore knowledge beyond the textbook.
- Please bear in mind that extra reading is always helpful for in depth understanding of the subject.
- Use thought-provoking, activity-oriented, open-ended, multiple choice questions for evaluation. Some examples are given at the end of every chapter.

Contents

Front Page : A mosaic depicting various chapters as well as the dynamic nature of our planet Earth.

Back Page : Calcite (nail head spar) on fine quartz crystals. Location Chandivli quarries, Mumbai, Maharashtra
Dimensions : 6.5cm × 2.5cm × 4.0cm,
Green Apophyllite - Location: Pashan quarries, Pune, Maharashtra, India.
Dimensions: 2.5cm × 2.0cm × 1.5cm

Acknowledgement : Back page photos by Mr. Arnav Samant