

**KERALA READER**  
**PHYSICS**  
**(ENGLISH)**

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**STANDARD** (X)



**Government of Kerala**  
**Department of Education**

**2004**

**Kerala Reader**  
**PHYSICS (English Medium)**  
**Standard X**

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**Education Department**  
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## PLEDGE

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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 respect to my parents, teachers and all elders and treat everyone with courtesy.

I pledge my devotion to my country and my people,  
In their well-being and prosperity alone lies my happiness.

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## THE NATIONAL ANTHEM

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*Jana Gana Mana Adhinayaka Jaya He  
Bharatha Bhagya Vidhata  
Punjab Sindhu Gujarata Maratha  
Dravida Utkala Banga  
Vindhya Himachala Jamuna Ganga  
Uchala Jaladhi Taranga  
Tava Subha Name Jage  
Tava Subha Ashisa Mage,  
Gahe Tava Jaya Gatha  
Jana Gana Mangala Dayaka Jaya He  
Bharatha Bhagya Vidhata  
Jaya He Jaya He Jaya He  
Jaya Jaya Jaya Jaya He.*

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# CONSTITUTION OF INDIA

## Part IV A

### FUNDAMENTAL DUTIES OF CITIZENS

#### 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 practice 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, 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 achievements.

Dear Students,

You would have by now developed a better understanding of the concepts and activities in physics which is an evergrowing field of knowledge. The study of physics becomes meaningful when you can understand the physical world and you are able to explain natural phenomena properly. For this you must cultivate the habit of conducting experiments with different equipment, and recording and analysing the data from the experiments. The new knowledge that you thus gain should help you in your practical life as well as to explore higher levels of knowledge. How the inventions in physics improve human welfare and development is now a common experience to us. Hence the student should get sufficient opportunities to understand the mutual relations between science and technology and to use this in different ways. I hope that this book would setup various real contexts for you to learn physics and progress to the higher levels.

The illustration and experiments given in the book would help you to understand the concepts clearly. You may select more illustrations and experiments with the help of your teacher to make learning more enjoyable and effective. Further activities listed in the textbook can be taken up individually or in groups through the science club. I hope that you build up the habit of conducting more experiments and record the data on your own, and thereby progress to the higher level of physics.

Dr. P.M. JALEEL  
Director, SCERT

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