

# SCIENCE

TEXTBOOK FOR CLASS VI



EDUCATION (ELEMENTARY) DEPARTMENT  
GOVERNMENT OF ASSAM



# Our National Flag

The Indian National Flag is the symbol of the land and people of India. Our National Flag is a tricolour panel made up of three rectangular panels or sub-panels of equal widths. The colour of the top panel is India saffron (*Kesaria*) and that of the bottom is India green. The middle panel is white, bearing at its centre the design of the Ashoka Chakra in navy blue colour with 24 equally spaced spokes. The Ashoka Chakra is visible on both sides of the Flag in the centre of the white panel. The Flag is rectangular in shape with the ratio of the length to the height (width) being 3 : 2.

Dr S. Radhakrishnan explained about the National Flag in the Constituent Assembly which adopted it, “Bhagwa or the saffron colour denotes renunciation or disinterestedness. The white in the centre is light, the path of truth to guide our conduct. The green shows our relation to the soil, our relation to the plant life here on which all other life depends. The Ashoka Wheel is the wheel of the law of dharma. Truth or *satya*, dharma or virtue ought to be the controlling principles of those who work under this flag. Again, the wheel denotes motion. There is life in movement. India must move and go forward.”

If done properly, there is no restriction on the display of the National Flag by common people, private organisations or educational institutions. Consistent with the dignity and honour of the Flag as detailed in the Flag Code of India, anyone may hoist/display the National Flag on all days and occasions, ceremonial or otherwise.

Where the practice is to fly the Flag on any public building, it must be flown on the building on all days including Sundays and holidays and, except as provided in the Code, it shall be flown from sunrise to sunset irrespective of weather conditions. The Flag may be flown on such a building at night also but this should be only on very special occasions.

The Flag must not be used as a drapery in any form except in State/Military/Central Paramilitary Forces funerals. In such cases also the Flag must not be lowered into the grave or burnt in the pyre. The Flag must not be draped over the hood, top, sides or back of a vehicle, train or boat. It must not be used or stored in such a manner as may damage or soil it. When the Flag is in a damaged or soiled condition, it must not be cast aside or disrespectfully disposed of but be destroyed as a whole in private, preferably by burning. The Flag must not be used as a covering for a building. Although the Flag can be used as a costume or uniform, it should not be used as undergarments or below the waist. It must not be embroidered or printed upon cushions, napkins, etc. Lettering of any kind must not be put upon the Flag. It must not be used in any form of advertisement. Showing disrespect or insult to the National Flag is a punishable offence.

The National Flag must not be flown from a single masthead simultaneously with any other flag. There must be separate mastheads for different flags. When a foreign dignitary travels in a car provided by Government, the National Flag is flown on the right side of the car and the Flag of the foreign countries on the left side of the car.

In the event of the death of the President, the Vice-President or the Prime Minister, the National Flag is half-masted throughout the country.

Over the last five decades, several people including members of the armed forces have laid down their lives to keep the tricolour flying in its full glory. We must salute and cherish our National Flag.

# SCIENCE

TEXTBOOK FOR CLASS VI



DEVELOPED BY : NATIONAL COUNCIL OF EDUCATIONAL RESEARCH  
AND TRAINING, NEW DELHI

ADOPTED BY : STATE COUNCIL OF EDUCATIONAL RESEARCH  
AND TRAINING, ASSAM

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**FREE TEXTBOOK**

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Minister, Assam



Education, Welfare of Plain  
Tribe & Backward classes



## MESSAGE

Textbooks are the key components of scholastic education. Students gain knowledge that flows through the pages of the textbooks. Students, enriched with knowledge, are the wealth and future of our State as well as our Nation. The Renaissance of human civilization had been influenced by Education only. With this realization and foresight, the present Government has accorded the highest priority to the development of the Educational sector in the State.

The present State Government, in a bid to complement the untiring efforts of the student community to achieve success and fulfil ones' ambition and contribute to the welfare of the State, has been implementing various educational assistance programmes under "Pragyan Bharati". Under this programme, Free Textbooks are being distributed to the students from Pre Primary, Class I to Class XII which is now extended up to degree level since 2020. The benefits have been further augmented by waiving admission fees for the students of Secondary and Degree level. The State Government has also waived examination fees at the Secondary level for the students from the economically weaker section. Free uniforms are also being provided to the students up to the High School level. Under the "Anundoram Borooah Award Scheme", free laptops and at times, substituted with cash rewards, are being provided to meritorious students who excel in the HSLC examinations.

The Free Textbook component of the noble programme - "Pragyan Bharati" comprises printing, publication and distribution and, it is implemented with concerted efforts of the Assam State Textbook Production and Publication Corporation Limited (ASTPPC Ltd.), State Council of Educational Research and Training (SCERT), Board of Secondary Education, Assam (SEBA) and Assam Higher Secondary Education Council (AHSEC). I thank all these wings of the education department and appreciate their sincere hard work to make the scheme successful. My best wishes remain to all the Students - the human resources of the Nation for relentlessly pursuing their studies with all dedication and sincerity to gain a successful foothold to a bright future.

**(Dr. Ranoj Pegu)**  
Education Minister, Assam

## FOREWORD

The National Curriculum Framework (NCF), 2005, recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on the steps that school principals and teachers will take to encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that, given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge.

These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required number of teaching days are actually devoted to teaching. The methods used for teaching and evaluation will also determine how effective this textbook proves for making children's life at school a happy experience, rather than a source of stress or boredom. Syllabus designers have tried to address the problem of curricular burden by restructuring and reorienting knowledge at different stages with greater consideration for child psychology and the time available for teaching. The textbook attempts to enhance this endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups, and activities requiring hands-on experience.

National Council of Educational Research and Training (NCERT) appreciates the hard work done by the Textbook Development Committee responsible for this book. We wish to thank the Chairperson of the advisory group in Science and Mathematics, Professor J.V. Narlikar and the Chief Advisor for this book, Dr. N. Rathnasree for guiding the work of this committee. Several teachers contributed to the development of this textbook; we are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Education, Ministry of Human Resource Development under the Chairpersonship of Professor Mrinal Miri and Professor G.P. Deshpande, for their valuable time and contribution. As an organisation committed to systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

New Delhi  
December 2005

Director  
National Council of Educational  
Research and Training

# 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.**

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*Nirada Devi*

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Guwahati

## A NOTE FOR STUDENTS

The team of Prahelika and Pragyana will be with you as you journey through this textbook. They love to ask questions. All kinds of questions come to their minds and they collect them in their sacks. Sometimes, they may share some of these questions with you, as you read through the chapters.

Prahelika and Pragyana are also on the lookout for answers to many questions— sometimes the questions seem answered after they discuss them with each other, sometimes through discussions with other classmates, teachers or their parents.

Answers to some questions do not seem available even after all these. They might need to experiment on their own, read books in the library, send questions to scientists.

Just dig and dig and dig into all possibilities and see if the questions can be answered. Perhaps, they would carry some of the unanswered questions in their sacks to higher classes.

What will really thrill them, would be your adding questions to their sacks or answer to their questions. Sometimes activities are suggested in the textbook, results or findings of these by different groups of students would be of interest to other students and teachers. You can complete the suggested activities and send your results or findings to Prahelika and Pragyana. Do keep in mind that activities that involve using blades, scissors or fire need to be done strictly under the care of your teachers. Stick to the precautions given and then enjoy doing all the suggested activities. Mind, the book will not be able to help you much, if the activities are not completed!

You can send your feedback for Prahelika and Pragyana at.



To

The Head  
Department of Education in  
Science and Mathematics,  
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New Delhi 110016

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3. Type the alphanumeric code in the search bar
4. View list of e-resources available and click on any e-resource of your choice

# CONSTITUTION OF INDIA

Part IV A (Article 51 A)

## Fundamental Duties

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, wildlife 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.



# CONTENTS

<b>FOREWORD</b>	<i>iii</i>
<b>A NOTE FOR STUDENTS</b>	<i>vii</i>
<b>CHAPTER 1</b>	
<b>FOOD: WHERE DOES IT COME FROM?</b>	<b>1</b>
<b>CHAPTER 2</b>	
<b>COMPONENTS OF FOOD</b>	<b>8</b>
<b>CHAPTER 3</b>	
<b>FIBRE TO FABRIC</b>	<b>18</b>
<b>CHAPTER 4</b>	
<b>SORTING MATERIALS INTO GROUPS</b>	<b>26</b>
<b>CHAPTER 5</b>	
<b>SEPARATION OF SUBSTANCES</b>	<b>35</b>
<b>CHAPTER 6</b>	
<b>CHANGES AROUND US</b>	<b>46</b>
<b>CHAPTER 7</b>	
<b>GETTING TO KNOW PLANTS</b>	<b>52</b>
<b>CHAPTER 8</b>	
<b>BODY MOVEMENTS</b>	<b>66</b>
<b>CHAPTER 9</b>	
<b>THE LIVING ORGANISMS AND THEIR SURROUNDINGS</b>	<b>79</b>
<b>CHAPTER 10</b>	
<b>MOTION AND MEASUREMENT OF DISTANCES</b>	<b>95</b>
<b>CHAPTER 11</b>	
<b>LIGHT, SHADOWS AND REFLECTIONS</b>	<b>107</b>
<b>CHAPTER 12</b>	
<b>ELECTRICITY AND CIRCUITS</b>	<b>116</b>
<b>CHAPTER 13</b>	
<b>FUN WITH MAGNETS</b>	<b>125</b>
<b>CHAPTER 14</b>	
<b>WATER</b>	<b>136</b>
<b>CHAPTER 15</b>	
<b>AIR AROUND US</b>	<b>147</b>
<b>CHAPTER 16</b>	
<b>GARBAGE IN, GARBAGE OUT</b>	<b>155</b>