4. What is Debye length? Explain the Kinetics of Oxide growth on silicon. 4+10

UNIT-III

5. Discuss the Ion beam etching used in dry physical etching techniques with proper diagram of ion milling equipment. Explain the concept of End-point detection in Reactive Ion Etching systems. 10+4

6. What is Nuclear Stopping? Give a brief description of the following Ion Implantation systems:

   a) Ion Sources, b) Accelerator and c) Beam Scanner 2+4*3

UNIT-IV

7. What is vacuum evaporation? Discuss how multilayer metal deposition is done using Sputter deposition technique in VLSI. 4+10

8. Describe the Through-Hole and Surface-Mount packaging techniques used in Plastic and Hermetic-ceramic packages of VLSI device. 7+7

UNIT-V

9. Differentiate sensor and actuator. Discuss the various commercial applications of MEMS technologies in today's world. 4+10

10. What is MEMS? What are the various modelling techniques involved in the design of MEMS device? State any two differences between microelectronics and MEMS technology 2+10+2

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M. Tech Odd Semester Examination, February, 2023

Electronics & Communication Engineering

(1st Semester)

Course No.: MECE-103A

(Microelectronics Technology)

Full Marks: 70
Pass Marks: 28

Time: 3 hours

Note:
1. Attempt 05 (Five) questions by taking one form each unit.
2. Begin each answer in a new page.
3. Answer parts of a question at a place.
4. Assume reasonable data wherever required.
5. The figures in the right margin indicate full marks for the question.

UNIT-I

1. Explain the vapour phase epitaxial and molecular beam epitaxial process. Also mention its merits and demerits. 5+5+2+2

2. Discuss the four different types of defects in a crystal. Explain the Float zone method of Crystal growth. 4+10

UNIT-II

3. a) What is optical lithography? How is it different from electron-beam lithography? What is proximity printing? What is a reticle mask? What is image reversal?

   b) What is negative and positive photoresist? (2*5)+(2+2)