Important Question CIE - Improvement

1. Describe the need of post-processing heat treatment methods of electronic devices.
2. Describe the following processes for electronic devices: i) Thermal oxidation ii) Diffusion iii) Rapid thermal processing
3. Discuss the advantages, limitations and applications of following post heat treatment processes: i) Solder reflow, ii) Diffusion process and iii) Rapid thermal processing
4. Describe the following heat treatment processes for ferrous materials
   i) Full annealing ii) Normalizing iii) Tempering iv) Hardening
5. Explain in detail the steps to construct Time Temperature Transformation diagram with neat sketches.
6. Differentiate: i) Annealing and Normalising ii) Martempering and Austempering
7. Describe the following special heat treatment processes: i) Pack carburising ii) Nitriding iii) flame hardening iv) induction hardening
8. Describe the defects in the heat treatment process.
9. Define heat treatment and write the purpose of heat treatment
10. Define nanomaterials and describe significant properties of it.
11. Describe the significant improvement of properties of nanomaterials over conventional materials.
12. Discuss the advantage, disadvantages, and applications of nanomaterials with examples.
13. Describe the synthesis processes of nanomaterials.
14. Describe ball milling / sol-gel / Chemical vapour deposition techniques for the synthesis of nanomaterials.
15. Describe top down and bottom-up approach for the synthesis of nanomaterials with example.
16. Describe the following characterization techniques of nanostructures
    i) Spectroscopic techniques – SEM, TEM,
    ii) Automatic force microscopy (AFM).