Multiple Choice Questions:

1. Particles that most effects material properties
(a) Neutrons (b) Protons (c) Electrons (d) Valence electrons
2. Mean distance between atoms in the range of
(a) 25 nm (b) 2.5 nm (c) 0.25 nm (d) 0.025 nm
3. Which one of the following is not a strong bond?
(a) van der Waals bond (b) Covalent bond (c) Metallic bond (d) Ionic bond
4. Bond strength of secondary bonds is in the range of
(a) 1 kJ/mol (b) 10 kJ/mol (c) 100 kJ/mol (d) 1000 kJ/mol
5. *Electron sea* exists in
(a) Polar bonds (b) Ionic bond (c) Covalent bond (d) Metallic bond
6. Repeatable entity of a crystal structure is known as
(a) Crystal (b) Lattice (c) Unit cell (d) Miller indices
7. Coordination number for closest packed crystal structure
(a) 16 (b) 12 (c) 8 (d) 4
8. Atomic packing factor is
(a) Distance between two adjacent atoms (b) Projected area fraction of atoms on a plane
(c) Volume fraction of atoms in cell (d) None
9. Coordination number in simple cubic crystal structure
(a) 1 (b) 2 (c) 3 (d) 4
10. The atomic diameter of an BCC crystal (if a is lattice parameter) is
(a) a (b) $a/2$ (c) $a/(4/\sqrt{3})$ (d) $a/(4/\sqrt{2})$
11. A family of directions is represented by
(a) (hkl) (b) <uvw> (c) {hkl} (d) [uvw]
12. Miller indices for Octahedral plane in cubic crystal
(a) (100) (b) (110) (c) (111) (d) None
13. The plane ($1\bar{1}1$) is parallel to
(a) ($\bar{1}1\bar{1}$) (b) ($\bar{1}\bar{1}1$) (c) (111) (d) ($1\bar{1}1$)
14. The angle between [111] and [$11\bar{2}$] directions in a cubic crystal is (in degrees)
(a) 0 (b) 45 (c) 90 (d) 180
15. Miller indices of the line of intersection of ($\bar{1}\bar{1}1$) and (110) are
(a) [110] (b) [101] (c) [$10\bar{1}$] (d) [$\bar{1}10$]
16. Repeatable unit of polymers
(a) isomer (b) copolymer (c) homopolymer (d) mer
17. Pick the thermo-plast from the following
(a) Vinyls (b) Epoxies (c) Resins (d) Vulcanized rubber
18. For c coordination number of four, anion sits at the center of ……..where corners are occupied by
cations
(a) Cube (b) Tetrahedron (c) Triangle (d) Octahedron
19. Layered silicate structures in clays consists the following group
(a) SiO_4^{4-} (b) $Si_2O_5^{2-}$ (c) $Si_2O_7^{6-}$ (d) SiO_4^{4-}
20. *Schottky-defect* in ceramic material is
(a) Interstitial impurity (b) Vacancy- interstitial pair of cations
(c) Pair of nearby cation and anion vacancies (d) Substitutional impurity

Answers:

1. d
2. c
3. a
4. b
5. d
6. c
7. b
8. c
9. b
10. c
11. b
12. c
13. a
14. c
15. d
16. d
17. a
18. b
19. b
20. c
21.