



Name :

Roll No. :

Invigilator's Signature :

CS/M.TECH (ECE.VLSI-OLD)/SEM-2/MVET-204/2011

2011

VLSI TECHNOLOGY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Short Answer Type Questions)

1. Answer any *seven of the* following $7 \times 2 = 14$
- a) What is a CLASS 1000 clean room ?
 - b) What is hybrid IC ?
 - c) What is batch processing ?
 - d) In an RF plasma system, what is the frequency commonly used ?
 - e) What are the different alignment processes for photolithography ?
 - f) What is negative & positive photoresist ?
 - g) What is Miller index ?

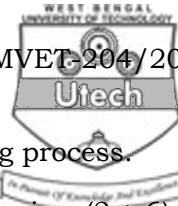


- h) What is rectifying contact ?
- i) What is diffusion coefficient ?
- j) What are the advantages of wet oxidation over dry oxidation ?

GROUP – B
(Long Answer Type Questions)

Answer any *four* questions. $4 \times 14 = 56$

- 2.
 - a) Explain the different mechanisms of impurity diffusion.
 - b) What are the Fick's laws of diffusion ? Explain their significance in Si IC processing. $5 + (5 + 4)$
- 3.
 - a) What is the need of cleaning & machining for wafer preparation ?
 - b) Explain how organic components & inorganic components are removed from wafer.
 - c) What are different machining processes involved in wafer preparation ? $5 + 4 + 5$
- 4.
 - a) Explain with suitable diagram dry & wet oxidation processes. Why in wet oxidation the water bubbler temperature is kept in 90°C ?
 - b) Explain with neat diagram different point defects in crystal. $(8 + 2) + 4$



5. a) What is plasma ? Explain plasma etching process.
b) Explain ion implantation for substrate doping. (2 + 6) + 6
6. a) What do you mean by lithography ? What is spin-coat & developer ?
b) Explain photolithography process with neat diagram.
(2 + 4) + 8
7. Write short notes on any two of the following : 2 × 7
- a) CVD
 - b) CZ method
 - c) MBE
 - d) Contact printing.
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