Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NEC603**

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 used of Silicon Dioxide?

(b) Differentiate among Point, Franke and Schottdy 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 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 SiO_2 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 nitrite used? Explain its deposition variables.

(b) Explain Monolithic and Itybrid Integrated Circuits.