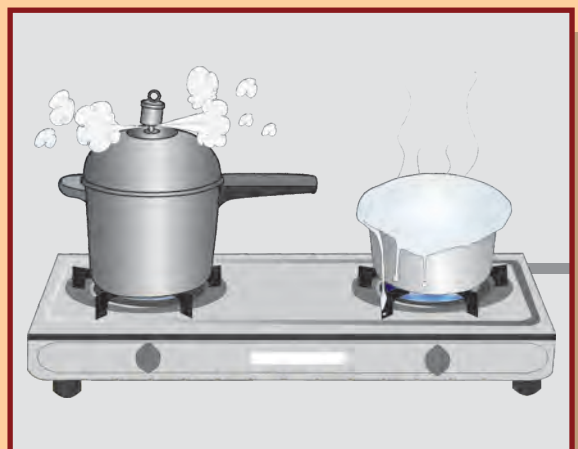
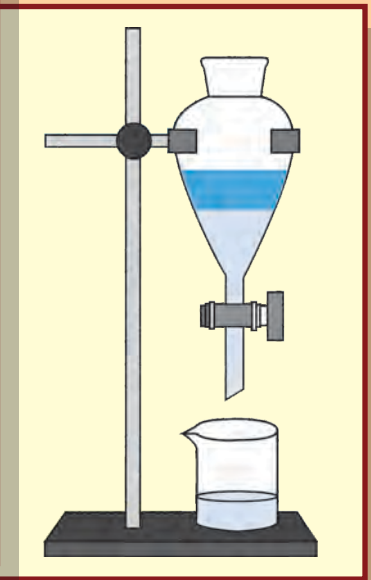
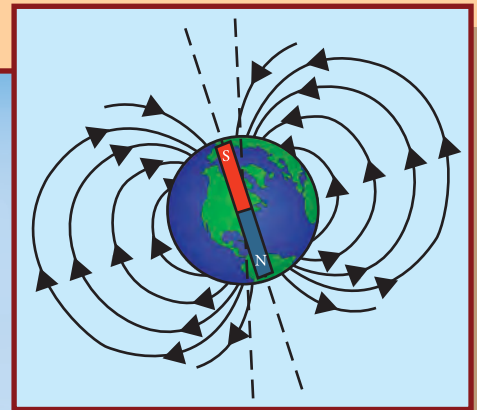
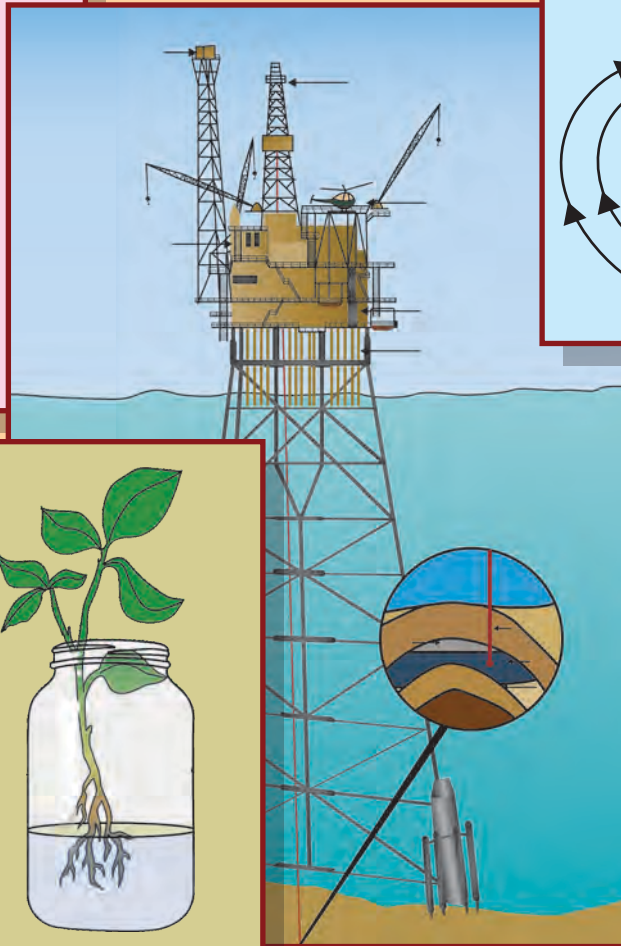


GENERAL SCIENCE

STANDARD SEVEN



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.

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 3.3.2017



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



5YEK1X

The digital textbook can be obtained through DIKSHA APP on a 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 : 2017
Fourth 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 Jog, 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 Shaikh Mohammed Waquiuddin H.

Dr Vishnu Vaze

Dr Ajay Digambar Mahajan

Dr Gayatri Gorakhnath Choukade

Shri. Sukumar Shrenik Navale

Shri. Prashant Panditrao Kolse

Shri. Dayashankar Vishnu Vaidya

Smt. Kanchan Rajendra Sorate

Smt. Anjali Khadke

Smt. Shweta Thakur

Smt. Jyoti Medpilwar

Smt. Pushpalata Gawande

Shri. Rajesh Vamanrao Roman

Shri. Shankar Bhikan Rajput

Smt. Manisha Rajendra Dahivelkar

Shri. Hemant Achyut Lagvankar

Shri. Nagesh Bhimsevak Telgote

Shri. Manoj Rahangdale

Shri. Mohammed Atique Abdul Shaikh

Smt. Dipti Chandansingh Bisht

Shri. Vishwas Bhawe

Smt. Jyoti Damodar Karane

Coordination :

Rajiv Arun Patole

Special Officer for Science

Translation :

Smt. Mrinalini Desai

Dr Sushma Jog

Scrutiny :

Dr Dilip Jog

Smt. Pushpa Khare

Coordination :

Dhanavanti Hardikar

Academic Secretary for Languages

Santosh Pawar

Assistant Special Officer, English

Paper :

70 GSM Creamwove

Print Order :

Printer :

Production :

Sachchitanand Aphale

Chief Production Officer

Rajendra Vispute

Production Officer

Cover and illustrations :

Shri. Vivekanand Shivshankar Patil

Ashana Advani

Shri. Suresh Gopichand Isave

Typesetting :

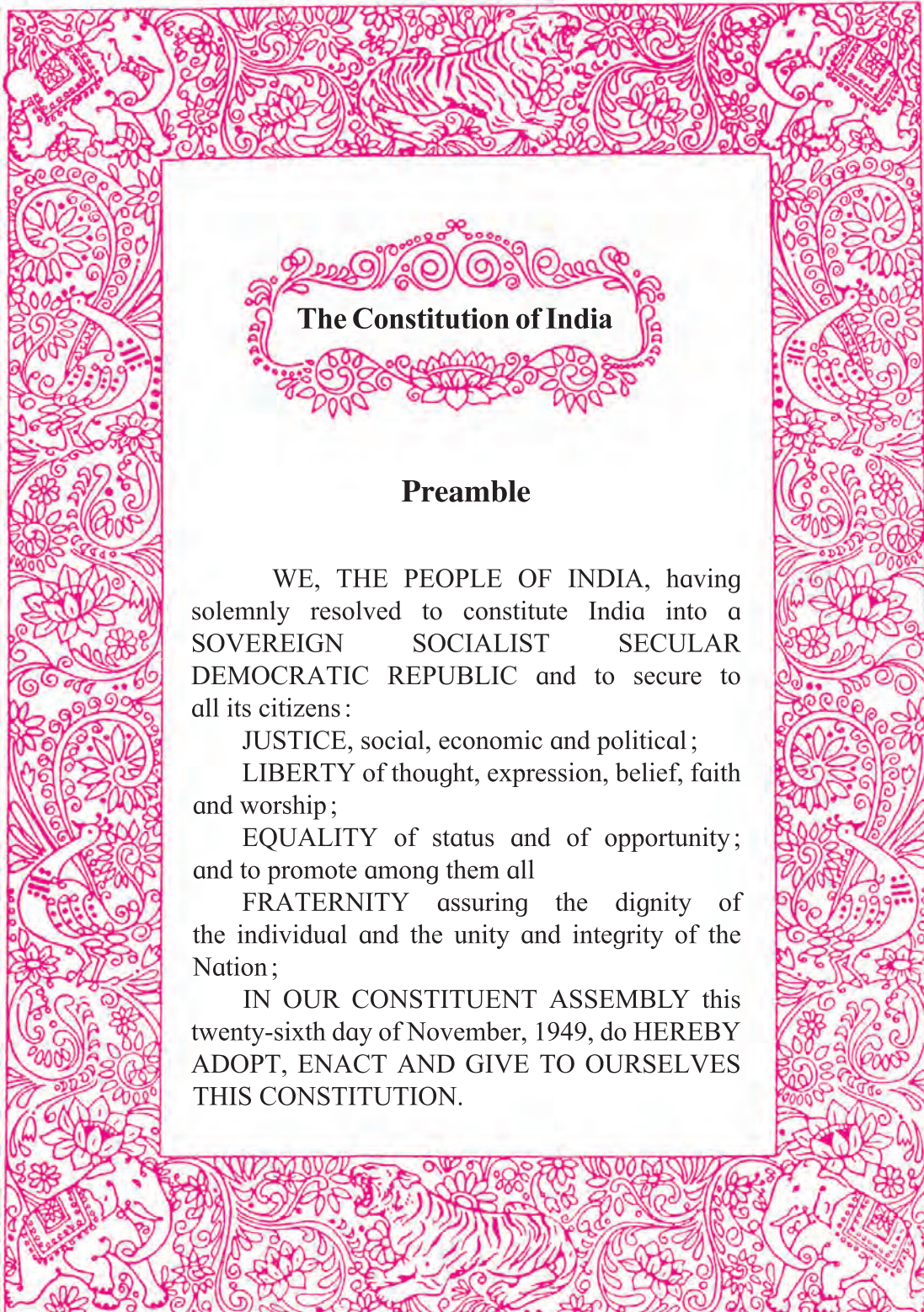
DTP Section, Textbook Bureau, Pune

Publisher :

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 VII.

We have great pleasure in offering to you this General Science textbook, based on the new syllabus. In Stds III to V you have acquired some knowledge of Science from your Environment Science textbooks. Last year, however, you began to study Science from a separate General Science textbook.

The basic purpose of this textbook can be said to be 'Understand and explain to others'. You will learn Science through many activities such as Observe and Discuss, Use your brain power ! Find Out, Think about it, etc. Do take part in all these activities. Use the activities Can you recall? and Can you tell? to revise the science you have already learnt.

The textbook also includes many activities and experiments under the titles Try this and Let's try this. You must yourself carefully carry out these activities, experiments and observations. Wherever necessary you may, of course, take the help of your teachers, parents or classmates. On some occasions you may have to look for some information. You must use the library or technology like the Internet for that purpose. A number of activities that explain the science behind everyday events, have been given. You too must make your own efforts to use science in everyday life. What you learn from the lessons in this textbook will not only help you with the studies of higher classes, but will also enable you to do many new things and equip you with many new skills.

Take all precautions while doing the activities and experiments given in the textbook and encourage others to take the same precautions. Understand Science and learn to use it. Lastly, a gentle reminder to you that, while carrying out activities related to plants and animals, all care must be taken to avoid doing them any harm or causing them injury.

Do tell us about the parts that you like as well as about the difficulties you face as you read and understand and study this textbook. We are especially eager to know about the questions that come to your mind as you study science. Do write to us about them.

Our best wishes for your academic progress.

Pune

Date : 28 March 2017

Gudi Padwa

Indian Solar Year :

Chaitra 7, 1939



(Dr Sunil Magar)

Director

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

For Teachers

- We learn many new facts while studying science. So, young children with a lot of curiosity find the subject enjoyable. However, the real objective of learning science is to learn to think about the world and all the events that take place in it, in an objective and rational manner so as to lead a happy confident life. Through the study of science we also expect children to develop social consciousness, awareness about conservation of the environment and adeptness in handling technology.
- We need to have adequate factual information and understanding about our world. However, in a rapidly changing world, the knowledge gained today may not suffice tomorrow. Hence, the skills required for obtaining knowledge must be learnt. These are the very skills that are learnt in the process of studying science.
- Many topics in science are more easily learnt by direct observation than by reading about them. Some abstract phenomena become visible through the effects they have. Hence, we do experiments related to them. They help to learn the skills of inference and verification. While learning science, these skills are learnt and internalized. This is an important objective of learning science.
- That we should be able to articulate what we have learnt, explain it to others, use it for further studies and finally bring about the proper changes in our behaviour is also an expectation from the learning of science. That is why, it is important to ensure that along with the content of the subject, these skills are also developed.
- **Can you recall?** is a section for reviewing the related topics already learnt, while the purpose of **Can you tell?** is to introduce a topic by bringing together what the children might already know about a topic through their own reading or experience. **Try this** is meant to give some specific experience while **Let's try this** are the parts that teachers must demonstrate to the class. **Use your brain power!** makes children apply the knowledge gained. **Always remember—** gives some important instructions or values. The sections **Find out**, **Do you know?** and **Science watch** are to create an awareness of the vast information that cannot be included in the textbook and to inculcate the habit of doing reference work independently.
- Teachers can see for themselves that this textbook is not meant for reading and explaining but for guiding students to gain knowledge by carrying out the given activities. Reading the textbook **after** the children have carried out the activities and discussed them in the class will make it easy and will also help to bring together and reinforce what they have already learnt. The attractive pictures will support their efforts to learn.
- Teachers should prepare well for discussions under **Can you tell?**, **Use your brain power!** etc. and for the various activities and experiments. They should maintain an informal atmosphere during such discussions and activities, encourage everyone to participate and make efforts to organize Science Days, presentations in the class, etc.

• **Front Cover** : Experiments and activities included in the textbook.

• **Back Cover** : Flamingos and other birds visiting Bhigwan in Pune District.

English General Science - Standard VII - Learning Outcomes

Suggested Pedagogical Processes	Learning Outcomes
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 trips/field visits, etc. - Analyse recorded data, interpret results and draw inference/make generalisations and share findings with peers and adults. - Exhibit 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. - Plan for sky watching/observation and record the observation of different constellations and nakshatras. - Be aware of and act on the various crises and disasters happening in the surroundings.	The learner — 07.72.01 Identifies materials and organisms, (such as animal fibres; types of teeth; mirrors and lenses) on the basis of observable features, for example, appearance, texture, functions, etc. 07.72.02 Differentiates materials and organisms such as digestion in different organisms; unisexual and bisexual flowers; conductors and insulators of heat; acidic, basic and neutral substances, images formed by mirrors and lenses, etc. on the basis of their properties, structure and function. 07.72.03 Classifies materials and organisms based on properties/characteristics, for example, plant and animal fibres, physical and chemical changes. 07.72.04 Conduct simple investigations to seek answers to queries, for example, extract of coloured flowers and their uses. Do leaves other than green also carry out photosynthesis? Is white light composed of many colours? 07.72.05 Relates processes and phenomenon with causes, for example, wind speed with air pressure, crops grown with types of soil, depletion of water table with human activities etc. 07.72.06 Explains processes and phenomenon, for example, processing of animal fibres, modes of transfer of heat; organs and systems in human and plants, heating and magnetic effects of electric current, etc. 07.72.07 Write word equation for chemical reactions, for example, acid-base reaction, corrosion, photosynthesis, respiration, etc. 07.72.08 Measures of calculates, for example, temperature, pulse rate, speed of moving objects, time period of a simple pendulum, etc. 07.72.09 To understand scientific concepts by using the instruments like microscope, thermosflask, centrifuge. 07.72.10 Awaken (dietary) about the diet and identify food adulteration. 07.72.11 To explain the correlation between the measures of various physical quantities. 07.72.12 Draws labelled diagrams/flow charts, for example, organ systems in human and plants; electric circuits; experimental set ups; life cycle of silk moth, etc. 07.72.13 Plots and interprets graphs, for example, distance time graph, sound frequency-high and low pitch of sound. 07.72.14 Constructs models using materials from surroundings and explains their working, for example, stethoscope, anemometer, electromagnets, Newton's colour disc, bakery food, magnetic needle, etc.. 07.72.15 Discusses and understands the importance of stories of scientific discoveries. 07.72.16 Applies learning of scientific concepts in day-to-day life, for example, dealing with acidity; testing and treating soil; taking measures to prevent corrosion; cultivation by vegetative propagation; connecting two or more electric cells in proper order in devices; taking measures during and after disasters; suggesting methods for treatment of polluted water for reuse; uses of magnet, preparation of soap and their uses; separating components from mixture, etc.

	07.72.17 Explains the uses of natural resources by classifying them.
	07.72.18 Makes efforts to protect environment, for example, following good practices for sanitation at public places; minimising generation of pollutants; planting trees; sensitising others with the consequences of excessive consumption of natural resources, etc.
	07.72.19 Exhibits creativity in designing, planning, making use of available resources, etc.
	07.72.20 Exhibits values of honesty, objectivity, cooperation, freedom from fear and prejudices.
	07.72.21 Remains awaken about famine, flood, cloudburst, lightning strikes, storms, etc. in the circumjacent to prevent them, uses the circumventions in day-to-day life.
	07.72.22 Understands the different scientific concepts, process by using different ICT equipments and techniques.
	07.72.23 Makes efforts to remove misconceptions related to zodiac signs and Nakshatra by observing the sky.

CONTENTS

No.	Chapters	Page No.
1.	The Living World : Adaptations and Classification	1
2.	Plants : Structure and Function.....	10
3.	Properties of Natural Resources	16
4.	Nutrition in Living Organisms.....	26
5.	Food Safety	34
6.	Measurement of Physical Quantities	41
7.	Motion, Force and Work.....	46
8.	Static Electricity	51
9.	Heat	58
10.	Disaster Management	64
11.	Cell Structure and Micro-organisms	71
12.	The Muscular System and Digestive System in Human Beings	81
13.	Changes – Physical and Chemical.....	88
14.	Elements, Compounds and Mixtures	92
15.	Materials we Use	100
16.	Natural Resources	104
17.	Effects of Light.....	113
18.	Sound : Production of Sound	118
19.	Properties of a Magnetic Field.....	126
20.	In the World of Stars	131