Time: 3 Hours **Marks: 80**

N.B. 1) Question No.1 is compulsory
2) Solve any three questions from the remaining questions.
3) Assume suitable data if necessary.

1		Solve **any four** of the following	
	(a)	State how MGS and EGS silicon are fabricated from sand.	**5**
	(b)	Explain the need of isolation techniques in MOSFET fabrication.	**5**
	(c)	Briefly explain four probe method for resistivity measurement.	**5**
	(d)	What is FinFET technology?	**5**
	(e)	Explain the types of Ion Implantation methods.	**5**
2	(a)	Explain law of oxidation. Explain thermal oxidation method and state it's advantages.	**10**
	(b)	Describe with neat diagram Hayness-Schokly experiment for measurement of drift mobility of n type semiconductor.	**10**
3	(a)	Explain NMOS fabrication process steps along with cross sectional diagrams.	**10**
	(b)	State the need of Epitaxial layer. Explain molecular beam epitaxy with diagram.	**10**
4	(a)	Differentiate diffusion and Ion Implantation techniques in all aspects.	**10**
	(b)	State need of λ (lambda) based design rules and draw layout of 2 input CMOS NAND gate using lambda-based design rule.	**10**
5	(a)	Compare evaporation and sputtering methods for metal deposition.	**10**
	(b)	Explain electron beam lithography in detail and state it's advantages.	**10**
6		Write short note on any **four**	
	(a)	Oxide layer patterning method	**5**
	(b)	Fabrication of MESFET	**5**
	(c)	Advantages of Nanowire Transistors	**5**
	(d)	SOI Technology	**5**
	(e)	Diffusion Mechanisms	**5**
