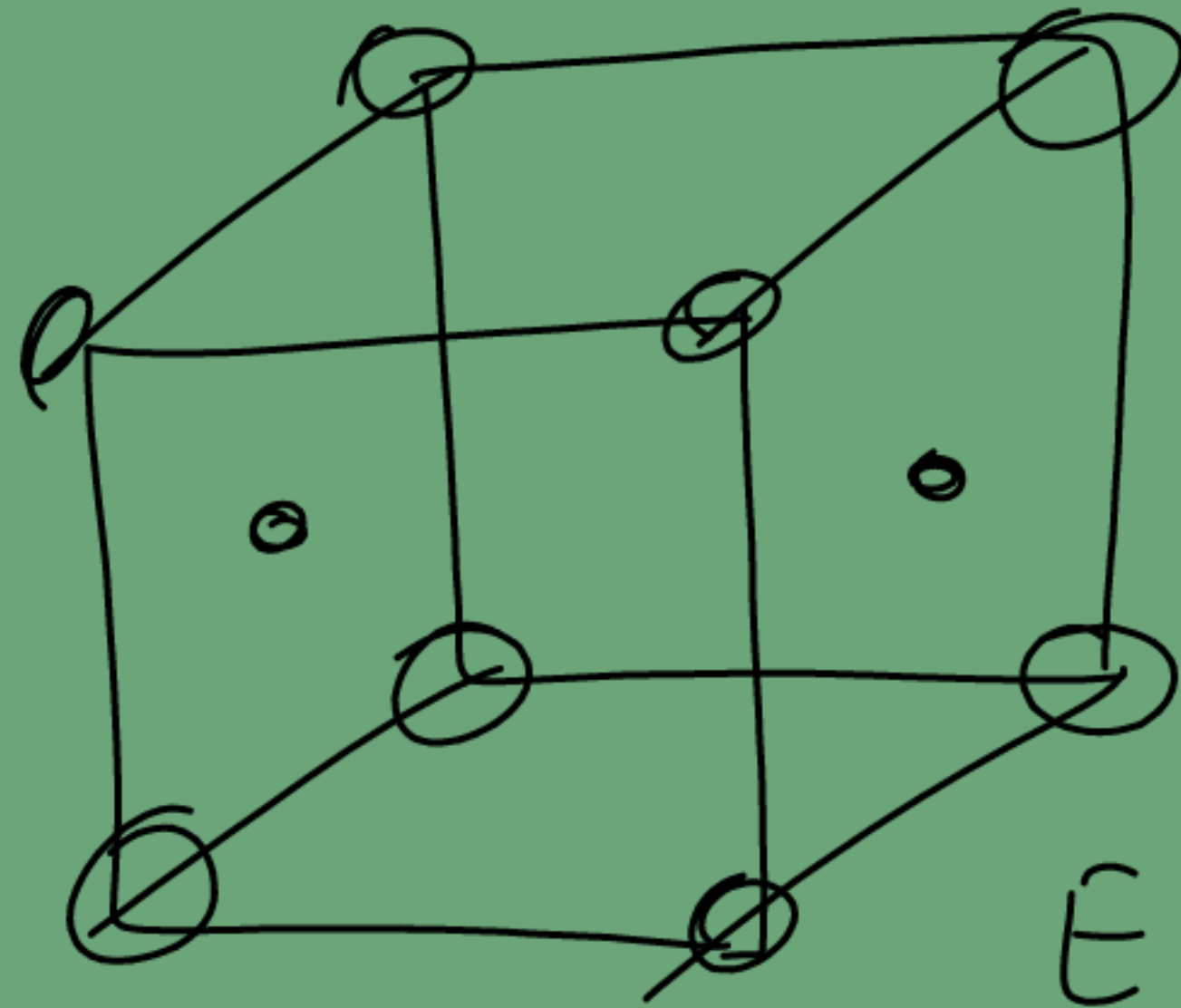
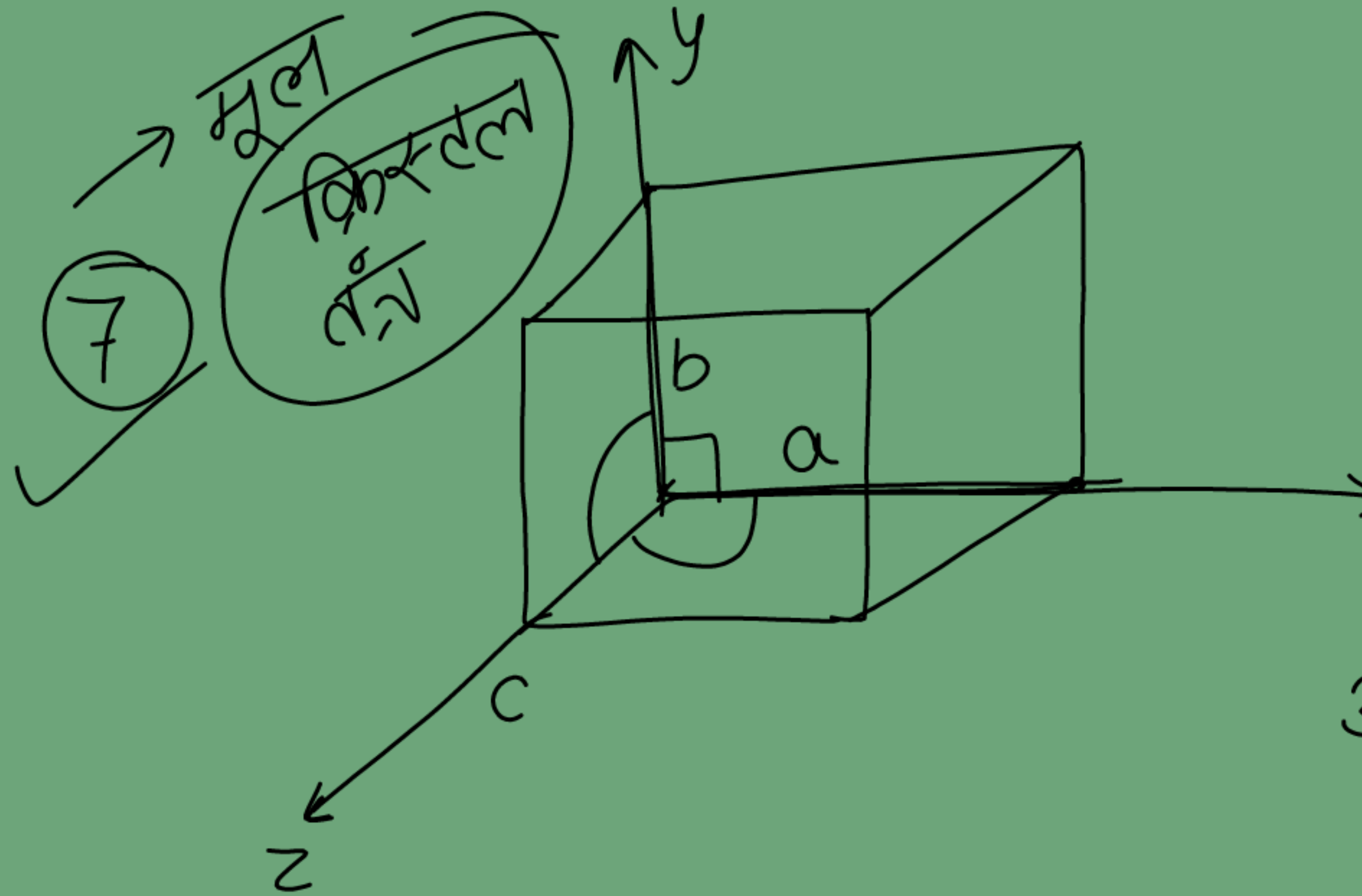


Crystal System	Axial Ratios	Axial Angles	Number of Bravais Lattices	Type of Bravais Lattices	Minimum Symmetry Elements	Example
Cubic	$a=b=c$	$\alpha=\beta=\gamma=90^\circ$	3	Primitive (P), <u>BCC, FCC</u>	Four 3-fold axes	NaCl, KCl, Ag, Au
Orthorhombic	$a \neq b \neq c$	$\alpha=\beta=\gamma=90^\circ$	4	Primitive (P), <u>BCC, FCC, EC</u>	Three 2-fold axes	BaSO ₄ , MgSO ₄ , KNO ₃
Tetragonal	$a=b \neq c$	$\alpha=\beta=\gamma=90^\circ$	2	Primitive (P), <u>BCC</u>	One 4-fold axis	Sn, TiO ₂ , NiSO ₄
Monoclinic	$a \neq b \neq c$	$\alpha=\gamma=90^\circ$ $\beta \neq 90^\circ$	2	Primitive (P), <u>EC</u>	One 2-fold axis	Gypsum, FeSO ₄
Triclinic	$a \neq b \neq c$	$\alpha \neq \beta \neq \gamma \neq 90^\circ$	1	Primitive (P)	One 1-fold axis	K ₂ Cr ₂ O ₇ , CuSO ₄ .5H ₂ O
Hexagonal	$a=b \neq c$	$\alpha=\beta=90^\circ$ $\gamma=120^\circ$	1	Primitive (P)	One 6-fold axis	Graphite, Zn, Quartz, Cd
Rhombohedral or Trigonal	$a=b=c$	$\alpha=\beta=\gamma \neq 90^\circ$	1	Primitive (P)	One 3-fold axis	ice, Sb, NaNO ₃

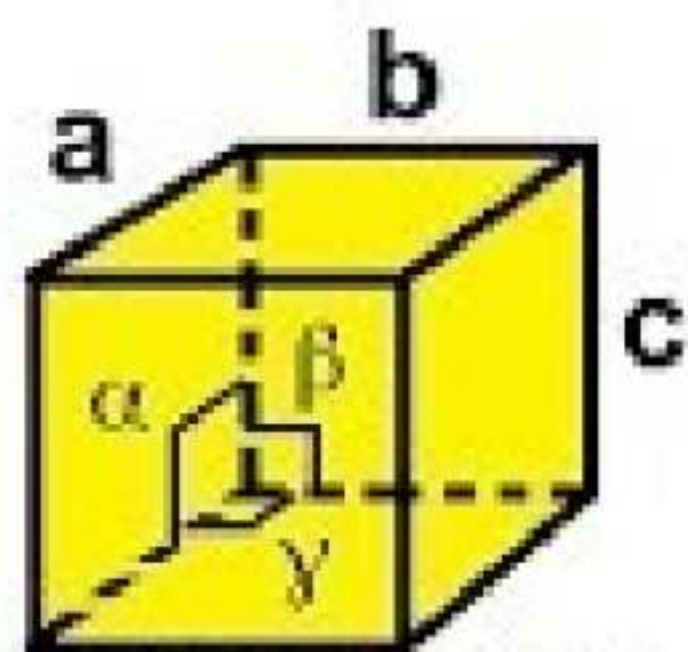


EC
अंत्य केन्द्रित
End cent.

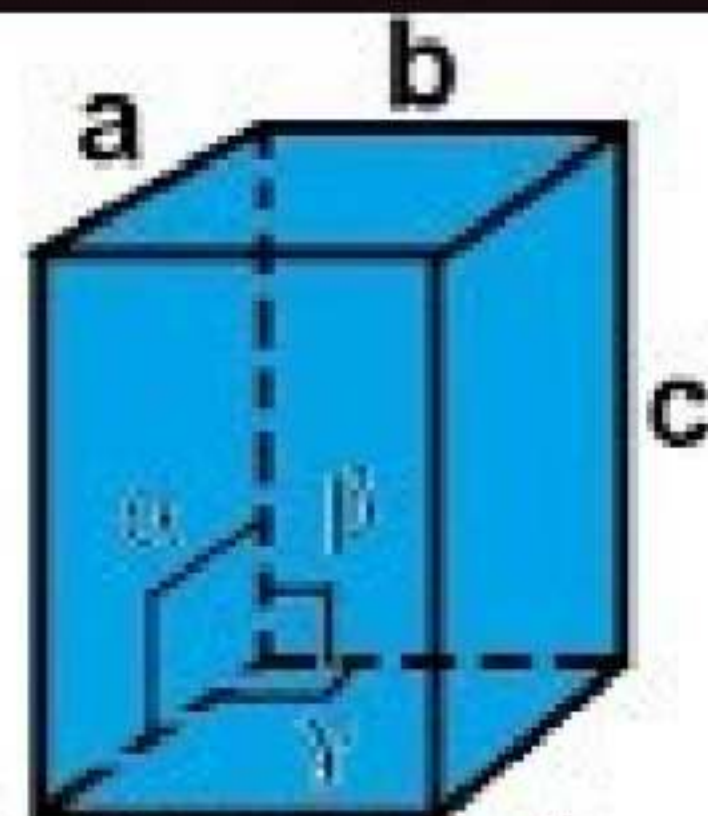


प्राचल
 अक्षीय
 लंबाई = a, b, c

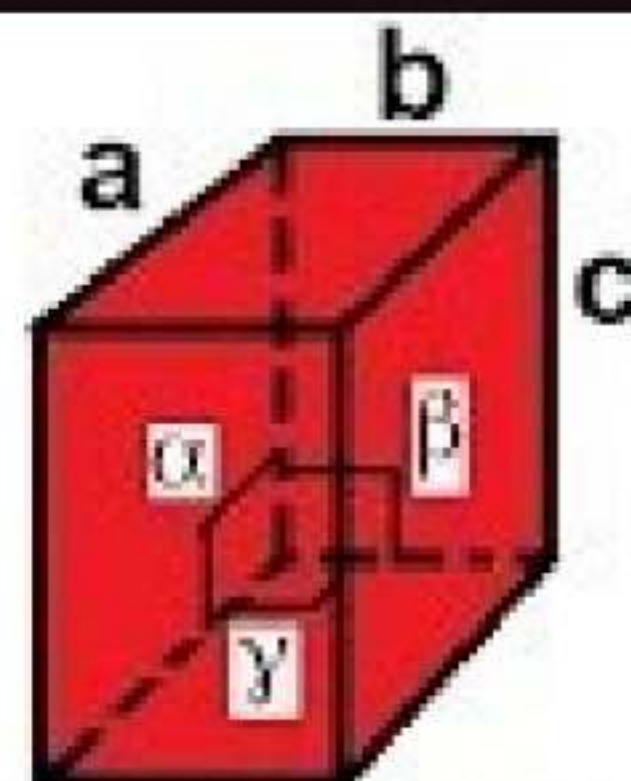
अक्षीय कोण = α, β, γ



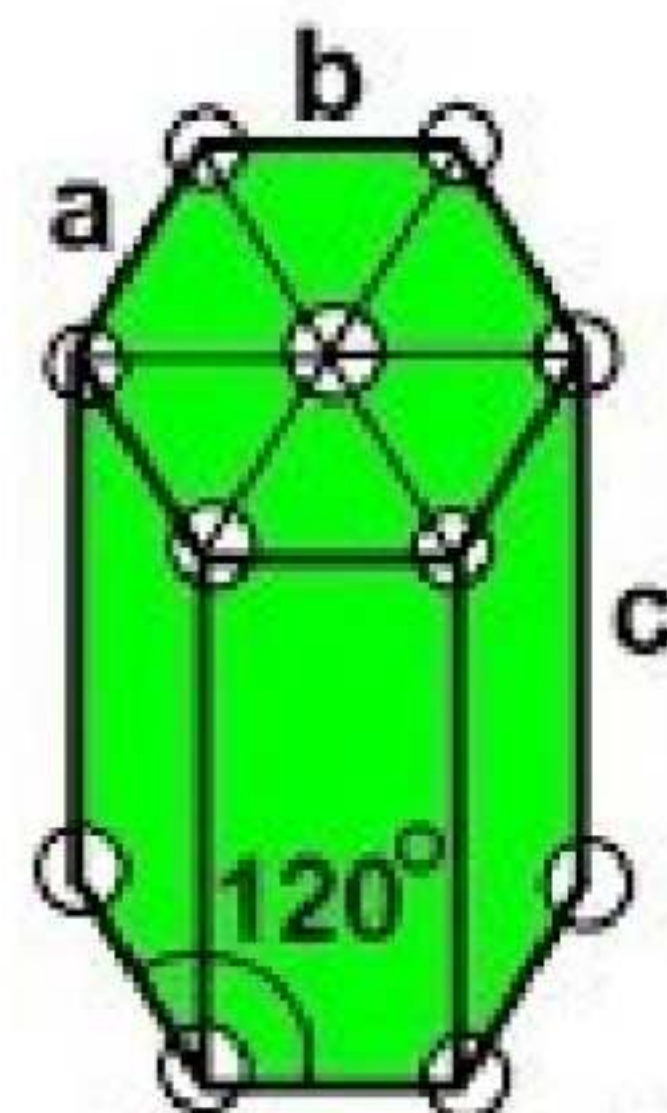
simple cubic
 $a = b = c$
 $\alpha = \beta = \gamma = 90^\circ$



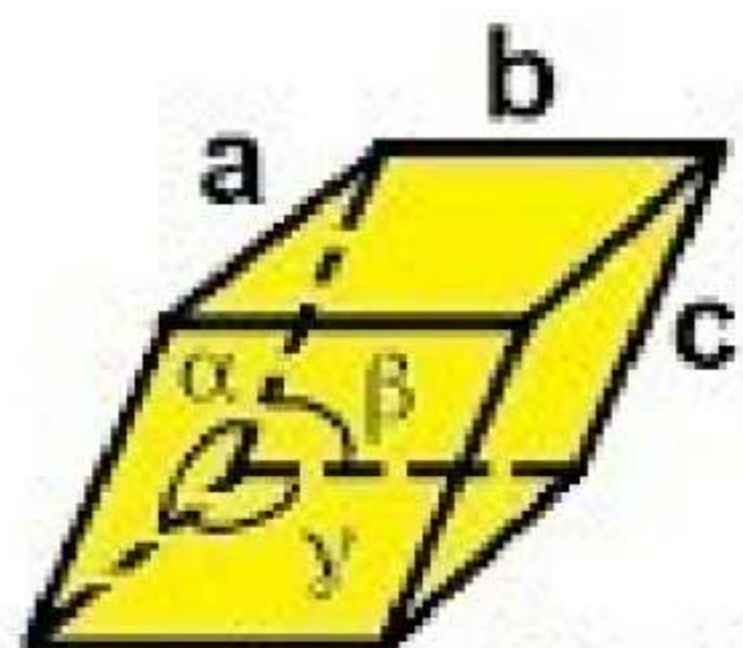
tetragonal
 $a = b \neq c$
 $\alpha = \beta = \gamma = 90^\circ$



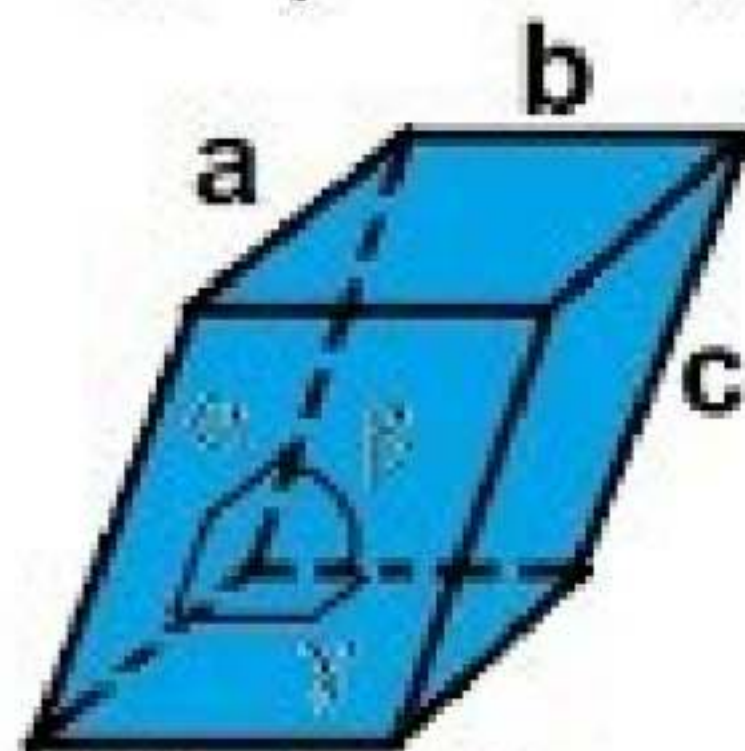
orthorhombic
 $a \neq b \neq c$
 $\alpha = \beta = \gamma = 90^\circ$



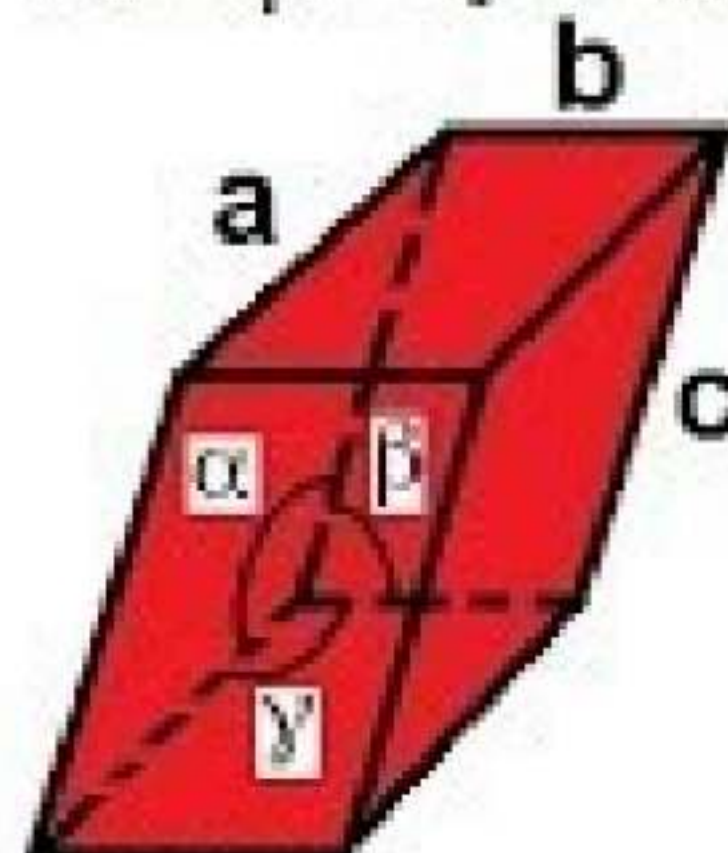
hexagonal
 $a = b \neq c$
 $\alpha = \beta = 90^\circ$
 $\gamma = 120^\circ$



rhombohedral
 $a = b = c$
 $\alpha = \beta = \gamma \neq 90^\circ$



monoclinic
 $a = b \neq c$
 $\alpha = \gamma = 90^\circ \neq \beta$



triclinic
 $a \neq b \neq c$
 $\alpha \neq \beta \neq \gamma \neq 90^\circ$

रवातंत्र	अक्षीय लंबाई	अक्षीय कोण	उदाहरण
1. घनाकार (cubical)	$a = b = c$	$\alpha = \beta = \gamma = 90^\circ$	KCl, ZnS, Cu
2. चतुष्कोणीय (tetragonal)	$a = b \neq c$	$\alpha = \beta = \gamma = 90^\circ$	SnO ₂
3. ऑर्थोरोम्बिक (orthorhombic)	$a \neq b \neq c$	$\alpha = \beta = \gamma = 90^\circ$	रॉम्बिक गंधक, CaCO ₃
4. एकनताक्ष (monoclinic)	$a \neq b \neq c$	$\alpha = \gamma = 90^\circ, \beta \neq 90^\circ$	एकनताक्ष गंधक
5. त्रिनताक्ष (triclinic)	$a \neq b \neq c$	$\alpha \neq \beta \neq \gamma \neq 90^\circ$	पोटैशियम डाइक्रोमेट (K ₂ Cr ₂ O ₇)
6. षट्कोणीय (hexagonal)	$a = b \neq c$	$\alpha = \beta = 90^\circ, \gamma = 120^\circ$	ग्रैफाइट, ZnO
7. समांतरषट्फलक (rhombohedral)	$a = b = c$	$\alpha = \beta = \gamma \neq 90^\circ$	कैल्साइट (CaCO ₃), सिनेबार (HgS)

$C.N = 6$



- समन्वय संख्या- आकाशीय जालक में एक कण अन्य जितने कणों के सम्पर्क में रहते हैं तो उन सम्पर्कीय कणों की संख्या को समन्वय संख्या कहते हैं।



$C.N = 4$

- Coordination number- It is defined as the number of particle immediately adjacent to each particle in the crystal lattice.

$C.N = 6$

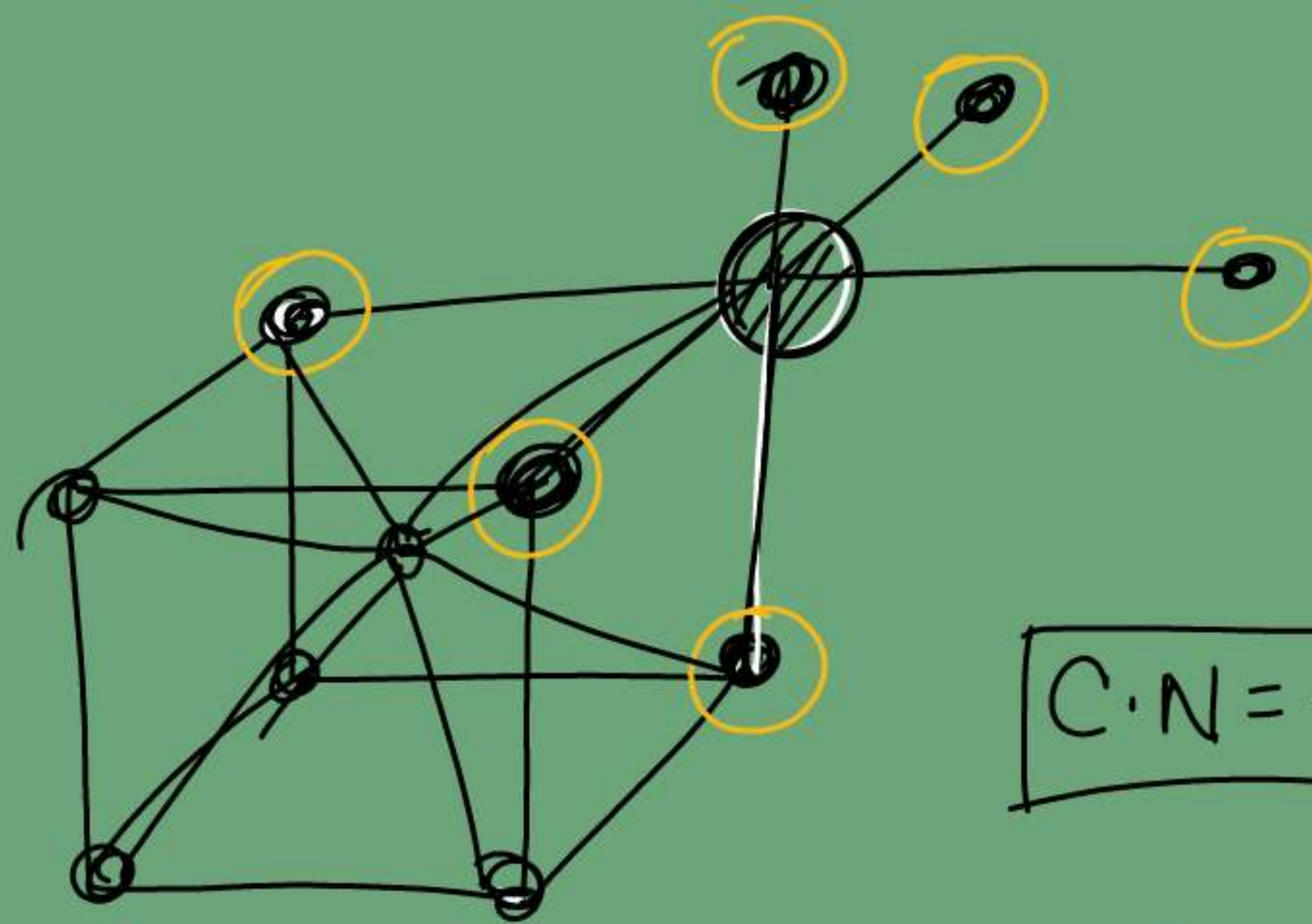


FCC

face

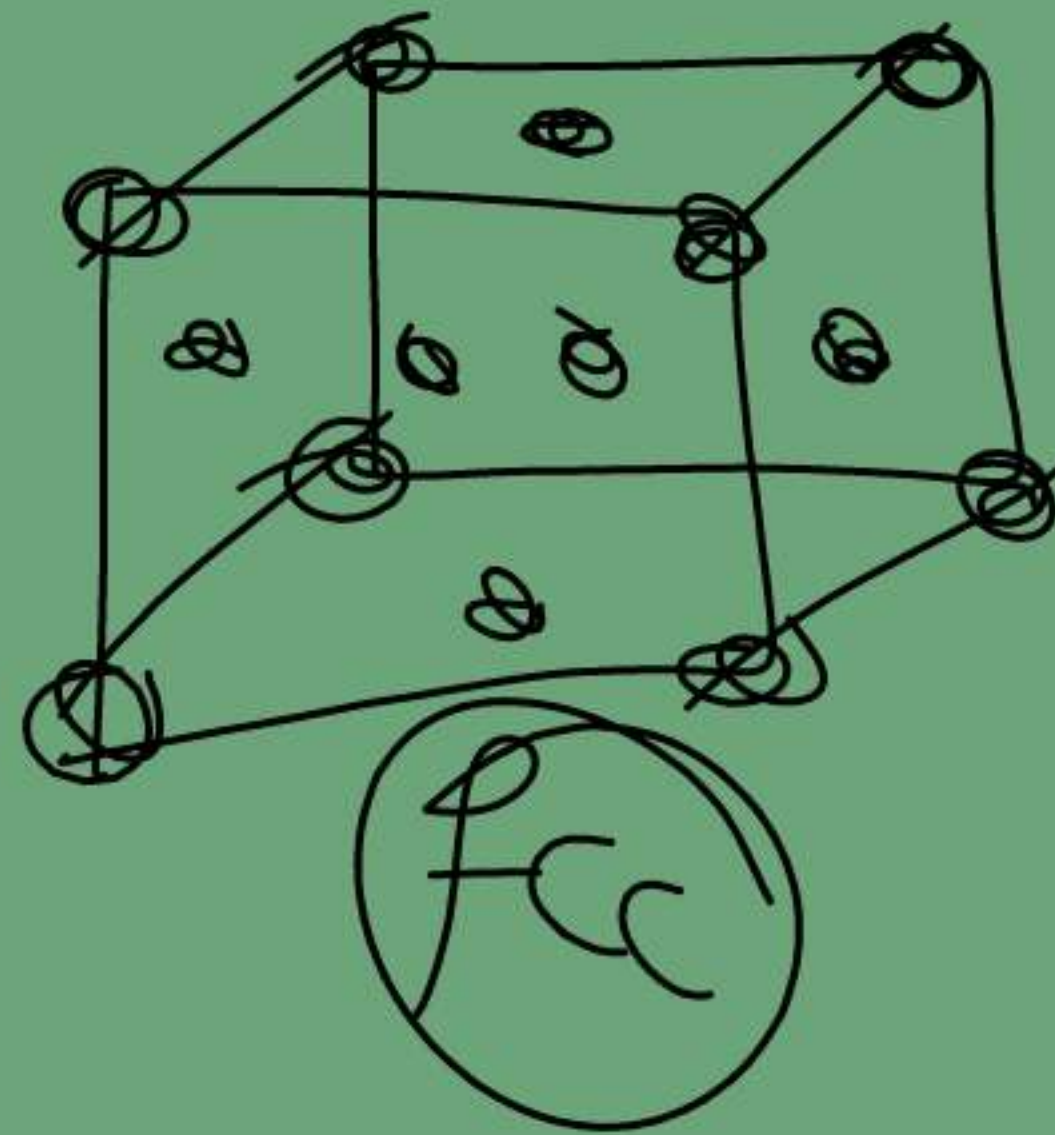
Cent.

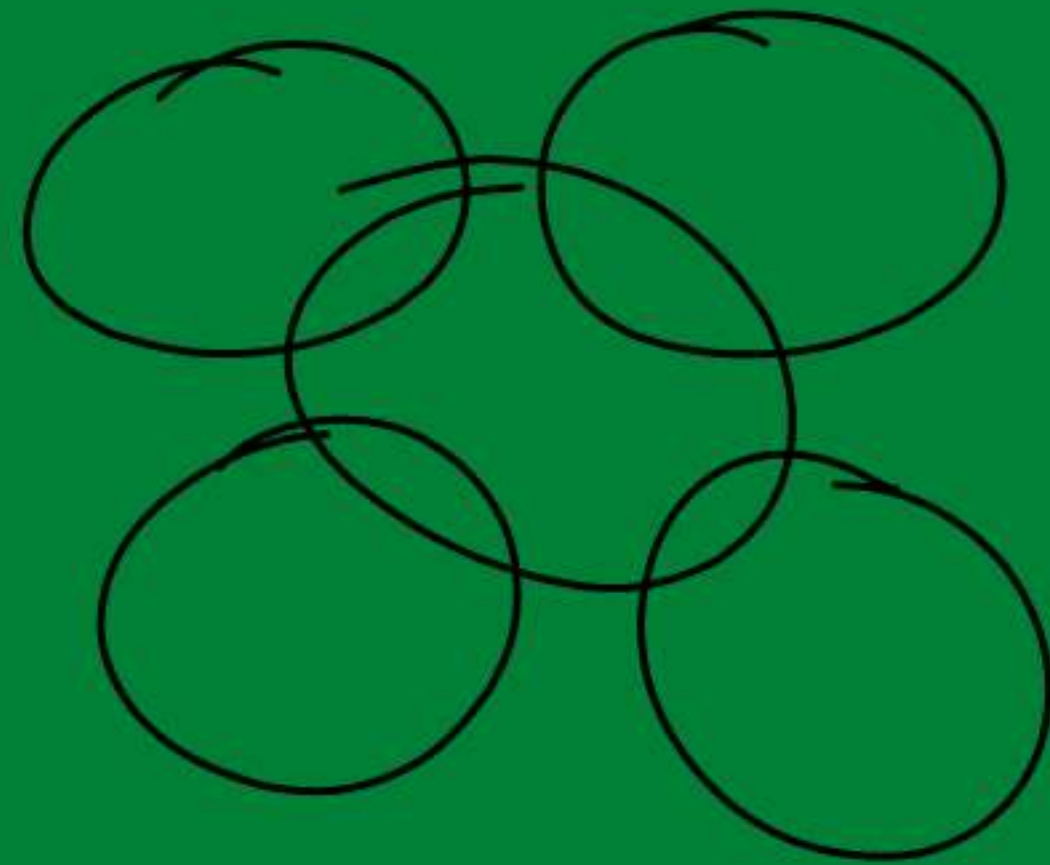
Cubic unit-cell



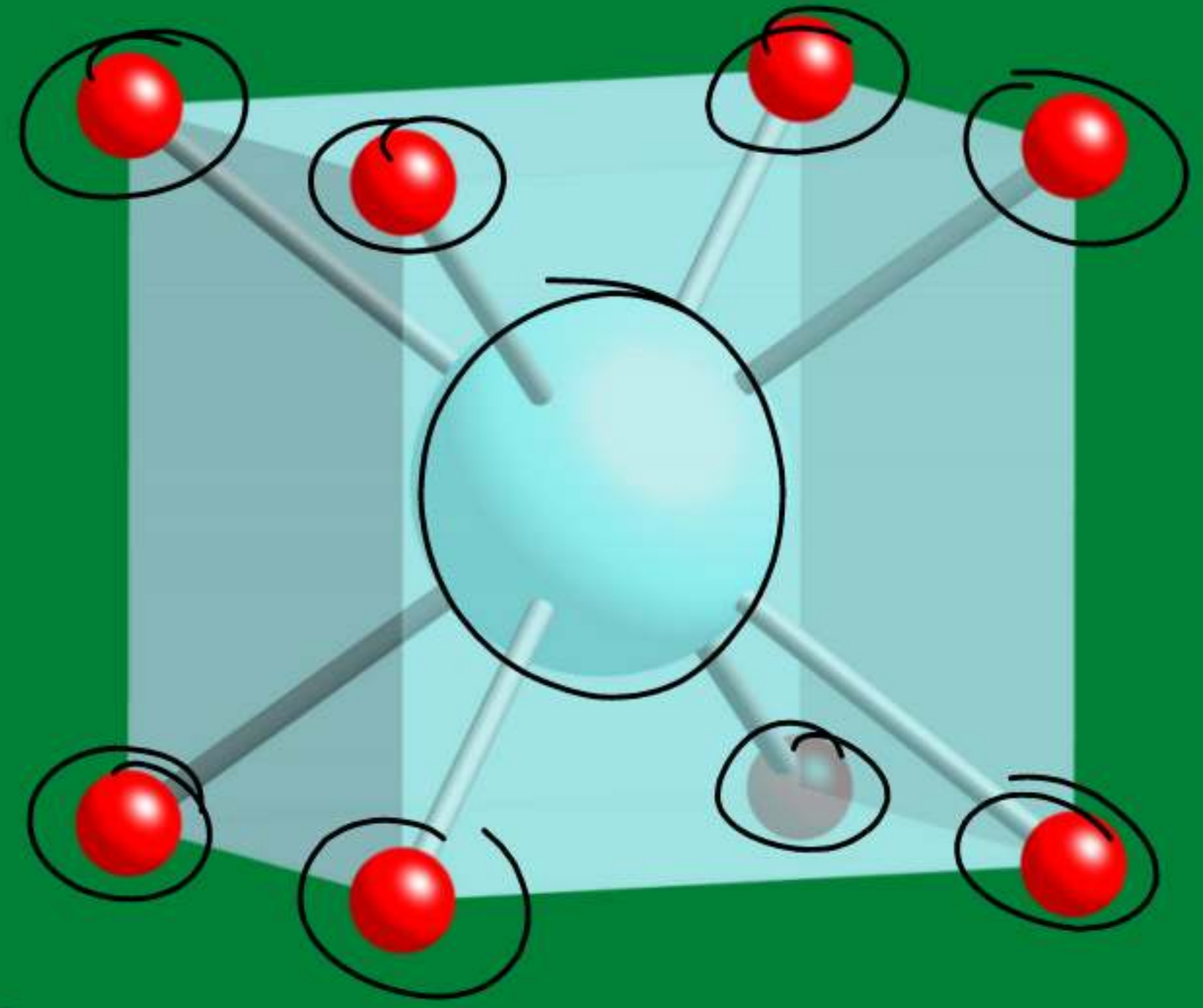
$$C.N = 6$$

(SCC)





⑧
C•N

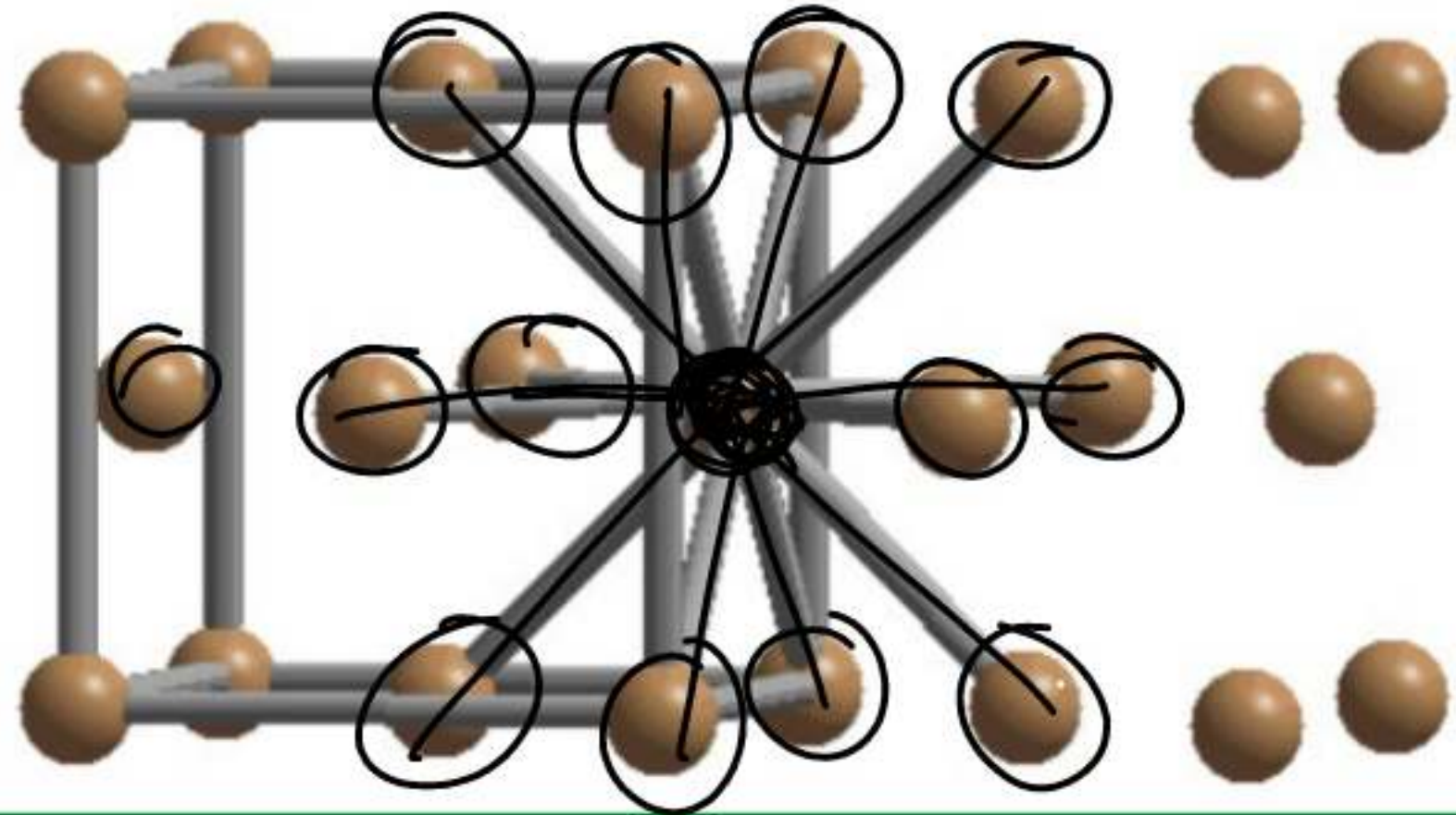


$$C.N = 12$$

$$\text{HCP} = C.N = 12$$

CCP =

FCC-coordination number

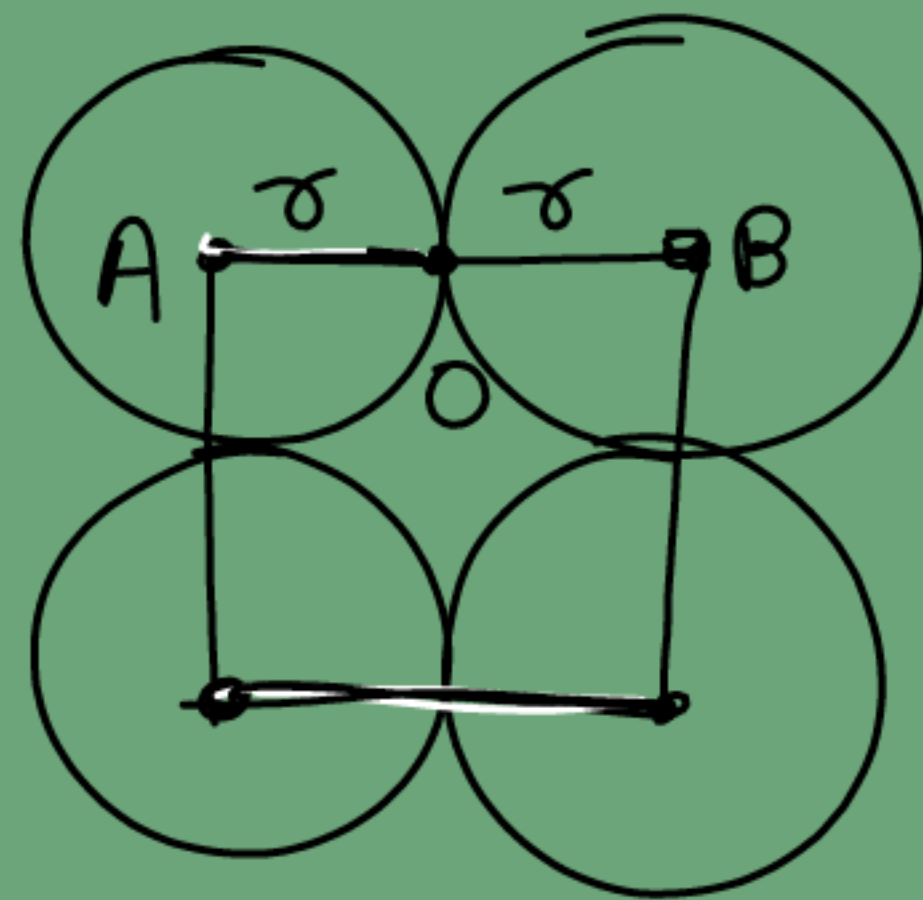


$$AB = AO + OB$$

$$a = r + r$$

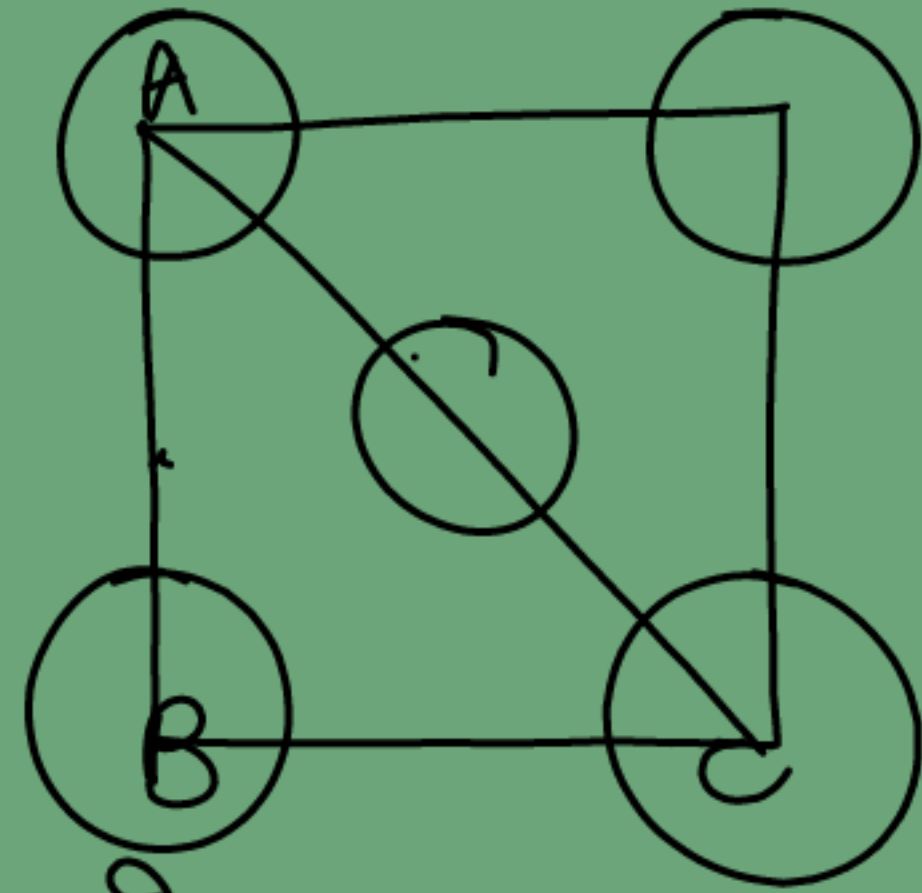
$$a = 2r$$

$$r = \frac{a}{2}$$



(SCC)

घन के किनारे की लंबाई = a

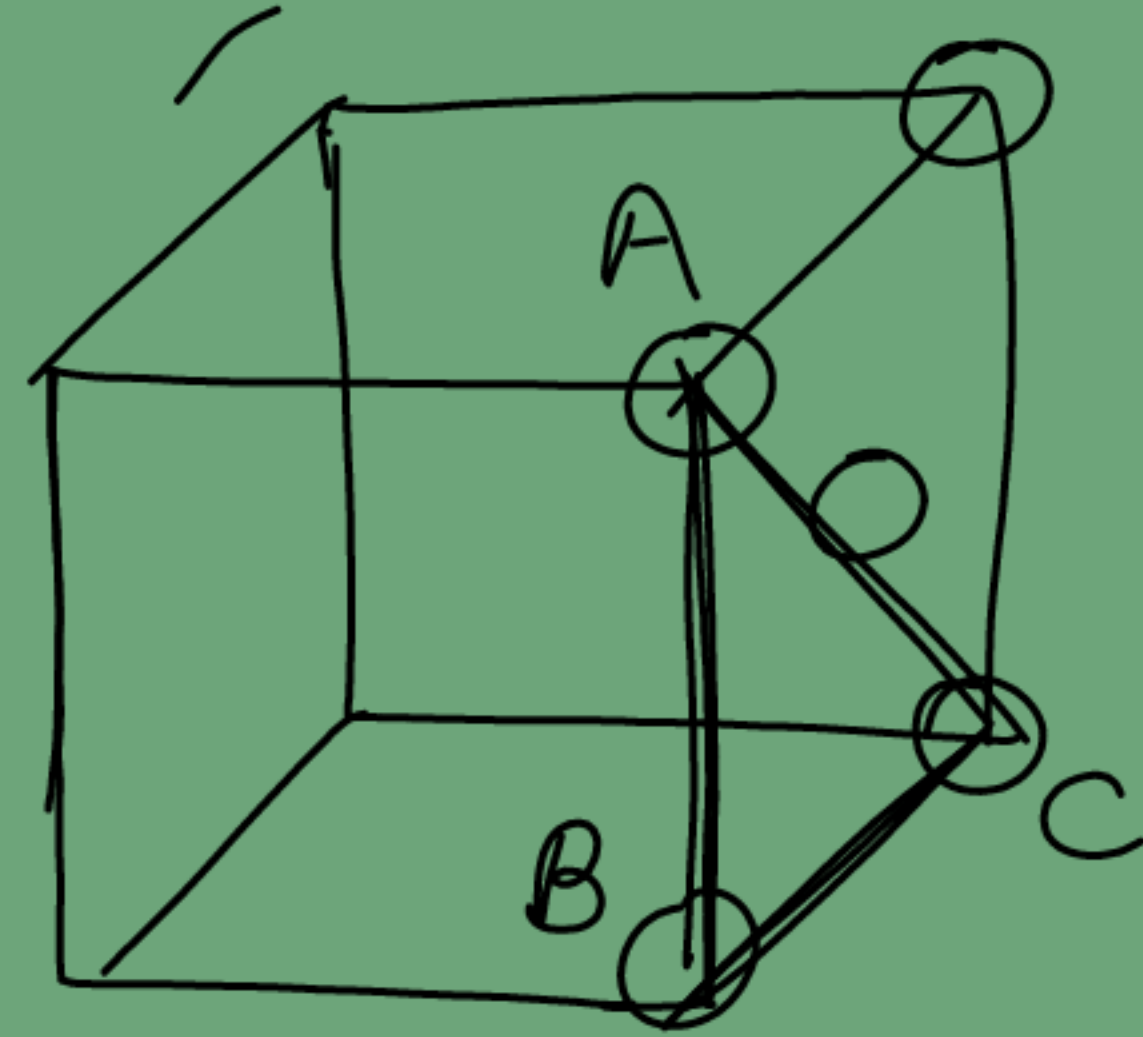


ΔABC में

$$AC^2 = AB^2 + BC^2$$

$$(4r)^2 = a^2 + a^2$$

$$(4r)^2 = 2a^2$$



$$4r = \sqrt{2} a$$

$$r = \frac{\sqrt{2} a}{4} \text{ या } \frac{a}{2\sqrt{2}}$$

H.W

BCC

में

अथवा

r में

संबंध = ?

$$\frac{a}{2\sqrt{2}}$$