647510 **MSC2PhyC204x** **Seat No :_____**

M.SC.(Physics) Semester - 2 (*CBCS*) Examination
May/June-2021 (NEW COURSE)
Solid State Physics

Time: 1:30 Hours **Marks: 42**

Instructions:

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

Que-1 **Answer The Following Questions.** (14)

A. Write a note on symmetry elements.

B. Write names of three X–ray diffraction experimental set ups. Discuss each in depth.

Que-2 **Answer The Following Questions.** (14)

A. Describe in detail the vacancy defects in solids.

B. Write a note on Kronig–Penney model.

Que-3 **Answer The Following Questions.** (14)

A. Discuss in brief (i) zero electrical resistance, (ii) persistent current, (iii) critical field, (iv) Meissner effect and (v) isotope effect in superconductors.

B. Describe Type–I and Type–II superconductors with suitable examples. Discuss various applications of superconductors.

Que-4 **Answer The Following Questions.** (14)

A. Write a note on Langevin's theory of diamagnetism.

B. Discuss in detail the paramagnetism of rare earth ions and iron group ions.

Que-5 **Answer The Following Questions.** (14)

A. Write a note on Weiss molecular field theory.

B. Draw the plots of $1/\chi$ versus temperature for different five types of magnetic materials.

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