

Jashore University of Science and Technology

Department of Physics

Bachelor of Science with Honours in Physics

1st semester of 3rd year, Academic session: 2024–2025

Course no.: PHY 3103

Course title: Quantum Mechanics I

Class test no.: 02

Date: 12 January 2026

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1. What is the commutator of two operators? Write down the properties of commutation relation. [3]
2. What is the physical meaning of a non-zero commutator between two operators? [2]
3. Show that the position and momentum operators do not commute. [5]
4. What is a Hermitian operator? Write down the properties of Hermitian operator. [5]
5. Show that the expectation value of a Hermitian operator is real. [5]
6. Show that the momentum operator is a Hermitian operator. [5]