**ASSIGNMENT – UNIT I**

**(M O T, Metallic Bonds, Liquid Crystals, Solid Defects, Graphite & Fullerenes, Nano-technology)**

1. Draw Molecular Orbital Diagram of O2, O2+, O2-, O2-- and arrange them **in increasing** order of **Bond length.**
2. Differentiate between **Bonding** and **Anti-bonding Orbitals.**
3. Why is **O2 Paramagnetic** and **F2 Diamagnetic?**
4. Why does **Hydrogen form diatomic** molecule whereas **Helium does not?**
5. Explain **Metallic bonds** on the basis of M O Approach (**Band Theory**).
6. Explain **Conductors, Semiconductors and Insulators** on the basis of Band Theory.
7. Describe **Liquid Crystals** and their different types with two examples of each type. Also give their **applications.**
8. Write short notes on various types of **Crystal Imperfections**. Also differentiate between **Frenkel** and **Schottky** defects.
9. Discuss the structure, properties and applications of **Graphite and Fullerenes**.
10. Write a note on the **conductivities of Graphite and Fullerenes.**
11. Write a note **on Nano-Technology and its applications**.