

## NEET SOLID STATE — CRYSTAL LATTICES &amp; UNIT CELLS — PYQS

Max. Marks: 52

Questions: 13

## Section A (MCQ) — 13 questions

**Q.1** The correct option for the number of body centred unit cells in all 14 types of Bravais lattice unit cells is : [NEET (UG) 2021]

- (1) 3                      (2) 7                      (3) 5                      (4) 2

 Scan or tap for the  
full solution


**Q.2** An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is : [NEET (UG) 2020]

- (1)  $\frac{\sqrt{2}}{4} \times 288$  pm                      (2)  $\frac{4}{\sqrt{3}} \times 288$  pm  
(3)  $\frac{4}{\sqrt{2}} \times 288$  pm                      (4)  $\frac{\sqrt{3}}{4} \times 288$  pm

 Scan or tap for the  
full solution


**Q.3** A compound is formed by cation C and anion A. The anions form hexagonal close packed (hcp) lattice and the cations occupy 75% of octahedral voids. The formula of the compound is : [NEET (UG) 2019]

- (1)  $C_3A_4$                       (2)  $C_4A_3$                       (3)  $C_2A_3$                       (4)  $C_3A$

 Scan or tap for the  
full solution


**Q.4** If  $a$  is the length of the side of a cube, the distance between the body centered atom and one corner atom in the cube will be [AIPMT 2014]

- (1)  $\frac{2}{\sqrt{3}}a$                       (2)  $\frac{4}{\sqrt{3}}a$                       (3)  $\frac{\sqrt{3}}{4}a$                       (4)  $\frac{\sqrt{3}}{2}a$

 Scan or tap for the  
full solution


**Q.5** The number of carbon atoms per unit cell of diamond unit cell is [NEET 2013]

- (1) 6                      (2) 1                      (3) 4                      (4) 8

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full solution


**Q.6** In a face-centered cubic lattice, a unit cell is shared equally by how many unit cells? [AIPMT 2005]

- (1) 2                      (2) 4                      (3) 6                      (4) 8

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full solution


**Q.7** AB crystallizes in a body centred cubic lattice with edge length ' $a$ ' equal to 387 pm. The distance between two oppositely charged ions in the lattice is [AIPMT 2010 (Prelims)]

- (1) 335 pm                      (2) 250 pm                      (3) 200 pm                      (4) 300 pm

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**Q.8** For a cubic crystal structure which one of the following relations indicating the cell characteristics is correct? [AIPMT 2007]

- (1)  $a \neq b \neq c$  and  $\alpha = \beta = \gamma = 90^\circ$   
(2)  $a = b = c$  and  $\alpha \neq \beta \neq \gamma = 90^\circ$   
(3)  $a = b = c$  and  $\alpha = \beta = \gamma = 90^\circ$   
(4)  $a \neq b \neq c$  and  $\alpha \neq \beta$  and  $\gamma = 90^\circ$

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full solution


**Q.9** A compound formed by elements X and Y crystallizes in a cubic structure in which the X atoms are at the corners of a cube and the Y atoms are at the face-centers. The formula of the compound is :- [AIPMT 2004]

- (1)  $XY_3$                       (2)  $X_3Y$                       (3) XY                      (4)  $XY_2$

 Scan or tap for the  
full solution


**Q.10** Number of atoms per unit cell in B.C.C. is [AIPMT 2002]

- (1) 9                      (2) 4                      (3) 2                      (4) 1

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**Q.11** The cations and anions are arranged in alternate form in [AIPMT 2000]

- (1) metallic crystal                      (2) ionic crystal  
(3) covalent crystal                      (4) semi-conductor crystal

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full solution


**Q.12** Cations and anions combine in a crystal to form the following type of compound [AIPMT 2000]

- (1) ionic                      (2) metallic  
(3) covalent                      (4) dipole-dipole

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full solution


**Q.13** In a cubic crystal, A-atoms are placed at every corner and B-atoms at the centre of every face. The formula of the compound is [AIPMT 2000]

- (1) AB      (2) AB<sub>3</sub>      (3) A<sub>2</sub>B<sub>2</sub>      (4) A<sub>2</sub>B<sub>3</sub>

Scan or tap for the  
full solution



### ANSWER KEY

|       |    |    |   |   |   |   |   |   |   |    |    |
|-------|----|----|---|---|---|---|---|---|---|----|----|
| Ques. | 1  | 2  | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Ans.  | 1  | 4  | 1 | 4 | 4 | 3 | 1 | 3 | 1 | 3  | 2  |
| Ques. | 12 | 13 |   |   |   |   |   |   |   |    |    |
| Ans.  | 1  | 2  |   |   |   |   |   |   |   |    |    |