



GOVERNMENT OF TAMIL NADU

HIGHER SECONDARY FIRST YEAR

PHYSICS

VOLUME - 2

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Department of School Education

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

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E-book



Assessment



DIGI links



Let's use the QR code in the text books ! How ?

- Download the QR code scanner from the Google PlayStore/ Apple App Store into your smartphone
- Open the QR code scanner application
- Once the scanner button in the application is clicked, camera opens and then bring it closer to the QR code in the text book.
- Once the camera detects the QR code, a url appears in the screen. Click the url and goto the content page.

HOW TO USE THE BOOK?

Scope of Physics

- Awareness on higher learning - courses, institutions and required competitive exams
- Financial assistance possible to help students to climb academic ladder



Learning Objectives:

- Overview of the unit
- Gives clarity on the goals and intention of the topics



- Additional facts related to the topics covered to facilitate curiosity driven learning

Example problems

- To ensure understanding, problems/illustrations are given at every stage before advancing to next level



- Visual representation of concepts with illustrations
- Videos, animations, and tutorials



ICT

- To harness the digital skills to class room learning and experimenting

Summary

- Recap of salient points of the lesson

Concept Map

- Schematic outline of salient learning of the unit

Evaluation

- Evaluate students' understanding and get them acquainted with the application of physical concepts to numerical and conceptual questions

Books for Reference

- List of relevant books for further reading

Solved examples

- Solutions to exercise problems are accessible here. In addition, a few solved examples are given to facilitate students to apply the concepts learnt.

Competitive Exam corner

- Model Questions - To motivate students aspiring to take up competitive examinations such as NEET, JEE, Physics Olympiad, JIPMER etc

Practical

- List of practical and the description of each is appended for easy access.

Glossary

- Scientific terms frequently used with their Tamil equivalents

Back wrapper: Solvay Conference 1927, Belgium

Photograph of the attendees of the most famous fifth solvay international conference held in october 1927. 17 of the 29 scientists found in this photograph are Nobel laureates (shown in bold).

Front row (L to R) : **I. Langmuir, M. Planck, Marie Curie, H.A. Lorentz, A. Einstein,**
P. Langevin, Ch.E. Guye, C.T.R. Wilson, O.W. Richardson

Middle row (L to R): **P. Debye, M. Knudsen, W.L. Bragg, H.A. Kramers, P.A.M. Dirac,**
A.H. Compton, L.de Broglie, M. Born, N. Bohr

Back row (L to R) : A. Piccard, E. Henriot, P. Ehrenfest, Ed. Herzen, Th. De Donder,
E. Schrödinger, E. Verschaell, W. Pauli, W. Heisenberg, R.H. Fowler,
L. Brillouin

—Photographie by Benjamin Couprie

Scope of Physics - Higher Education



Exams

- JEE-Joint Entrance Examination
- Physics Olympiad Exam
- NEET- National Eligibility and Entrance Test
- NEST- National Entrance Screening Test
- AIEEE- All India Engineering Entrance Exam
- AIIMS- All India Institute of Medical Science (Entrance Examination)
- JIPMER- Jawaharlal Institute of Postgraduate Medical Education and Research (Entrance Examination)
- KVPY- Kishore Vaigyanik Protsahan Yojana
- JAM- Joint Admission Test
- TIFR GS- Tata Institute of Fundamental Research Graduate School Admissions Examination
- JEST- Joint Entrance Screening Test
- NET- National Eligibility Test (CSIR and UGC)
- GATE-Graduate Aptitude Test in Engineering
- ICAR -AIEEE-Indian Council of Agricultural Research All India Entrance Examination



After completing +2

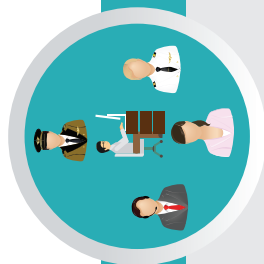
- B.Sc (Physics)
- Integrated M.Sc (Physics) (Central Universities)
- Integrated M.Sc (in Central Research Institutes through NEST and KVPY with stipend)
- B.Sc./B.S./B.Stat./B.Math./M.S. in Mathematics, Chemistry and Biology. (KVPY)
- B.E/B.Tech/ B.Arch (JEE, AIEEE in IITs and NITs)
- MBBS/ B.D.S/B.Pharm (NEET, JIPMER, AIIMS)
- B.Sc. (Agriculture) (ICAR -AIEEA)
- Dual Degree Program BS & MS (JEE, JEST in IITs and IISERs)
- B.Sc (Hospitality administration)
- B.Sc (Optoelectronics)
- B.Sc (Optometry)
- B.Tech (Optics and Optoelectronics)



After completing undergraduate course in Physics (B.Sc Physics)

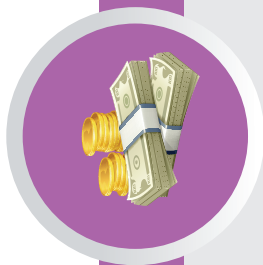
- M.Sc. (Physics) (In Central and State Universities and Colleges)
- M.Sc. Physics (JAM in IISc ,IITs and NITs)
- M.Sc. (In State and Central Universities)
- Medical Physics
- Materials Science
- Energy
- Earth Sciences
- Space science
- Oceanography
- Remote sensing
- Electronics
- Photonics
- Optoelectronics
- Acoustics
- Applied electronics
- Astronomy and Astrophysics
- Nanoscience and Nanotechnology
- Biostatistics
- Bio informatics
- Vacuum sciences

Opportunities after B.Sc. Physics



Jobs in Government Sector

- Indian Forest Services
- Scientist Job in ISRO, DRDO, CSIR labs
- Union Public Service Commission
- Staff Selection Commission
- Indian Defence Services etc.
- Public Sector Bank
- State PCS
- Grade III & Compiler Post
- Tax Assistant
- Statistical Investigator
- Combined Higher Secondary
- Combined Graduate Level Exam etc.

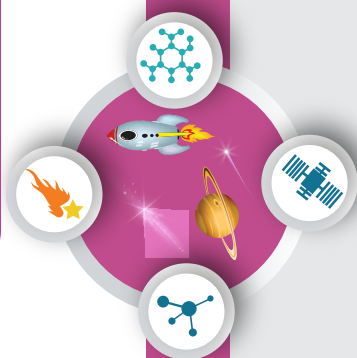


Financial assistance to pursue higher education

Scholarships for graduate and post graduate courses

- International Olympiad: for getting stipend for Higher Education in Science and Mathematics
- DST – INSPIRE Scholarships (for UG and PG)
- DST – INSPIRE Fellowships (for Ph.D)
- UGC National Fellowship (for Ph.D)
- Indira Gandhi Fellowship for Single Girl Child (for UG and PG)
- Maulana Azad Fellowship for Minorities (for Ph.D)
- In addition various fellowships for SC/ST/PWD, OBC etc. are available.
- Visit website of University Grants Commission (UGC) and Department of Science and Technology (DST)

Institutes in india to pursue research in physics



After completing Post Graduate course in Physics (M.Sc Physics)

Topics of Research

- Quantum Physics and Quantum Optics
- Astrophysics, Astronomy
- String theory, Quantum Gravity
- Mathematical Physics, Statistical Mechanics
- Quantum Field Theory
- Particle Physics and Quantum Thermodynamics
- Quantum Information Theory
- Condensed Matter Physics, Materials Science
- Electro Magnetic Theory
- Black Holes, Cosmology
- Crystal Growth, Crystallography
- Spectroscopy, Atomic, Molecular and Optical Physics
- Nano Science and Nanotechnology
- Energy and Environment Studies
- Biophysics, Medical Physics
- Cryptography, Spintronics
- Optics and Photonics
- Meteorology and Atmospheric Science



Research Institutions in various areas of science		
Name of the Institution		Website
Indian Institute of Science (IISc) Bangalore		www.iisc.ac.in
Raman Research Institute (RRI) Bangalore		www.rrri.res.in
Institute of Mathematical Sciences (IMSc) Chennai		www.imsc.res.in
Indian Association for Cultivation of Science (IACS) Calcutta		www.iacs.res.in
Chennai Mathematical Institute (CMI) Chennai		www.cmi.ac.in
Tata Institute of Fundamental Research (TIFR) Mumbai		www.tifr.res.in
Bhabha Atomic Research Centre (BARC) Mumbai		www.barc.gov.in
SN Bose centre Basic Natural science Calcutta		www.bose.res.in
Indian Institute of Space Science and Technology (IIST) Trivandrum		www.iist.ac.in
Physics Research Laboratory (PRL) Ahmedabad		www.prl.res.in
Indian Institute of Astrophysics (IIA) Bangalore		www.iia.res.in
Institute of Physics (IOP) Bhubaneswar		www.iopb.res.in
Institute for Plasma Research (IPR) Gujarat		www.ipr.res.in
Inter University Centre for Astronomy and Astrophysics (IUCAA) Pune		www.iucaa.in
Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam		www.igcar.gov.in
Hyderabad Central University, Hyderabad		www.uohyd.ac.in
Delhi University, Delhi		www.du.ac.in
Mumbai University, Mumbai		www.mu.ac.in
SavitribaiPhule Pune university, Pune		www.unipune.ac.in
National Institute of Science Education and Research (NISER), Bhubaneswar		www.niser.ac.in
IISER Educational Institutions		www.iiseradmission.in
Indian Institute of Technology in various places (IIT's)		www.iitm.ac.in
National Institute of Technology (NITs)		www.nit.edu
Jawaharlal Nehru University (JNU)		www.jnu.ac.in
Central Universities		www.ugc.ac.in
State Universities		https://www.ugc.ac.in
CSIR – Academy (National laboratories, Delhi, Hyderabad, Trivandrum, Chennai, Calcutta etc)		

