

Roll No.

Y – 3120
M.Sc. (Second Semester)
EXAMINATION, May/June 2021
PHYSICS
Paper–203
CONDENSED MATTER PHYSICS-I

Time : Three Hours

Maximum Marks : 85

Minimum Pass Marks : 29

Note—Attempt *all* questions.

Unit-I

1. State and explain the concept of Reciprocal lattice. Discuss the reciprocal lattice of FCC and BCC. Give its importance also. 17

Unit-II

2. What are the basic drawbacks of Einstein model of specific heat ? Discuss the high and low temperature limits of Debye's model and also define Debye's T^3 law. 17

Unit-III

3. Give the elementary explanation of tight binding approximation for bond structure. 17

Unit-IV

4. Explain the concept of depletion layer for a $p-n$ junction diode. What happened to the depletion region width when the $p-n$ junction is forward or reverse biased ? 17

Unit-IV

5. Give the elementary idea about optical properties in solids. Discuss energy loss by fast moving particles in solids. 17