

# Jashore University of Science and Technology

Bachelor of Science in Electrical and Electronic Engineering

1st semester of 2nd year, Academic session: 2022–2023

Course no.: EEE 2105

Course title: Electrical Engineering Materials

Class test no.: 01

Date: February 04, 2024

Roll:	
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1. What is the uncertainty relation between position and momentum? Explain its significance. Show that the uncertainty relation hold dimensionally. [6]

2. Write down the postulates of quantum mechanics. [6]

3. Normalize the wavefunction of a Gaussian wave packet, centered on  $x = x_0$  with characteristic width  $\sigma$  [Given  $\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$ ]:

$$\Psi(x) = Ae^{-(x-x_0)^2/(4\sigma^2)}$$

[8]