December 2023

B.Sc. (Physics Hons.) Vth SEMESTER

Solid State Physics (BPH-502A)

Time : 3 Hours]   [Max. Marks : 75

Instructions :

1.   *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*

2.   *Answer any four questions from Part-B in detail.*

3.   *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1.   (a)   Show that for a cubic lattice, the lattice constant 'a' is given by $(nM/pN)^{1/3}$ where the symbols have their usual meaning.   (1.5)

  (b)   A crystal plane intercepts the three crystallographic axes of the following multiples of unit distances 3/2, 2 and 1. What are the Miller indices of the plane?   (1.5)

  (c)   Derive the mathematical expression for 2-d density of states.   (1.5)

  (d)   Differentiate between soft and hard magnetic materials.   (1.5)

  (e)   What is the significance hysteresis of curve in magnetism?   (1.5)