

Major Topics for Quiz 1

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Quiz 1 will cover up to and including chapter 12, that is it includes all the material that you have done homework on.

You are free to use a calculator and to consult a single sheet of notes, both sides. A table of fundamental constants and Fourier transforms will be provided. Other books and references are not to be used during the exam in class.

A list of topics:

1. Interference of waves: single slit, double slit, etc.
2. S-equation in Free space and its propagation
3. S-Eqn for a potential
4. Operators, expectation values, and Ehrenfest's theorem
5. The meaning and use of eigenfunctions and Eigenvalues
6. Solutions to S-Eqn in one-dimension:
 1. transmission and reflection off barriers (piecewise continuous)
 2. bound states in a potential well (piecewise continuous)
 3. particle in a box
 4. Simple harmonic oscillator
 - a. solution in x-space and q-space
 - b. use of creation and annihilation operators
 - c. coherent states
7. Use of Heisenberg Uncertainty Principle to estimate ground state energy of a system