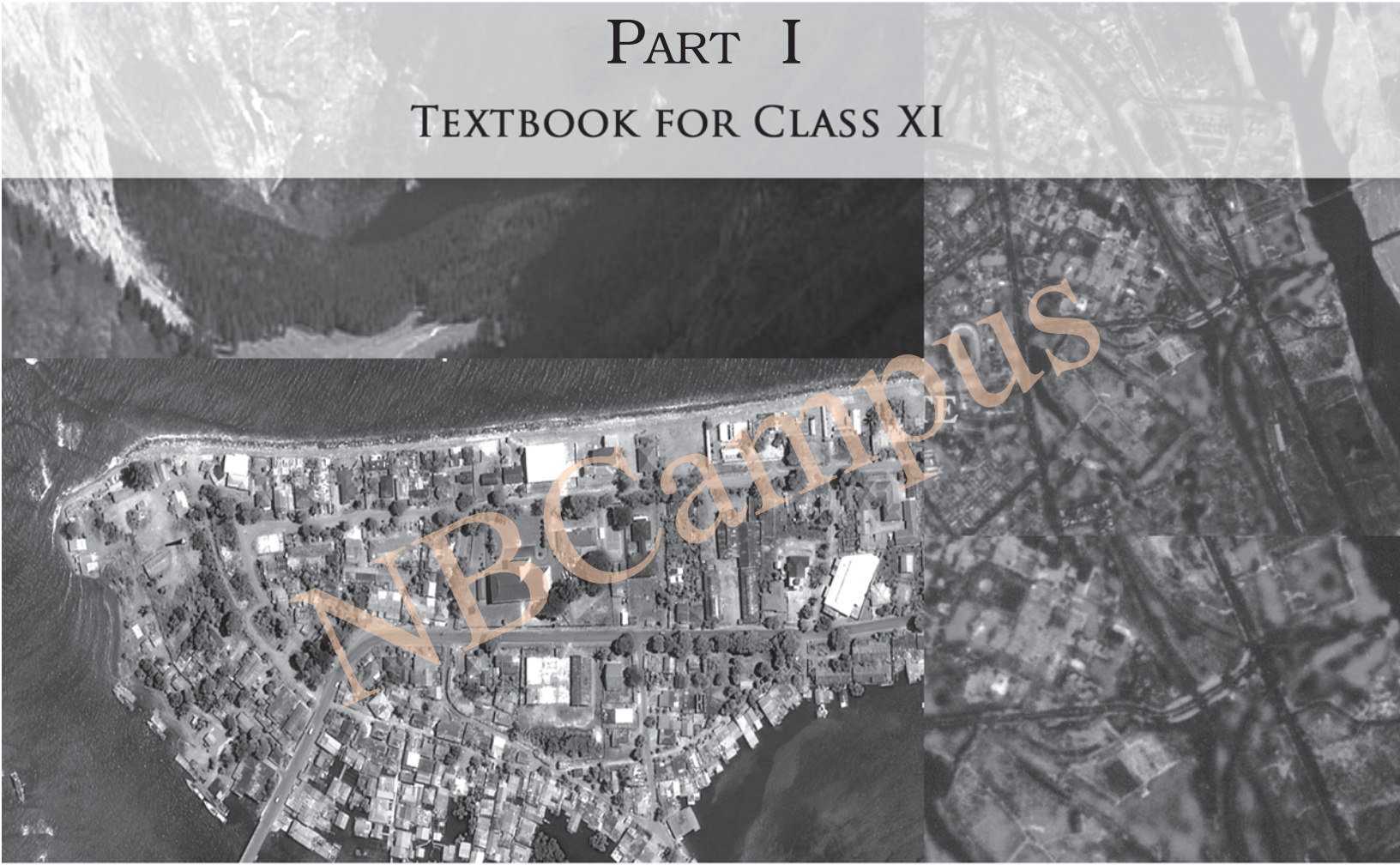


# PRACTICAL WORK IN GEOGRAPHY

PART I  
TEXTBOOK FOR CLASS XI



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्  
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

ISBN 81-7450-595-4

**First Edition**

June 2006 Asadha 1928

**Reprinted**

February 2007 Magha 1928

December 2007 Pausa 1929

May 2008 Jaishtha 1930

February 2009 Magha 1930

January 2010 Magha 1931

January 2011 Magha 1932

November 2013 Kartika 1935

December 2014 Pausa 1936

March 2016 Phalgun 1937

February 2017 Phalgun 1938

November 2017 Agrahayana 1939

December 2018 Agrahayana 1940

**PD 60T BS**

© National Council of Educational  
Research and Training, 2006

₹ 100.00

Printed on 80 GSM paper with NCERT  
watermark

Published at the Publication Division by the  
Secretary, National Council of Educational  
Research and Training, Sri Aurobindo Marg,  
New Delhi 110 016 and SDA Print 'N' Pack,  
D-19, Sector-B1, Tronica City Industrial  
Area, Loni, District Ghaziabad-201102 (U.P.)

**ALL RIGHTS RESERVED**

- No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which it is published.
- The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

**OFFICES OF THE PUBLICATION  
DIVISION, NCERT**

NCERT Campus  
Sri Aurobindo Marg  
New Delhi 110 016 Phone : 011-26562708

108, 100 Feet Road  
Hosdakere Halli Extension  
Banashankari III Stage  
Bengaluru 560 085 Phone : 080-26725740

Navjivan Trust Building  
P.O.Navjivan  
Ahmedabad 380 014 Phone : 079-27541446

CWC Campus  
Opp. Dhankal Bus Stop  
Panihati  
Kolkata 700 114 Phone : 033-25530454

CWC Complex  
Maligaon  
Guwahati 781 021 Phone : 0361-2674869

**Publication Team**

Head, Publication Division : M. Siraj Anwar

Chief Editor : Shveta Uppal

Chief Business Manager : Gautam Ganguly

Chief Production Officer : Arun Chitkara

Assistant Editor : R.N. Bhardwaj

Production Assistant : Mukesh Gaur

**Cover and Layout**

Shweta Rao

**Cartography**

Narendra Kumar Saini  
and Cartographic Designs  
Agency, New Delhi





## 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.

The 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 committee for textbooks in Social Sciences, at the higher secondary level, Professor Hari Vasudevan and the Chief Advisor for this book, Professor M.H. Qureshi 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  
20 December 2005

*Director*  
National Council of Educational  
Research and Training



## **TEXTBOOK DEVELOPMENT COMMITTEE**

### **CHAIRPERSON, ADVISORY COMMITTEE FOR SOCIAL SCIENCE TEXTBOOKS AT HIGHER SECONDARY LEVEL**

Hari Vasudevan, *Professor*, Department of History, University of Calcutta, Kolkata

### **CHIEF ADVISOR**

M. H. Qureshi, *Professor*, CSRD, Jawaharlal Nehru University, New Delhi

### **MEMBERS**

Rupa Das, *PGT*, DPS, R.K. Puram, New Delhi

S.M. Rashid, *Professor*, Department of Geography, Jamia Millia Islamia, New Delhi

Sucharita Sen, *Asstt. Professor*, CSRD, Jawaharlal Nehru University, New Delhi

Y. Sreekanth, *Lecturer*, DEME, NCERT, New Delhi

### **MEMBER-COORDINATOR**

Tannu Malik, *Lecturer*, DESSH, NCERT, New Delhi



# Constitution of India

## Part IV A (Article 51 A)

### 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.

**Note:** The Article 51A containing Fundamental Duties was inserted by the Constitution (42nd Amendment) Act, 1976 (with effect from 3 January 1977).

\* (k) was inserted by the Constitution (86th Amendment) Act, 2002 (with effect from 1 April 2010).



## ACKNOWLEDGEMENTS

The National Council of Educational Research and Training acknowledges the contribution of Milap Chand Sharma, *Reader*, CSRD, JNU; Muzammil Husain Quasmi, *Lecturer*, IASE, Jamia Millia Islamia; Aruna Gordan, *PGT*, St. Thomas School, New Delhi and C. Pargi, *PGT*, KV, Neemuch in the development of this textbook.

Acknowledgements are also due to Savita Sinha, *Professor and Head*, Department of Education in Social Science and Humanities for her valuable support at every stage of preparation of this textbook.

The Council is thankful to the Survey of India for certification of maps given in the textbook. It also gratefully acknowledges the support of individuals and organisations as listed below for providing various photographs and other materials used in the textbook-

Milap Chand Sharma, CSRD, JNU for photographs of gentle slope, steep slope, concave slope, convex slope, conical hill, plateau, V-shaped valley, U-shaped valley, gorge, spur, cliff, waterfall and rapids in Chapter 5; Narendra Kumar Saini, *Cartographer*, JMI for box 1.1, Figures 1.1, 6.1, 7.1, 8.3 and 8.5; Concept Publishing Company (Book : Fundamentals of Cartography by R.P. Misra and A. Ramesh), New Delhi for Figures 1.4, 1.5 and 1.6 and NCERT textbook (Remote Sensing by Meenakshi) for Figures 7.3 and 7.6; Survey of India for Figures 1.2, 1.3 and parts of toposheet on page nos. 66 and 68; National Atlas and Thematic Mapping Organisation for Figures 1.7, 1.8, 1.9, 1.10, 1.11, 1.12 and 1.13; Indian Institute of Remote Sensing, Dehradun for Figures 6.4, 6.6, 6.8, 6.9 and 6.10; Regional Remote Sensing Service Centre, Jodhpur for Figures 7.4; National Remote Sensing Agency, Hyderabad for Figures 7.9, 7.11, 7.13, 7.14, 7.15, 7.16, 7.17 and image on page on 106; Newspaper *The Hindu* for Figure 6.2 and Digital Globe Agency for Figure 7.10.

The Council also gratefully acknowledges the contributions of Anil Sharma, *DTP Operator*; Sameer Khatana and Amar Kumar Prusty, *Copy Editors*; Shrestha and Deepti Sharma, *Proof Readers*; Dinesh Kumar, *Computer Station Incharge* who have helped in giving a final shape of this textbook. The efforts of Publication Department, NCERT are also duly acknowledged.





**The following are applicable to all the maps of India used in this book**

© Government of India, Copyright 2006

1. The responsibility for the correctness of internal details rests with the publisher.
2. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.
3. The administrative headquarters of Chandigarh, Haryana and Punjab are at Chandigarh.
4. The interstate boundaries amongst Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the "North-Eastern Areas (Reorganisation) Act.1971," but have yet to be verified.
5. The external boundaries and coastlines of India agree with the Record/Master Copy certified by Survey of India.
6. The state boundaries between Uttaranchal & Uttar Pradesh, Bihar & Jharkhand and Chhattisgarh & Madhya Pradesh have not been verified by the Governments concerned.
7. The spellings of names in this map, have been taken from various sources.





# CONTENTS

FOREWORD	v
<b>CHAPTER 1</b> Introduction to Maps	1
<b>CHAPTER 2</b> Map Scale	17
<b>CHAPTER 3</b> Latitude, Longitude and Time	26
<b>CHAPTER 4</b> Map Projections	35
<b>CHAPTER 5</b> Topographical Maps	49
<b>CHAPTER 6</b> Introduction To Aerial Photographs	69
<b>CHAPTER 7</b> Introduction To Remote Sensing	84
<b>CHAPTER 8</b> Weather Instruments, Maps and Charts	107





# 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.