

B. TECH.**THEORY EXAMINATION (SEM–VI) 2016-17****INTEGRATED CIRCUIT TECHNOLOGY****Time : 3 Hours****Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.****SECTION – A****1. Attempt all of the following questions:****10 x 2 = 20**

- (a) What are the uses of Silicon Dioxide?
- (b) Differentiate among Point, Frank and Schottky Defects.
- (c) What is preoxidation cleaning?
- (d) What is Epitaxy?
- (e) What do you understand by Ion – implantation?
- (f) Write the diffusion equation at any given distance and time.
- (g) Define the total stopping power of the target.
- (h) What are the four important performance parameters of a projection printer?
- (i) Write the principle of mass separation.
- (j) What does ion source contain?

SECTION – B**2. Attempt any five of the following questions:****5 x 10 = 50**

- a) Explain Electronic Grade Silicon with neat diagram. Explain the polishing process of Silicon in detail.
- b) Why is cleaning of Silicon wafer necessary before any processing steps? Explain the crystal structure.
- c) Describe the Silicon on insulator with neat diagram. Discuss about the epitaxial defects.
- d) Explain plasma oxidation technique for the growth of oxide layer. Explain the application of SiO₂ layer in IC Fabrication.
- e) Describe the effect of impurities and damage on the oxidation rate.
- f) Explain Lithography with neat schematic diagram.
- g) Describe basic layout of implantation equipment.
- h) Discuss gaseous and liquid diffusion systems.

SECTION – C**Attempt any two of the following questions:****2 x 15 = 30**

- 3 (a) Discuss different shaping operations involved in Preparing Wafers with diagram.
- (b) Explain the principle of molecular beam epitaxy.
- 4 (a) Explain the concept of vacuum Deposition.
- (b) Describe the various charges present in oxidation layer in detail.
- 5 (a) How is the silicon nitride used? Explain its deposition variables.
- (b) Explain Monolithic and Hybrid Integrated Circuits.