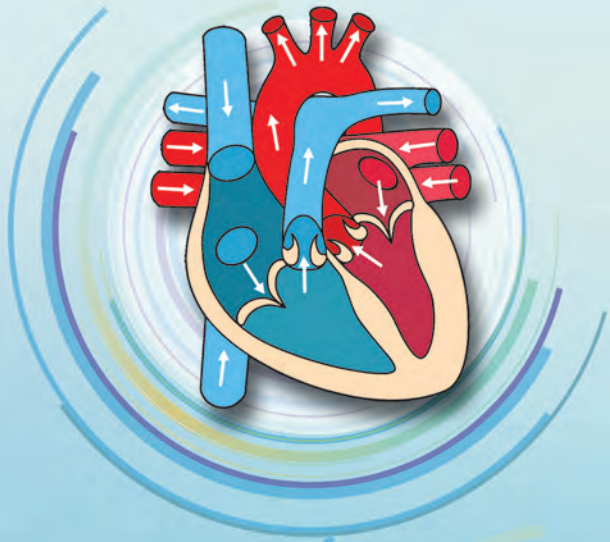
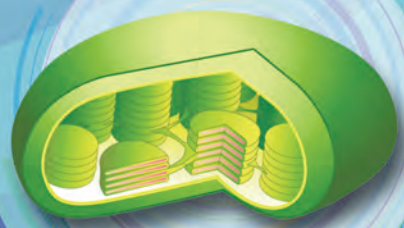
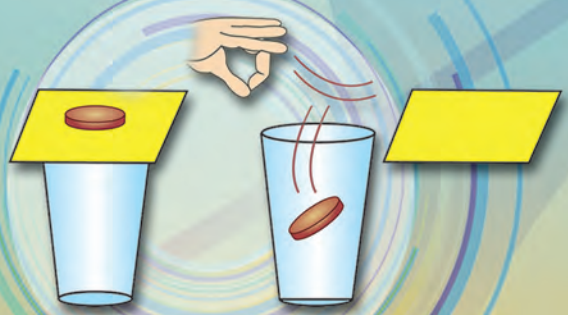
GENERAL SCIENCE

STANDARD EIGHT







The Constitution of India

Chapter IV A

Fundamental Duties

ARTICLE 51A

Fundamental Duties- It shall be the duty of every citizen of India–

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities, to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

(g) to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;

(k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.

Permission is granted for enforcing this textbook from the academic year 2018-19 in the meeting, held on the date 29.12.2017, of the coordination committee constituted by the Government Resolution No: Abhyas-2116/(pra kra.43/16) S.D -4 dated 25.4.2016

GENERAL SCIENCE

STANDARD EIGHT

Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune.

The digital textbook can be obtained through DIKSHA App on your smartphone by using the Q.R.Code given on title page of the textbook and useful audio-visual teaching-learning material of the relevant lesson will be available through the Q.R. Code given in each lesson of this textbook.

First Edition : 2018
Reprint : 2021

© Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune - 411 004.

The Maharashtra State Bureau of Textbook Production and Curriculum Research reserves all rights relating to the book. No part of this book should be reproduced without the written permission of the Director, Maharashtra State Bureau of Textbook Production and Curriculum Research, 'Balbharati', Senapati Bapat Marg, Pune 411004.

Science Subject Committee :

Dr. Chandrashekhar Murumkar, Chairman
Dr. Dilip Sadashiv Joag, Member
Dr. Sushma Dilip Joag, Member
Dr. Pushpa Khare, Member
Dr. Imtiyaz S. Mulla, Member
Dr. Jaydeep Vinayak Sali, Member
Dr. Abhay Jere, Member
Dr. Sulabha Nitin Vidhate, Member
Smt. Mrinalini Desai, Member
Shri. Gajanan Suryawanshi, Member
Shri. Sudhir Yadavrao Kamble, Member
Smt. Dipali Dhananjay Bhale, Member
Shri. Rajiv Arun Patole, Member-Secretary

Science Study Group :
Dr. Prabhakar Nagnath Kshirsagar
Dr. Vishnu Vaze
Dr. Prachi Rahul Chaudhary
Dr. Shaikh Mohammed Waquioddin H.
Dr. Ajay Digambar Mahajan
Dr. Gayatri Gorakhnath Choukade
Shri. Prashant Panditrao Kolase
Shri. Sandip Popatlal Chordiya
Shri. Sachin Ashok Bartakke
Smt. Shweta Dilip Thakur
Shri. Rupesh Dinkar Thakur
Shri. Dayashankar Vishnu Vaidya
Shri. Sukumar Shrenik Navale
Shri. Gajanan Nagoraoji Mankar
Shri. Mohammed Atique Abdul Shaikh
Smt. Anjali Lakshmikant Khadke
Smt. Manisha Rajendra Dahivelkar
Smt. Jyoti Milind Medpilwar
Smt. Dipti Chandansingh Bisht
Smt. Pushpalata Ravindra Gawande
Smt. Anita Rajendra Patil
Smt. Kanchan Rajendra Sorate
Shri. Rajesh Vamanrao Roman
Shri. Nagesh Bhimsevak Telgote
Shri. Shankar Bhikan Rajput
Shri. Manoj Rahangdale
Shri. Hemant Achyut Lagvankar
Smt. Jyoti Damodar Karane
Shri. Vishwas Bhave

Cover and illustrations :
Shri. Vivekanand Shivshankar Patil
Ashana Advani

Typesetting :
DTP Section, Textbook Bureau, Pune

Translation :
Dr. Sushma Dilip Joag
Dr. Dilip S. Joag
Dr Pushpa Khare
Dr. Jaydeep V. Sali
Shri. Sandip P. Chordiya
Smt. Shweta D. Thakur

Scrutiny :
Dr. Pushpa Khare
Smt. Shweta Thakur

Paper : 70 GSM Creamwove

Print Order :

Printer :

Production :
Shri. Sachchitanand Aphale
Chief Production Officer
Shri. Rajendra Vispute
Production Officer

Publisher :
Shri. Vivek Uttam Gosavi
Controller
Maharashtra State Textbook Bureau,
Prabhadevi, Mumbai - 400 025.

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,

Welcome to std VIIIth. We have great pleasure in offering you this General Science textbook based on the new syllabus. From Primary level till today, you have studied Science through various textbooks. From std 8th onwards, you will be able to study the fundamental concepts and technology through the medium of different branches of Science.

The basic purpose of this 'General Science' text book is 'Understand and explain to others' the science that relates to our day to day lives. While studying the concepts, principles and theories in Science, understand their connection to daily affairs. While studying this textbook, use the sections 'Can you recall? and 'Can you tell?' for revision. You will learn Science through many activities given under the titles such as 'Observe and discuss' and 'Try this' or ' Let's try this'. Activities like 'Use your brain power', 'Research', 'Think about it' will stimulate your thinking power. We insist that you must perform all these activities.

Many experiments have been included in this text book. Follow the given procedure, make your own observations and conclusions to perform these experiments. You can ask for help from your teachers, parents or classmates - whenever needed. This book reveals the Science, interesting information and the developed technology behind many day to day happenings. All of this is explainecd through the medium of activities.

In today's world of speedy technology, you are already close to computers and smartphones. While studying this textbook, make full and proper use of Information and Communication Technology tools.

For effective learning, Q.R. code app will provide you additional infromation, useful audio-visual material regarding each lesson. This will definitely help you and make you content rich.

While performing given activities and experiments take all precautions regarding handling of apparatus, chemicals etc. and encourage others to do the same.

When the activities involve plants and animals, you must perform them keeping in mind the nature and environment conservation. Harm to animals and plants must be strictly avoided.

Do communicate with us about the part you liked as well as about the difficulties that you faced while reading, understanding and studying the book. Our best wishes for your academic progress.

(Dr. Sunil Magar)
Director
Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune

Pune
Date : 18 April 2018, Akshaya Tritiya
Indian Solar Year : 28 Chaitra 1940

For Teachers

- The real objective of science education is to develop the ability to think logically and with discretion about events that are happening around us.
- From std IIIrd to Vth we have explained easy science to our students through the medium of 'Environmental Study' while from std VIth to VIIth we are introducing them Science through the text books.
- Considering the age group std 8th students, they should be given an opportunity and scope for their curiousity about the events of the world, their propensity to find out the causes behind them and to develop their own initiative and capacity to take the lead.
- In the process of learning Science, the skill of performing experiments is necessary for observation, logic, conclusion, comparison and application of recieved information. Therefore purposeful efforts must be taken to develop all these skills. All the observations by the students should be accepted and we should help them to reach upto expected conclusion.
- It is our responsibility that students will take interest to enrich their science. As usual, you must be leading to develop scientific attitude, creativity, skills and content in your students.
- You can use 'Let's recall' to review the previous knowledge required for a lesson and 'Can you tell?' to introduce a topic by eliciting all the knowledge that the students already have from their own reading experience. You may of course use any of your own activities or questions for this. Activities given under 'Try this' and 'Let's try this' help to explain the content. Former are for students to do themselves and latter are those that you are expected to demonstrate.

  'Use your brain power!' is meant for application of previous knowledge as well as the new lesson, and 'Always remember' gives important suggestions/information or values. 'Research', 'Find out', 'Do you know?', 'Introduction to scientists' and 'Institutes at work' are meant to give some information about the world outside the textbook and to develop the habit of doing independent reference work to obtain additional information.
- This textbook is not meant only for reading and explaining but to guide students to obtain knowledge through activities. An informal atmosphere in the classroom is required to achieve the aims of this textbook. Encourage more and more student to participate in discussions, experiments and activities. Special efforts should be made to organise presentations or report-reading in the class based on students' activities and projects. Science Day and other relevant occasions/ days must be observed.
- The science content of the textbook has been complemented with Information Communication Technology. To study different scientific contents these techniques must be used under your observation. Also you should encourage the students to gain additional information by using Q.R. codes.

Front and back covers : Pictures of various activities, experiments and concepts in the book.

DISCLAIMER Note : All attempts have been made to contact copy righters (©) but we have not heard from them. We will be pleased to acknowledge the copy right holder (s) in our next edition if we learn from them.

Learning Outcomes : Standard VIII

The learner is to be provided with opportunities in pairs /groups/ individually in an inclusive setup and encouraged to ...

- Explore surroundings, natural processes, phenomena using senses viz.watching, touching, tasting, smelling, hearing.
- Pose questions and find answers through reflection, discussion, designing and performing appropriate activities, role plays, debates, use of ICT, etc.
- Record the observations during the activity , experiments, surveys, field visits, etc.
- Analyse recorded data, interpret results and draw inference / make generalisations and share findings with peers and adults.
- Exibits creativity presenting novel ideas, new designs /patterns ,improvisation, etc.
- Internalise, acquire and appreciate values such as cooperation, collaboration, honest reporting, judicious use of resources, etc .
- To do different activities by awaken different crisis /disaster improvising in vicinity.
- Understand the astronomical concepts and progress done by human about it.
- Discuss on scientific research stories and understand its importance.
- To take efforts for protection of the environment. For eg: The use of fertilizers and pesticides, to take efforts for conservation of the environment.
- To use the available raw materials using proper planning and format.
- To spread awareness about consequences of misuse of natural resources.

The learner...

08.72.01 differentiates materials and organisms, such as, natural and human made fibres; contact and non -contact forces; liquids as electrical conductors and insulators; plant and animal cells; viviparous and oviparous animals,on the basis of their properties, structure and functions.

08.72.02 classifies materials and organisms based on properties /characteristics, for example, metals and non metals; useful and harmful microorganisms; sexual and asexual reproduction; celestial objects; exhaustible and inexhaustible natural resources, etc.

08.72.03 conducts simple investigations to seek answers to queries, for example, What are the conditions required for combustion ? Why do we add salt and sugar in pickles and murambas? Do liquids exert equal pressure at the same depth ?

08.72.04 relates processes and phenomenon with causes, for example, smog formation with the presence of pollutants in air; deterioration of monuments with acid rain, etc .

08.72.05 explains processes and phenomenon, for example, various processes in human and animals; production and propagation of sound; chemical properties of electric current etc.

08.72.06 write word equation for chemical reactions, for example, reactions of metals and non-metals with air, water and acids, etc.

08.72.07 measures angles of incidence and reflection.

08.72.08 prepares slides of microorganisms; onion peel, human cheek cells, etc and describes their microscopic features.

08.72.09 draws labelled diagram/flow charts, for example, structure of cells, structure of heart and respiratory system, experimental set ups, etc .

08.72.10 constructs/prepare models using materials from surroundings and explains their working, for example, ektari, electroscope, fire extinguisher, string instruments, periscope etc.

08.72.11 exhibits creativity in designing, planning making use of available resources, etc.

08.72.12 applies learning of scientific concepts in day–to-day life, for example, purifying water; segregating biodegradable and non-biodegradable wastes; increasing crop production;using appropriate metals and non-metals for various purposes; increasing/reducing friction; challenging myths, legends and taboos regarding adolescence, etc.

08.72.13 discusses and appreciates stories of scientific discoveries.

08.72.14 makes efforts to protect environment, for example, using resources judiciously; making controlled use of fertilisers and pesticides; suggesting ways to cope with environmental hazards, etc.

08.72.15 sensitises others with the over utilization of natural resources.

08.72.16 exhibits values of honesty, objectivity, cooperation, freedom from fear and prejudices.

08.72.17 explains the formation of universe and the progress of humans in space technology.

08.72.18 uses different ICT equipments to understand the different scientific concepts.

Contents