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Atal Bihari Vajpayee Indian Institute of Information Technology & Management, Gwalior

EE404: Integrated Circuit Technology

Minor Examination (Session 2024–25)

Maximum Time: 1.5 Hours **Max Marks: 30**

Note: All questions are compulsory. Rough diagrams are acceptable but must be labelled.

1. **Multiple Choice Questions (1 mark each):** (a) Which technique provides the most accurate doping control? (i) Diffusion (ii) Ion implantation (iii) Oxidation (iv) Metallization

   (b) The primary purpose of epitaxy is: (i) Increase resistivity (ii) Grow single-crystal layer (iii) Reduce contamination (iv) Improve lithography

   (c) LSI refers to: (i) Low Scale Integration (ii) Large Scale Integration (iii) Limited Silicon Integration (iv) None

2. **True/False (justify in 1–2 sentences, 2 marks each):** (a) Dry oxidation is slower but gives better-quality oxide. (b) Plasma etching is purely physical etching.

3. **Match the Following (1 mark each):**

A. Czochralski Method	1. Layer Deposition
B. Photolithography	2. Wafer Growth
C. Sputtering	3. Pattern Transfer
D. Ion Implantation	4. Doping

4. With neat steps, explain the fabrication process of a p–n junction diode. (6 Marks)

5. Differentiate between **BJT IC technology** and **MOS IC technology** with at least 3 points. (5 Marks)

6. Short notes (any two): (a) Cleanroom requirements (b) Wet vs Dry oxidation (c) Metallization techniques (8 Marks)