

Menofia University

Faculty of Science

Subject: Quantum Mechanics I (P275)

Time allowed: 2 hrs Date of exam: 2- 1 - 2019

Answer the following questions

1. Find the energy eigenvalues and eigen functions of a particle moving in infinite square potential well of width " b ".
(60)
2. a. Define: the eigen function, the eigen value, degeneracy, the compatibility, Hermitian operator.
b. Prove that the energy of the harmonic oscillator is quantized.
(60)
3. Prove that:
 - a. The eigenvalue of a Hermitian operator is real.
 - b. The momentum and kinetic energy operators are Hermitian operators.(10)
4. Derive a general form of the uncertainty principle. (50)