

Babu Banarasi Das- National Institute of Technology & Management, Lucknow**Subject: Material Science (B06-07)****Tutorial Sheet I (Unit-1)**

1. Discuss importance of engineering materials with proper illustration and examples.
 2. Describe Bohr's Atomic Model along with its merits and limitations.
 3. Differentiate between characteristics of Mendeleev Periodic Table and Modern Periodic Table with suitable examples.
 4. What do you understand by Valence, Primary and Secondary Bonding? Justify by examples.
 5. What are postulates of Molecular Orbital Theory?
 6. What are Common Crystal Structures? Describe in detail.
 7. Define concept of Packing Fraction and calculate PF values for simple, fcc and bcc systems.
 8. Define Miller Indices? Draw (1, 1, 1) plane on Body Centered tetragonal unit cell? Also, draw its intersection with (1, 1, 0) plane.
 9. What is Crystal Imperfection? Discuss Frenkel and Schottky defect in crystalline solids.
10. Write short notes on the following:
- a) Pauli Exclusion Principle
 - b) Hund's Rule
 - c) Heisenberg Uncertainty Principle
 - d) Unit Cell
 - e) Ionic Radii and Atomic Radii
 - f) Ionization Potential
 - g) Effective Nuclear Charge and Shielding Effect
 - h) Diamond structure
 - i) Screw Dislocation and Edge Dislocation
 - j) Burgers Circuit and Burgers Vector
