

B.Sc. 5th Sem. (CBCS) Sessional Exam, 2021

Sub: Physics

Paper: PHY-HC-5026

Solid State Physics

Time: 1 hr

Full marks: 20

1. Answer the following questions (any five). $5 \times 1 = 5$

- (a) Define Unit cell.
- (b) What is the difference between unit cell and primitive cell?
- (c) How many basic crystal system?
- (d) What do you mean by crystal structure?
- (e) How many lattice points per unit cell in FCC lattice?
- (f) What is the Miller indices of a plane having intercepts 2, 3, 4 along X, Y and Z axes respectively?

2. Answer the following questions (any three). $3 \times 5 = 15$

- (a) Deduce the interplanar spacing (distance) of a simple cubic lattice of side a .
- (b) Calculate atomic radius for SC, FCC and BCC structures.
- (c) Prove that every reciprocal lattice vector is normal to a lattice plane of the crystal lattice.
- (d) Define and derive Bragg's law for X-ray Diffraction.