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## Topic : Solid State

## Type of Questions

M.M., Min.

Single choice Objective ('-1' negative marking) Q.1 to Q.10

(3 marks, 3 min.)

[30, 30]

**Match the Following (no negative marking) Q.11**

(8 marks, 10 min.)

[8, 10]

1. Column A describe nature of bonding and Column B the solid having that type of bonding :

A (Nature of bonding)	B (solid)
I. Van der Waals	<b>P.</b> Al, Cd
II. Ionic	<b>Q.</b> $\text{CO}_2, \text{H}_2$
III. Metallic	<b>R.</b> Si, diamond
II. Covalent	<b>S.</b> $\text{MgO}, \text{NaCl}$

Correct matching of A and B is in alternate :

	I	II	III	IV		I	II	III	IV
(A)	P	Q	R	S	(B)	Q	S	P	R
(C)	Q	P	R	S	(D)	S	P	Q	R

<b>Column-I</b> <b>(Bravais Lattice(s))</b>	<b>Column-II</b> <b>[Crystal system]</b>
(A) Primitive, face centered, body centered, end centered	(p) Cubic
(B) Primitive, face centered, body centered	(q) Orthorhombic
(C) Primitive, body centered	(r) Hexagonal
(D) Primitive only	(s) Tetragonal

# Answer Key

## DPP No. # 41

1. (B) 2. (a) (C) (b) (A) 3. (a) (B) (b) (B) 4. (a) (D) (b) (A)  
5. (a) (A) (b) (B) 6. (a) (C) (b) (D) 7. (C) 8. (C)  
9. (a) (B) (b) (A) 10. (a) (D) (b) (C) 11. (A) - (q) ; (B) - (p) ; (C) - (s) ; (D) - (r)

# Hints & Solutions

## PHYSICAL / INORGANIC CHEMISTRY

### DPP No. # 41

2. (a) For triclinic  $a \neq b \neq c$  &  $\alpha \neq \beta \neq \gamma \neq 90^\circ$   
3. (b)  $a \neq b \neq c$  &  $\alpha = \beta = \gamma = 90^\circ$  the crystal system is orthorhombic  
6. (a)  $P = 8 \times \frac{1}{8} = 1$  ;  $Q = 1 = 1$  ;  $R = 12 \times \frac{1}{4} = 3$  ; formula =  $PQR_3$   
(b)  $Au = 8 \times \frac{1}{8} = 1$   $Cu = 6 \times \frac{1}{2} = 3$  formula  $AuCu_3$   
7.  $A = 7 \times \frac{1}{8} = \frac{7}{8}$  ;  $B = 6 \times \frac{1}{2} = 3$   
Formula =  $A_{7/8} B_3$  or  $A_7 B_{24}$   
10. (a) In triclinic unit cell.  
 $a \neq b \neq c$   
 $\alpha \neq \beta \neq \gamma$   
(b). In simple cubic contribution of one corner =  $\frac{1}{8}$   
total corner = 8  
effective no. of atom per unit cell =  $\frac{1}{8} \times 8 = 1$   
No. of body center in simple cubic = 1  
No. of atom in body center = 1  
AB

