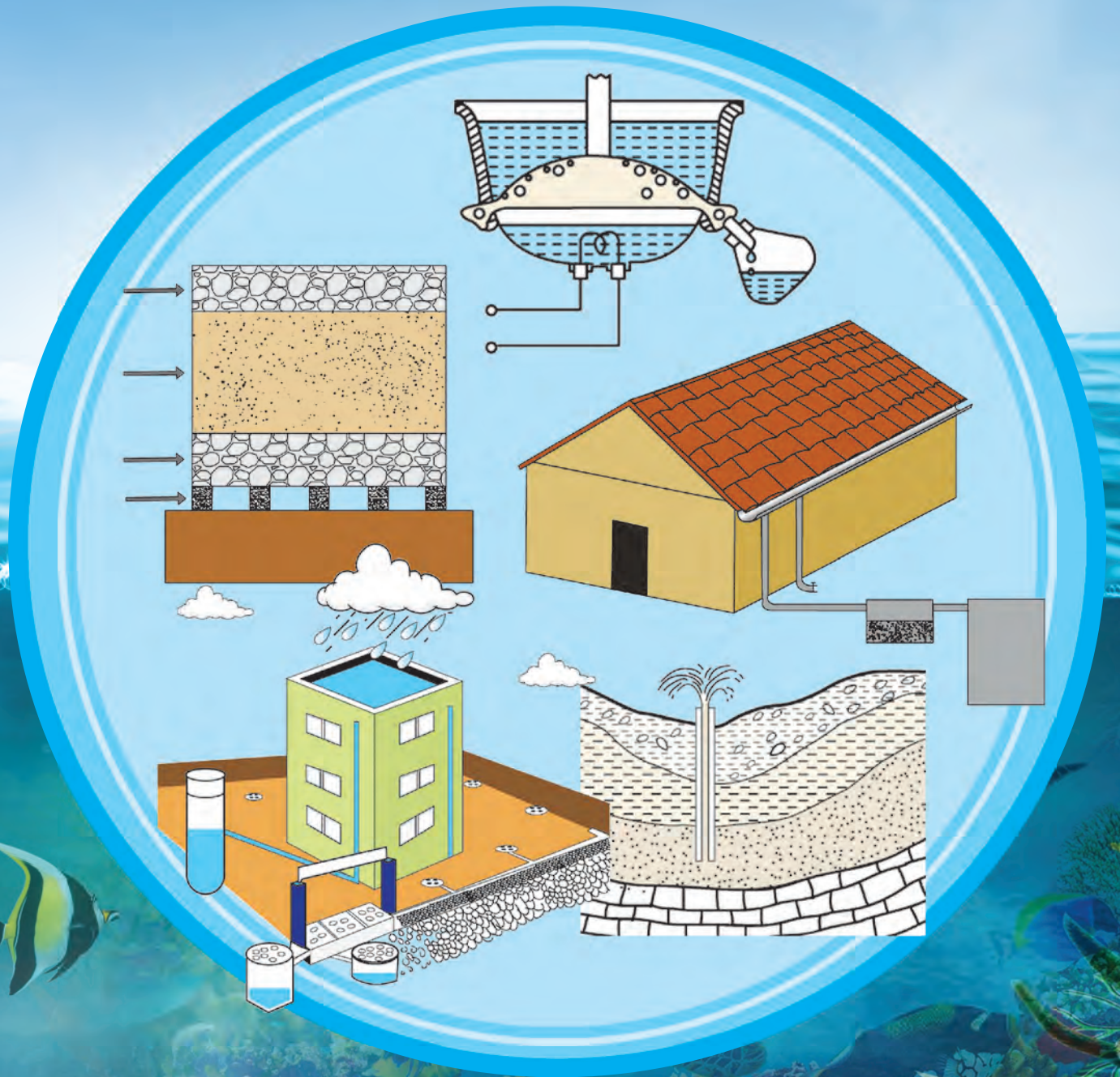




WATER SECURITY

Standard Nine



Govt. Resolution No.: Study - 2116 (Q. No. 43/16) SD-4 dated 25.04.2016 in the meeting of the Coordinating Committee dated 30.01.2020 has approved this textbook from the academic year 2020-21 .

Water Security

Standard Nine



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



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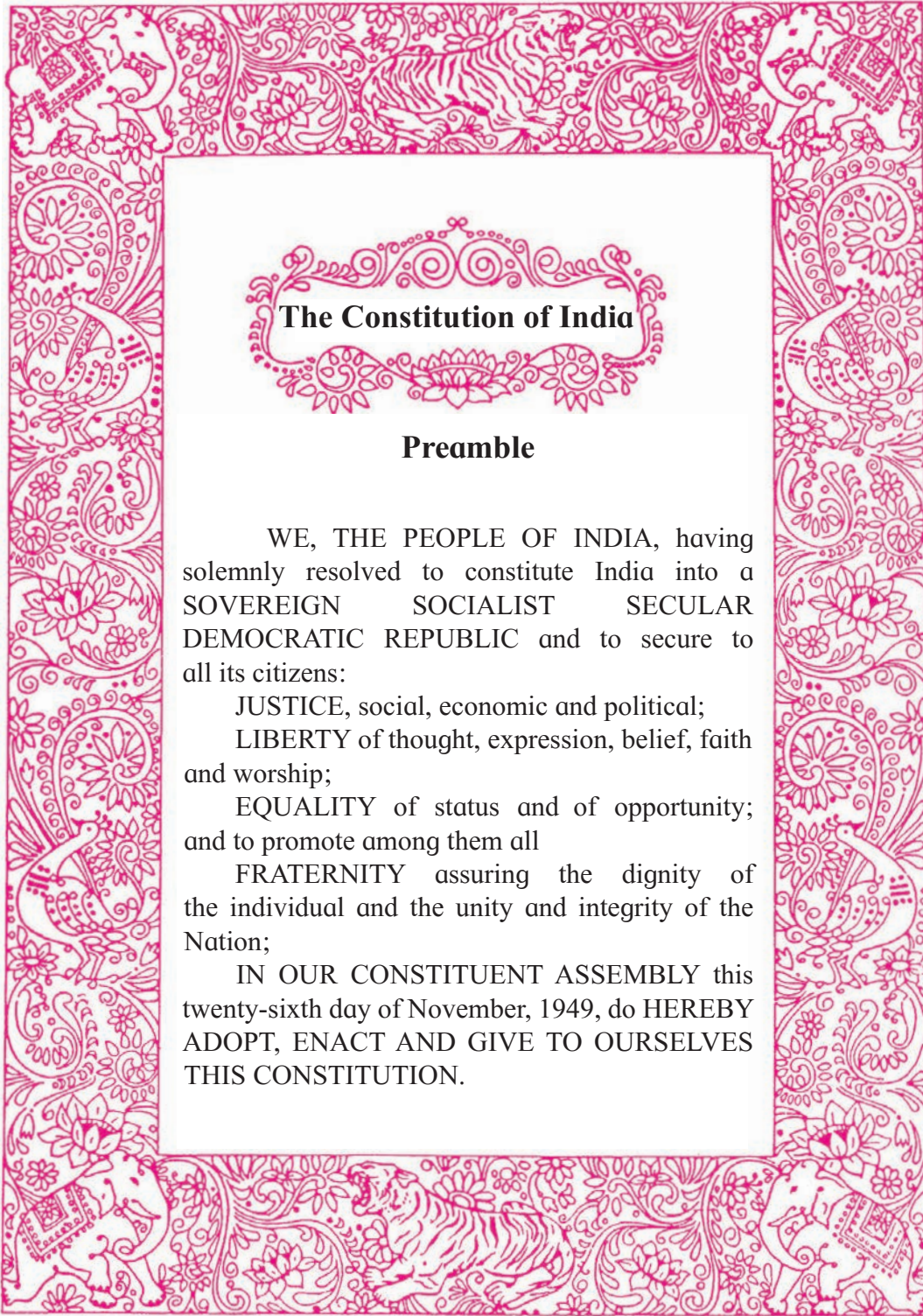
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The Constitution of India

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,

Welcome to Class IX. You are studying various subjects as per National Curriculum Framework 2005, State Curriculum Framework 2010, State Secondary Education Curriculum 2012 and Restructured Secondary Education Curriculum 2016. As per Govt. misc. 2019 / S.No. (243/19)SD4, dated 8th August 2019, Water security is a compulsory grade subject for secondary education level from the academic year 2020-21. We are very happy to handover you the 9th grade textbook on water security. Studying various subjects from primary level till now has developed various abilities in your personality.

You all know that there are different kinds of problems in the environment. They are based on various factors. At the school level, the main objective of the curriculum is that, the student should study the environment problems/issues, suggest solutions and behave accordingly. The issue of water security has been framed with the same objective in mind. While studying the subject of water security, you have to carefully observe (analyse) the situation and the relevant factors around you. Understand the various concepts, principles, theories in this subject and relate them to daily practice. The major components of water education, water conservation, water management and water quality are covered in this textbook. The textbook has been deliberately based on information and activities while designing the topic of water security. You must apply the complete information of the subject through activities and projects.

The main purpose of this textbook is to understand and apply the knowledge of water security related to our daily life and explain its application to others. In the textbook, various concepts, theories are explained through figures and actions. Exercises are also given along with it. Try all these activities, experiments yourself to understand the subject properly. Seek the help of your teachers, parents, society and classmates as you practice. Connect the knowledge you have learned with your daily life.

In today's fast paced world of technology, you are familiar with computers and smartphones. Therefore, make proper use of information communication technology tools while studying this water security textbook. Be careful while handling various apparatus, important materials while doing activities and experiments and tell others to be careful too. Also try environmental conservation while doing activities and observations. Take care that plants and animals are not harmed. While reading, studying and understanding this textbook, please let us know your favourite part of it as well as the difficulties encountered.

Best wishes to you for your academic progress.



(Vivek Gosavi)

Director

Pune

Date : 21 February 2020

Indian Solar: 2 Phalgun 1941

Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune 4

Standard 9th Water Security

Unit	Competency Statements / Learning Outcomes
Water Education	1. To be able to name the different steps in the water cycle. 2. Be able to describe the processes that take place in each step of the water cycle. 3. To be able to explain the scientific causation of the water cycle. 4. Identify the type of clouds in the area. 5. Be able to describe the process of rainfall. 6. Identify the type of rainfall in one's own region. 7. To be able to tell the difference between seepage and run-off. 8. Be able to tell the type of rivers in the area. 9. To be able to describe the type of landforms formed by the river. 10. To be able to explain the involvement of components in the river ecosystem. 11. Be able to map the river system in the district. 12. Explain the use of the river. 13. To be able to classify the various religious rituals, various types of actions taking place along the river as right and wrong. 14. To be able to take care of the river by explaining the measures for river protection. 15. To be able to classify the watershed/catchment area. 16. Describe the type of watershed/catchment area in the area. 17. To be able to explain the properties of rain. 18. To be able to explain the distribution of water and type of ground water. 19. Identify the aquifers of your district by understanding the types and characteristics of aquifers. 20. To identify the types of soil and rocks in district / taluka through observation.
Water Conservation	1. Understand the work of the Water Conservation Department and be able to review the work of this department in the area. 2. To be able to suggest various water conservation methods that are suitable for the area. 3. To be able to take measures considering the benefits of rain water conservation. 4. Understand the relationship between groundwater recharge and structure of underground and choose recharge method accordingly. 5. To be able to use roof water for recharge. 6. To be able to calculate the rainfall in the area. 7. Explain the importance of soak pits in the groundwater recharge process. 8. Explain the care to be taken while refilling wells and borewells.

Water Management	1. To be able to calculate the water usage and calculate the water requirement for the family, village, city. 2. To be able to explain the importance of water required for business. 3. To create awareness in the society to stop water leakage considering the importance of water conservation. 4. Understand and adopt different methods of saving water. 5. To be able to get information about the water saving efforts being implemented by the government. 6. To create awareness in the society about habits to avoid wastage of water. 7. Convincing others about the importance of water. 8. Explain the water journey from different water sources to the house. 9. To be able to describe the process of water purification.
Water Quality	1. To be able to state the factors that affect water quality. 2. To be able to name the components required for water quality. 3. To be able to suggest necessary measures for sewage management. 4. To be able to state the properties of drinking water / water quality criteria. 5. To be able to describe suitable water storage methods as well as water disinfection methods to maintain water quality at household level. 6. Understanding the causes of water pollution and reviewing the pollution of water resources in the area. 7. To be able to suggest necessary measures to stop water pollution in the area.

For teachers and students

Through the subject of class IX water security, the necessary information in daily life has been introduced. Attempts have been made to create awareness and develop a positive attitude towards the various situations around us, some important issues and measures to be taken to avoid adverse effects on their daily lives. It is necessary to strive for the development of personality, inquisitiveness, efficiency and a sense of leadership. While studying and teaching the subject of water security, the steps will have to be taken not only for the purpose of knowing the subject matter but also for the purpose of observation, reasoning through comparison, conclusion and inference.

It is important to understand the subject and the actions taken to explain it to others, to experience it for oneself and to make proper application of the information gained. While formulating the subject, the main topics of water security include water education, water conservation, water management and water quality.

The arrangement of these chapters has been done not only in the form of information but also with various figures and photographs. The information given is rich in various activities and experiments. Discussion, Observation, Tell, See are the titles given to give impetus to the thought process. 'Did you know ?' is the title for extra important information. Through this subject, we want to make our role, actions and behavior useful to the society on many issues such as the water crisis, water scarcity that we find around us and in fact we personally feel. It will help to mould oneself and society.

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