

PHYS 451 – HOMEWORK # 3 – DUE TUESDAY, 10/17/2013

1. **P4.13 p.126.**
2. **P4.14 p.126.**
3. **P4.17 p.127.**
4. **P4.21 p.128.**

Key

Unless otherwise specified, questions and problems are from the course textbook:

Richard W. Robinett

QUANTUM MECHANICS (SECOND EDITION)

Oxford University Press (2006)

ISBN-13: 978-0198530978

P(Q)X.Y p.Z means “Problem (Question) P(Q)X.Y of Chapter X, page Z.”

Example: Problem P1.2 p.24 = Problem P1.2 of Chapter 1, page 24.

Quantum mechanics is the branch of physics that describes fundamental subatomic behavior. The basic principle of quantum mechanics is that there is an uncertainty in the location of a subatomic particle until it is observed. This explains why the Second Law of Thermodynamics is always true, and why everyone declines with old age. Quantum mechanics explains the discrete nature of small-scale interactions, wave-particle duality, the uncertainty principle, and quantum entanglement. Quantum mechanics Quantum mechanics, also known as quantum physics or quantum theory, is a theory of physics providing a mathematical description of the interaction of matter and energy. The theory was developed in 1925 by Werner Heisenberg.[1] Quantum mechanics describes the time evolution of physical systems via a mathematical structure called the wave function.Â 3.1 Quantum mechanics and classical physics. 3.2 Relativity and quantum mechanics. 3.3 Attempts at a unified field theory. 4 Philosophical implications.

Quantum mechanics is the foundation of several related disciplines including nanotechnology, condensed matter physics, quantum chemistry, structural biology, particle physics, and electronics. The term "quantum mechanics" was first coined by Max Born in 1924. The acceptance by the general physics community of quantum mechanics is due to its accurate prediction of the physical behaviour of systems, including systems where Newtonian mechanics fails. Quantum mechanics explains how the universe works at a scale smaller than atoms. It is also called quantum physics or quantum theory. Mechanics is the part of physics that explains how things move and quantum is the Latin word for 'how much' . A quantum of energy is the least amount possible (or the least extra amount), and quantum mechanics describes how that energy moves or interacts.

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Quantum mechanics, science dealing with the behavior of matter and light on the atomic and subatomic scale. It attempts to describe and account for the properties of molecules and atoms and their constituents—electrons, protons, neutrons, and other more esoteric particles such as quarks and gluons. Lecturer in Physics, University of Cambridge; Fellow of Trinity College, Cambridge. Author of Problems in Quantum Mechanics with Solutions and others. See Article History. Quantum Mechanics - Essential Things To Know. Most people hear this term tossed around sometime or the other. This post will cover the basic properties and essential things that one should know if they want to comprehend Quantum Mechanics. Quantum mechanics is the branch of physics that deals with the behavior of matter and light on a subatomic and atomic level. It attempts to explain the properties of atoms and molecules and their fundamental particles like protons, neutrons, electrons, gluons, and quarks.