



THE AMERICAN COLLEGE, MADURAI
(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (2nd Cycle) by NAAC with Grade “A”, CGPA – 3.46 on a 4-point scale
Backlog Arrear Examination, March 2021

**PGP 4424 Condensed Matter Physics – I /
PGP 565 – Solid State Physics**

Marks: 75

Time : 3 Hrs

Part-A

Answer Any FIVE questions

(5 x 15 = 75)

1. What are symmetry elements? Name at least five of them and explain each one of them.
2. Obtain the expressions for diffraction condition in the reciprocal lattice space and hence derive the same in real space.
3. Determine the atomic packing fraction for for (a) Simple cubic (b) FCC and (c) BCC systems.
4. Describe on Vander Walls London interaction in rare gases with suitable expressions.
5. Obtain the dispersion relation for phonons in a mono atomic lattice.
6. Describe the theory of specific heat capacity as explained by Einstein.
7. Describe the Kronig and Penny model of arriving at the allowed and forbidden energy levels.
