

**Internal Test I**  
**FE Sem. – I (2015-16)**

Time: 1 hour

MM: 3x5=15

**N.B. : Attempt any five from the following.**

- Q.1 Define the term space lattice, unit cell, inter planar spacing.
- Q.2 Define ligancy and calculate critical radius ratio for ligancy 6.
- Q.3 Draw the following in a cubic unit cell:  $[2\bar{1}2]$ ,  $[021]$ ,  $[1\bar{2}3]$ .
- Q.4 Draw the following in the cubic unit cell:  $(1\bar{2}0)$ ,  $(100)$ ,  $(101)$ .
- Q.5 Calculate the number of atoms per unit cell of a metal having the lattice parameter  $2.9\text{\AA}$  and density  $7.87\text{ gm/cm}^3$ . Atomic weight of metal is 55.85, also find the type to which the metal belongs.
- Q.6 Calculate the distance between two atoms of a basis of the diamond structure, if the lattice constant of the structure is  $5\text{\AA}$ .
- Q.7 A crystal ;lattice plane (326) makes an intercept of  $1.5\text{\AA}$  on X- axis in a crystal having lattice constant  $1.5\text{\AA}$ ,  $2\text{\AA}$  and  $4\text{\AA}$  respectively on X, Y, and Z axes. Find Y and Z axis intercepts.