

P. Pages : 2



Time : Three Hours

**GUG/S/25/13921**

Max. Marks : 80

- Notes : 1. All questions are compulsory.  
2. Assume suitable data wherever necessary.  
3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Describe Czochralski Method for silicon crystal growth along with it's advantages and disadvantages. 8  
b) Describe types of diffusion and factor's affecting on diffusion. 8

**OR**

2. a) Discuss solid source diffusion system with neat diagram. Also give one example of each source for P-Type and N-Type diffusion. 8  
b) Elaborate clean room and it's classes along with RCA cleaning process. 8  
3. a) Enlist the different oxidation techniques describe High pressure oxidation techniques in detail. 8  
b) Discuss oxide as a mask and the properties of silicodi-oxide in detail. 8

**OR**

4. a) What is oxidation? Derive the kinetics of Thermal oxidation. 8  
b) Describe the effect of Impurities and damage on the oxidation rate. 8  
5. a) Discuss the concept of LPCVD process with the help of suitable example. 8  
b) Describe X-ray Lithography in details along with it's advantages and disadvantages. 8

**OR**

6. a) Describe in detail about molecular beam epitaxy with the help of neat diagram. 8  
b) Elaborate the concept about masked Ion beam lithography in IC fabrication. 8  
7. a) Write a short notes on:  
i) Metallurgical and chemical Interaction.  
ii) Multilevel structure. 8  
b) Describe the properties of metal film deposition with evaporation techniques in detail. 8

**OR**

- 8.** a) Discuss the problem associated with deposition and processing during metallization process. **8**
- b) Describe the importance of metallization, its requirement, material choice and application. **8**
- 9.** a) Write a short notes on the following. **8**
- i) Parallel plate etcher.  
ii) Loud locked etcher.
- b) Illustrate PECVD techniques in detail. **8**

**OR**

- 10.** a) Differentiate between WET etching and DRY etching. **8**
- b) Describe Evaporation method for the deposition of film along with suitable example. **8**

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