

B.E. Electronics & Communication/Telecommunication Engineering (Model Curriculum) Sem-V  
**ET502M2 : Open Elective-I : Integrated Circuit Technology**

P. Pages : 1

Time : Three Hours



**GUG/W/22/13921**

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain Czochralski method for silicon crystal growth. What are its advantages? **8**  
b) What do you mean by class of a clean room? Give the steps in a standard RCA cycle during wafer cleaning? **8**

**OR**

2. a) Explain solid source diffusion system with neat diagram. Also give one example of each source for P – type and N – type diffusion? **8**  
b) With a neat diagram, explain the float zone technique of crystal growth? **8**
3. a) Discuss Oxide as a mask and the properties of silicon dioxide in details? **8**  
b) Explain high k and low k dielectrics and why it is needed? **8**

**OR**

4. a) Why per oxidation cleaning is done, explain the cleaning process? **8**  
b) Explain in detail how WET oxidation is performed in the IC fabrication? **8**
5. a) Explain Optical lithography with neat and labelled diagram? **8**  
b) Explain electron beam lithography with neat diagram? **8**

**OR**

6. a) Describe X – ray lithography in detail with its advantages? **8**  
b) Explain deposition process of polysilicon, silicon Dioxide and silicon Nitride? **8**
7. a) Explain how gate and interconnection defect occur due to processing problem in metallization? **8**  
b) How metallurgical and chemical interaction can completely destroy metallization? **8**

**OR**

8. a) Enlist the desired properties of the metallization for integrated circuits and role of Gate and interconnection metallization? **8**  
b) Explain Dry etching and chemical etching process during metallization? **8**
9. a) Describe Plasma surface chemistry in detail? **8**  
b) Discuss the interaction of reactive plasma with surfaces due to physical component? **8**

**OR**

10. a) Explain generation of plasma by AC plasma excitation in detail. **8**  
b) Write a short note on. **8**  
i) Reactive Ion – Beam Etching. ii) Microwave plasma etching.

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