Jashore University of Science and Technology

Department of Physics

Bachelor of Science with Honours in Physics

1st semester of 3rd year (2025–2026)

Course code: 053313 PHY 3107 **Course title: Solid State Physics I**

Class test no.: 1 **Date: 10 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 FCC 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]