

VOLUME-05 Part B and C

MCQs/ Objectives

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IX. Condensed Matter Physics

1. NaCl has fcc lattice with $a = 5.63 \text{ \AA}$, the spacing of $\{100\}$ planes is –
 - a) 2.82 \AA
 - b) 5.64 \AA
 - c) 1.41 \AA
 - d) 4.23 \AA

2. The crystal structure of diamond is –
 - a) fcc with two atom basis of (000) and $\frac{a}{4}(\hat{i} + \hat{j} + \hat{k})$
 - b) Simple cubic with two atom basis of (000) and $\frac{a}{2}(\hat{i} + \hat{j} + \hat{k})$
 - c) fcc with two atom basis of (000) and $\frac{a}{2}(\hat{i} + \hat{j} + \hat{k})$
 - d) bcc with one atom basis

3. For a diamond structure the packing fraction is given by –
 - a) $\frac{\pi\sqrt{3}}{8}$
 - b) $\frac{\pi\sqrt{3}}{4}$
 - c) $\frac{\pi\sqrt{3}}{2}$
 - d) $\frac{\pi\sqrt{3}}{16}$

4. Gold has atomic weight 197 and density 19.3 gm/cc. The spacing between the atoms in solid gold is –
 - a) 2.57 \AA
 - b) 5.14 \AA
 - c) 1.28 \AA
 - d) 3.85 \AA

5. How many atoms per unit cell are in hcp structure?
 - a) 1
 - b) 2
 - c) 4
 - d) 6

6. How many atoms per unit cell are in fcc structure?
 - a) 1
 - b) 2
 - c) 4
 - d) 6

