S.No. : 8 BEC 2604

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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 23459	Roll No.										

B. Tech. Examination 2021-22

(Even Semester)

VLSI TECHNOLOGY

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION – A

1. Attempt all parts of the following : 8×1=8

   (a) What are the uses of silicon dioxide?

   (b) What is preoxidation cleaning?

   (c) What is epitaxy?

   (d) What do you understand by ion-implantation?

   (e) Write the diffusion equation at any given distance and time.

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(f) Define the total stopping power of the target.

(g) What are the four important performance of a projection printer?

(h) Write the principle of mass separation.

SECTION – B

2. Attempt any two parts of the following : $2\times6=12$

(a) Discuss different shaping operations involved in preparing wafers with diagrams.

(b) Explain the principle of molecular beam epitaxy.

(c) Explain the concept of vaccum deposition.

(d) Explain lithography with neat schematic diagram.

SECTION – C

Note :– Attempt all questions from this section. 8×5

3. Attempt any two parts of the following :

(a) Explain electronic grade silicon with neat diagram.

(b) Why is cleaning of silicon wafer necessary before any processing steps?

(c) Describe the silicon on insulator with neat diagram.

4. Attempt any two parts of the following :

(a) Explain plasma oxidation technique for the growth of oxide layer.

(b) Describe the effect of impurities and damage on the oxidation rate.

(c) How is the silicon nitrite used? Explain its deposition variables.

5. Attempt any two parts of the following :

(a) Derive the diffusion equation. How the depth of diffusion is controlled during diffusion process?

(b) Explain the metallization and describe the problems associated with this process. Explain dc sputtering method of metallization.

(c) Explain the basic working principle of ion implantation process with all necessary equations.

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6. Attempt any two parts of the following :

   (a) Write short note on package types and packing design VLSI technology. What is meant by DIP?

   (b) What is sheet resistance? Give all the method regarding its measurement.

   (c) What is VLSI assembly technologies? Differentiate it with package fabrication technologies.

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