Jashore University of Science and Technology

Bachelor of Science Textile Engineering
1st semester of 1st year
Session: 2024–2025

Course no.: 053322PHY1125 **Course title: Physics - I**
Assignment no.: 01 **Date: 12 November 2025**

Deadline for submission: 21 November 2025, 12:30 PM

1. Define surface tension. Derive the equation for capillary rise using surface tension and contact angle.

2. Define Poisson's ratio and derive its expression. What is the physical significance of Poisson's ratio?

3. Define diffraction of light. For single slit diffraction show that $I = I_0 \left(\frac{\sin\beta}{\beta}\right)^2$, where the symbols carry usual meaning.

4. Define polarization of light. How can elliptically and circularly polarized light be formed from plane polarized light?

5. Explain stimulated emission and how it leads to the amplification of light in a laser.

6. Describe the working principle of a four-level laser system with suitable examples.