SOLID STATE

DanSity of Cubic Crystal SyStern

$$p \text{ Or } d) = \frac{ZxM}{\#} \quad g.CM^{-1}$$

Viiihere, Z =number of atoms per unit cell

N_{iL} = Avegedro's Number

M =Gram atomic weight of element (9. mor^{l})

a _edge -length

{211. Radius-ratio in ionic solids

Voids	Triangular	Tetrahedral	Ottahedral	Cubical
Ra d i us-ratio	CL15S $\frac{r}{r^-} < 0.225$	0.25S $\frac{r}{r^-} < 0.414$	0.414 $\frac{r}{r^-} <$ 0332	0.732 $\frac{r}{r^-} <$ 0.999

Cm/still	Radius of atom Ir}	No of atoms per unit coil	pI.
Simple cubic	$\frac{a}{2}$	1	52,4 %
F.C.C.	$\frac{a}{2..1^{l}}$	2	74%
EL C.0	$\frac{13.}{7}$	2	68-%

OIL Packin8. Fraction (of.) _ $\frac{\text{Volume occupied by particles (per unit cell)}}{\text{Volume of unit cell}}$

Contribution of Each atom presEnt ore the comer $\frac{1}{8}$

Contribution OF each atom present on the centre of face =

Contribution of each atorn present on the body centre = 1

Contribution of each atom present on the edge oentre $\times \frac{1}{4}$

(5 M. Seven crystal system with dimensions :

{a) Cubit: t = 1 = ı = 91:19. a =b=

(14 Tetragonal = = w 9=P. a = b c

{cl Orthorhombic : = Y 91:P;a boc

{gyp Monoclinic : = = 90^6; 13 # 91}4 b c

(e) Hexagma I =13 =9D°; = 90P ; =15

(f) Rhombohiedral or trigonal : = P.= y 4 90^0 ;azI3c

() ct 91:1P ; a