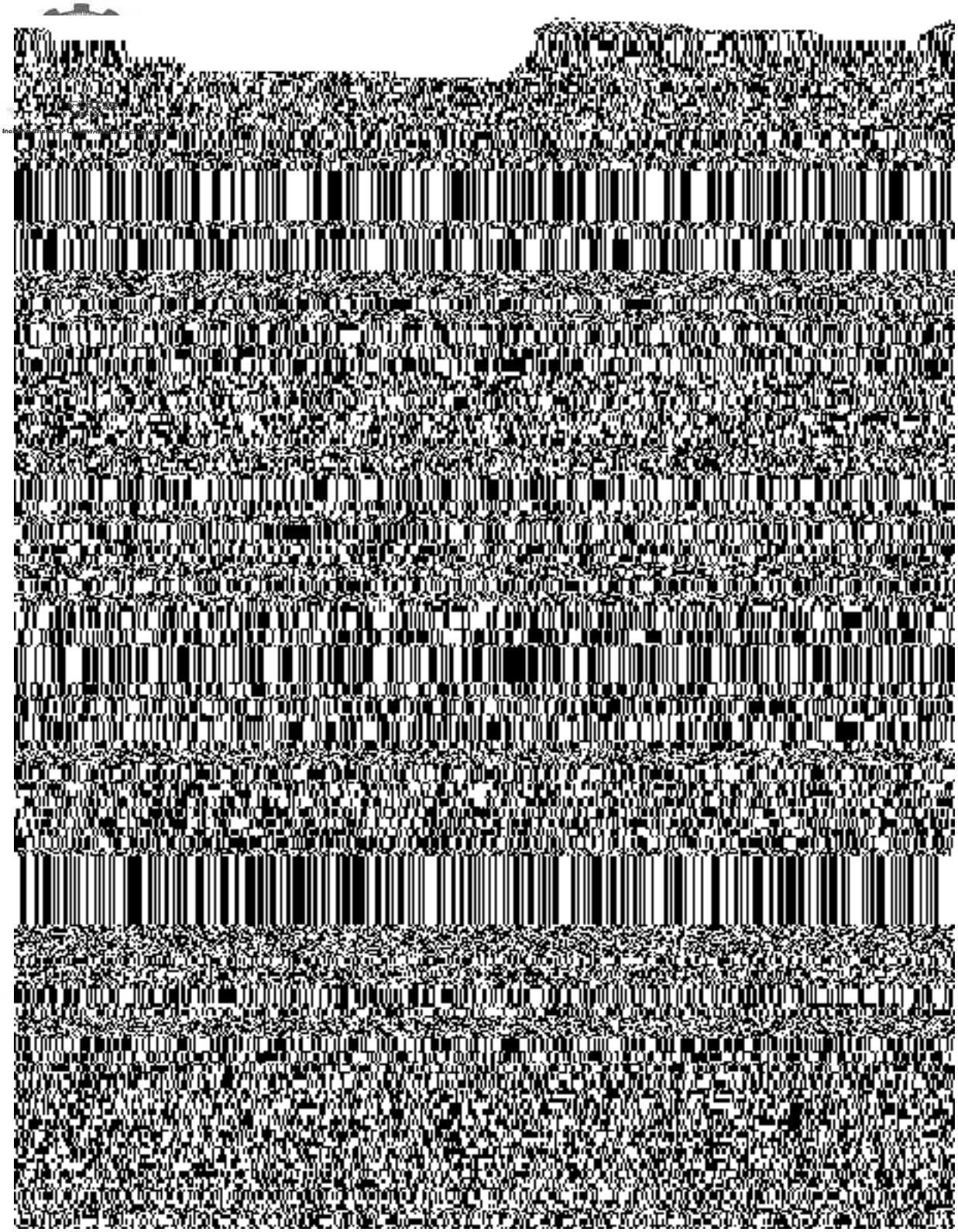

13. Explain the formation of PN Junction and the energy level diagram of biased PN junction. 10M

(OR)

14. a) Determine the concentration of holes in the valance band of intrinsic semiconductors. 5M

b) Explain the working of a Solar cell. 5M

15. a) Derive an expression for ionic polarizability. 5M

b) Derive an expression for Internal fileds in dielectric material. 5M

(OR)

16. a) Explain the various types of polarization mechanisms. 5M

b) Derive an expression for the Clausius-Mossotti equation. 5M

17. a) Explain the origin of Magnetic moment and Bohr magneton. 5M

b) What is Meissner Effect? Give few applications of superconductivity. 5M

(OR)

18. a) What is magnetic hysteresis explain on the basis of domain theory. 5M

b) Explain superconductivity and give few properties of superconducting material. 5M 5M

19. a) Explain the importance of surface to volume ratio on nano scale. 5M

b) What are nanomaterials. How are they classified? 5M

(OR)

20. a) Explain how nano particles play an important role over bulk materials. 5M

b) Write in detail the SEM characterization technique in detail. 5M