

Assignment-4(solid state)

1. The substance, which does not have a sharp melting point is:

- (a) KCl (b) glass (c) ice (d) diamond

(2) An amorphous substance is:

- (a) Isotropic (b) anisotropic (c) very fine powder
(d) a liquid

3. Which name is not associated with the crystal diffraction studies?

- (a) Debye (b) Van der Waals (c) Braggs (d) Laue

(4) A crystal having unit cell dimensions $a \neq b \neq c$ $\alpha = \beta = \gamma = 90^\circ$ is

- (a) Cubic (b) Tetragonal (c) orthorhombic
(d) monoclinic

(5) All crystals except Cubic -----are anisotropic:

- (a) Trigonal (b) Cubic (c) orthorhombic (d) hexagonal

6. A cubic crystal possesses several axes of symmetry, several planes of symmetry and

- (a) C_5 -axis (b) C_7 -axis (c) a centre of symmetry
(d) None of above

7. A tetragonal crystal possesses the following one axis as minimum element of symmetry:

- (a) Two- fold (b) three-fold (c) four-fold (d) six-fold

8. A crystal, which possesses no element of symmetry (.i.e. , a tri clinic crystal) is

- (a) KNO_3 (b) NaCl (c) $CuSO_4 \cdot 5H_2O$ (d) CsCl

9. A cubic crystal has ----- four fold axes of symmetry:

- (a) 2 (b) 3 (c) 4 (d) 6

10. A cubic crystal has ----- three fold axes of symmetry:

- (a) 2 (b) 3 (c) 4 (d) 6

11. The total number of Bravais lattices in crystals:

- (a) 7 (b) 32 (c) 230 (d) 14

12. The total number of space groups in crystals:

- (a) 7 (b) 14 (c) 32 (d) 1230

13. For a first order Bragg reflection, if the Bragg (glancing) angle of incidence is 30° , then For a first order Bragg reflection, if the Bragg (glancing) angle of incidence is 30° , then $d_{hkl}/\lambda=1/2$

- (a) 72 (b) 1 (c) $1/2$ (d) $1/4$

14. For a first order Bragg reflection, $d_{hkl}/\lambda=1/2$ if the Bragg (glancing) angle of incidence is:

- (a) 30° (b) 45° (c) 90° (d) 60°

15. For a first order Bragg reflection, $d_{hkl}/\lambda=2$ if the Bragg (glancing) angle of incidence is:

- (a) 30° (b) 45° (c) 60° (d) 90°

16. The number of atoms per unit cell in a simple cubic, fcc , and bcc arrangement are respectively.

- (a) 8,14,9 (b)1,4,2 (c) 1,2,4 (d) 4,1,2

17. For a cubic crystal, d_{100}/a is equal to:

- (a) 1 (b)1/2 (3) 1/4 (d) 1/8

18. The crystal plane for which the interplanar spacing d_{hkl} is $a/\sqrt{12}$ is

- (a) 100 (b)111 (C) 221 (d)222

19. Density ρ of a unit cell is given by:

- (a) $\frac{nM}{VNN_A}$ (b) $\frac{nV}{MNA}$ (c) $\frac{nV_A}{VM}$ (d) $\frac{VN_A}{nM}$

20. X rays have frequency

- (a) Less than that of light
(b) More than that Of IR
(c) more than that of uv but less than that Of γ -rays
(d) more than that of micro wave but less than that of light

Answer key assignment -4(solid state)

1.(b)	6.(c)	11.(d)	16.(b)
2.(a)	7.(d)	12.(d)	17.(1)
3.(b)	8.(c)	13.(b)	18.(d)
4.(c)	9.(b)	14.(c)	19.(a)
5.(b)	10.(c)	15.(a)	20.(c)

