

ગુજરાત રાજ્યના શિક્ષણવિભાગના પત્ર-ક્રમાંક  
મશબ / 102012 / છ, તા. 7-9-2012 - થી મંજૂર

# BIOLOGY

## Standard 12

(Semester IV)



### 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 respect my parents, teachers and all my  
elders and treat everyone with courtesy.  
I pledge my devotion to my country and its people.  
My happiness lies in their well-being and prosperity.

Price : ₹ 76.00



Gujarat State Board of School Textbooks  
'Vidyayan', Sector 10-A, Gandhinagar-382010

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## PREFACE

In compliance with the new national syllabi designed by N.C.E.R.T. according to NCF-2005 and core-curriculum the Secondary and Higher Secondary Board of Education, Gujarat State, has prepared the new syllabi of various subjects with the approval of the State Government.

The State Textbook Board delightfully introduces the new edition of **Biology** for **Semester IV** for the students which has been prepared according to the new syllabus of Biology approved by the State Government for **Semester IV of XII standard**.

It has been reviewed and revised thoroughly by the subject experts.

The Textbook Board has taken all precautions to make it interesting, advantageous and inerroneous. However, the Board welcomes suggestions from the concerned intellectuals for the qualitative enrichment of this book.

**H. K. Patel** GAS  
Director  
Date : 01-8-2013

**Dr. Nitin Pethani**  
Executive President  
Gandhinagar

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## 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.

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