

SAMPLE PAPER – SOLID STATE PHYSICS

- Q-1 In a crystal, the coupling of conduction electrons with phonons results in**
- a) Thermal conductivity
 - b) Electrical resistivity
 - c) Thermal resistivity
 - d) Propagation of sound
- Q-2 Which of the following is not a property of crystalline solid?**
- a) Isotropy
 - b) Anisotropy
 - c) Sharp melting point
 - d) Definite geometry
- Q-3 A vacancy and an interstitial in close enough proximity in a crystal is known as**
- a) Surface defect
 - b) Line defect
 - c) Schottky defect
 - d) Frenkel defect
- Q-4 The volume density of a body centered cubic crystal is $1.6 \times 10^{22} \text{ cm}^{-3}$. The lattice parameter 'a' is**
- a) 5 \AA
 - b) 5.72 \AA
 - c) 6.3 \AA
 - d) 8.55 \AA
- Q-5 The space lattice of diamond is fcc. The primitive basis has two identical atoms at**
- a) $000, \frac{1}{4} \frac{1}{4} \frac{1}{4}$
 - b) $000, \frac{1}{2} \frac{1}{2} \frac{1}{2}$
 - c) $000, \frac{1}{2} \frac{1}{2} 0$
 - d) $000, \frac{1}{4} \frac{1}{4} \frac{3}{4}$
- Q-6 Magnons are defined as**
- a) Quantized spin waves
 - b) Quantized lattice vibrations
 - c) Quantized e-m waves
 - d) Quantized collective electron waves
- Q-7 The dielectric function $\epsilon(\omega)$ gives the response of a crystal to**
- a) Elastic waves
 - b) e-m waves
 - c) Spin waves
 - d) Alfven waves