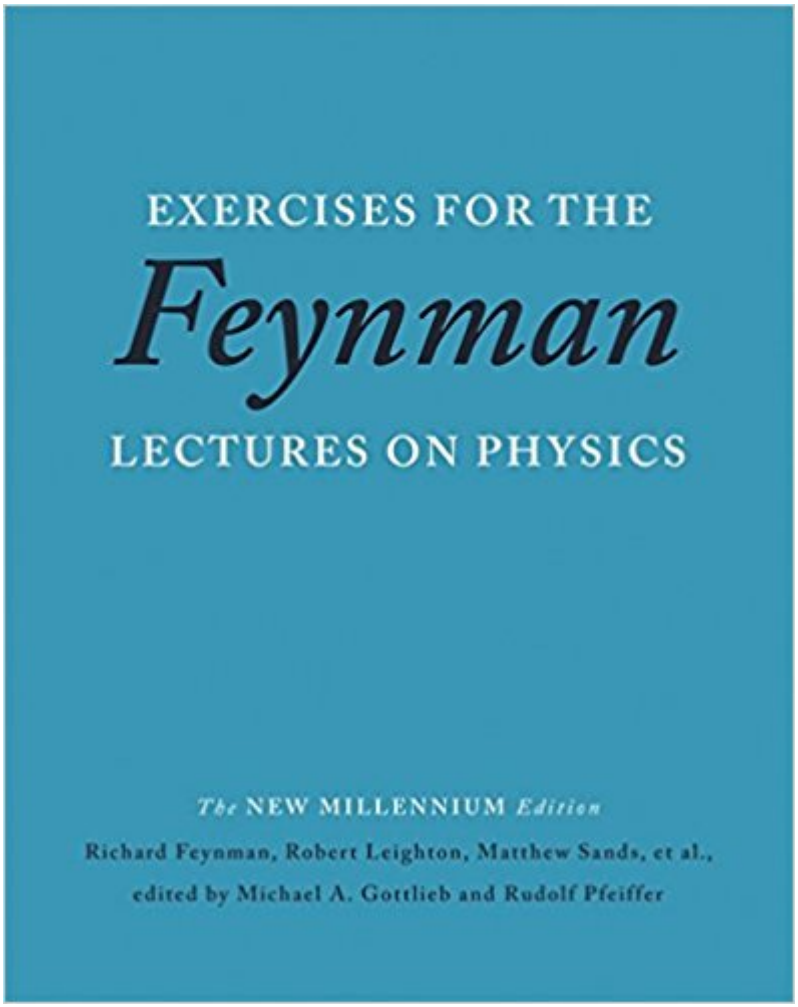
Exercises For The Feynman Lectures On Physics



Synopsis

Combined into one volume for the first time, the updated and clarified Exercises for the Feynman Lectures on Physics provides comprehensive, hands-on practice in all the most important areas of physics—from Newtonian mechanics through the theory of relativity and quantum mechanics.A perfect complement to The Feynman Lectures on Physics, these exercises have all been assigned in Caltech's mandatory two-year introductory physics course, either when Richard Feynman was teaching it, or during the nearly two decades that followed when The Feynman Lectures on Physics was used as the textbook. With this modern, easy-to-use volume, students of physics will have a chance to apply what they have learned in the Lectures and to enhance and reinforce the concepts taught by the inimitable Richard Feynman.

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Customer Reviews

The late Richard P. Feynman was Richard Chace Tolman Professor of Theoretical Physics at the California Institute of Technology. He was awarded the 1965 Nobel Prize for his work on the development of quantum field theory. He was also one of the most famous and beloved figures of the twentieth century, both in physics and as a public intellectual.Exercises for The Feynman Lectures on Physics is edited by Michael A. Gottlieb and Rudlf Pfeiffer, publishers of the online edition of FLP at the Feynman Lectures Websites.

a great book if you really want to understand physics, Feynman has his own style to explain physics really simple.

For fifty years now, physics students and mature physicists have cherished a copy of the Feynman lectures on their bookshelves as a resource to be used when they wanted to go back and see a clear, elementary exposition of a difficult idea, without wading through a more advanced treatment in a graduate text, where the fundamentals would be obscured by too much generality and mathematics. What the lectures have been useless for, however, has been their purported original purpose of teaching undergraduates.There are many reasons that nobody uses the Feynman lectures as a text for a freshman physics class, but one of them has always been that the book didn't contain end-of-chapter homework problems that could be used to practice the techniques demonstrated in the text. You might think that this would be no big deal, because one could just use problems from another book. But that would be difficult because the Feynman lectures use an idiosyncratic order of topics. For example, there is a sophisticated treatment of diffraction, polarization, and antennas that comes long before any description of how to light up a light bulb with a battery. Also, the Feynman lectures introduce a lot of sophisticated techniques, such as the use of complex numbers to describe waves, and it's not necessarily easy to find a source of problems that provide practice in these techniques while hewing to a more or less freshman level of physics. This book is meant to provide the long-needed problem sets. It seems usable for its intended purpose, but I have a number of reservations.Like the Feynman lectures itself, this book is a little lumpy and uneven. For example, the problems for the very first chapter start with some purely conceptual questions, which are nice, but the problems for the later chapters focus almost entirely on mathematical calculation rather than concepts.The problems are broken up into numbered sections, but these numbers don't match the numbered sections in the Feynman lectures. This is a very unfortunate decision that makes it difficult to figure out the correlation between the text and the problems.A similar and constant source of annoyance is the lack of correlation between the numbering of the figures and the numbering of the problems. Glancing through the book, my eye is caught by a figure showing a chain being lifted off of a horizontal plane. Intrigued, I want to find the problem that this figure relates to. Well, the figure is Figure 6-2, but only by painstakingly scanning through the text of all the problems on the page can I find the relevant problem, which is 6.12.Another annoyance is the page-numbering scheme. There are no purely Arabic page numbers. Section 7 starts on a page labeled 7-1, and so on. This is the same as the scheme used in the Feynman lectures. There was a reason to do this in the era of typewriters, to avoid renumbering later pages when something was changed earlier on. There's no excuse for it in 2014.Some topics in the text don't seem to be supported at all by the problems. For example, sections 9-6 and 9-7 of

the Feynman lectures demonstrate the numerical solutions of the equations of motion for Newtonian gravity. This is a really cool and forward-looking feature for a book from 1964! But the problems don’t appear to provide any opportunities to try out these techniques. Again this seems to be a symptom of an unwillingness to adapt the half-century-old material to modern technology. This application would have been a natural fit for a spreadsheet.Another technology-related issue is that the answer checks are given as answers printed in the back of the book. This was the way to do this in 1964, but it’s not the way to do it in 2014, when computer software can do better, e.g., by checking symbolic results as well as numerical ones. There are several free and open-source systems that do this sort of thing.In terms of accuracy, I’m not sure whether to evaluate this as a first edition released in 2014 or as a set of materials that presumably was developed in the early 1960s and that should have been thoroughly debugged since then. I found a significant error (an incorrect answer to problem 3.12) pretty rapidly, which erodes my confidence.The question to ask is who will find this book useful. It’s not going to be useful to the typical older physicist who uses the Feynman lectures for reference, inspiration, and conceptual clarification. It’s not going to be useful for teaching a freshman physics course using the Feynman lectures, because there are still half a dozen insuperable obstacles to that. The best use case that I can think of is the following. Sally is a community college student who was going to be an electrical engineering major, but when she took physics, she fell in love with the subject and decided to change her major to physics. She owned Physics 101, and now she intends to transfer to a school like Berkeley or MIT and get a four-year degree in physics. The trouble is, she knows her technical chops aren’t adequate for upper-division courses at Berkeley. She buys a copy of the Feynman lectures and a copy of this book, and works through it.

The best exercises....

I purchased this to supplement my reading of the Feynman Lectures. I’ve never taken physics beyond a high-school level, but was interested in learning. The questions are helpful, but unfortunately a lot of the answer key is missing. So as a self-study student with no other resources, it makes it very difficult to know if you are grasping the material correctly. I would happily pay 5 times the price to have an extensive answer key, with some answers having an in-depth explanation as to how the result was arrived at.

Wonderful problems to think about. For example, the first problem in the whole book asks "If heat is

merely molecular motion, what is the difference between a hot, stationary baseball and a cool, rapidly moving one?" There are plenty of "compute the force on member D in the diagram above" type of problems, but also lots of ones to simply get you thinking about how all of this relates to the real world.

The book is not easy but ones you opened it ,it stick to you

Good supplementaries to the three Red books.

I read a lot of the Feynman lectures when I was an undergraduate. You can improve your GRE score a lot by just reading these lectures. I wish I'd had the problem book then.

Lecture Notes in Physics) Thermodynamics and the Kinetic Theory of Gases: Volume 3 of Pauli Lectures on Physics (Dover Books on Physics) Lectures on Antitrust Economics (Cairoli Lectures)