Jashore University of Science and Technology

Bachelor of Science in Electrical and Electronic Engineering

1st semester of 3rd year, Academic session: 2025–2026

Course no.: 053311 PHY 3101 **Course title: Electrical Engineering Materials**

Class test no.: 02 **Date: 31 October 2026**

Roll:	

1. Define Bravais lattice and crystal with examples. [6]

2. Define the term Reciprocal Lattice. Show that the reciprocal lattice of a BCC lattice is a FCC. [6]

3. Define atomic facking fraction. Calculate the atomic packing fraction of a BCC lattice. [6]

4. What are Miller indices? Draw (010), (101) and (121) plane of a simple cubic lattice. [6]

5. A first-order X-ray diffraction peak from the (200) planes of a cubic crystal occurs at a Bragg angle of 22.0°. If the X-ray wavelength is 0.154 nm, calculate the lattice parameter of the crystal. [6]