

- N.B. :** 1) Question No. 1 is **compulsory**.
2) Answer any **four** questions out of remaining **six** questions.
3) **Figures** to the **right** indicate **full** marks.

1. (a) Draw and explain Arrhenius plot for CVD processes. (5)
(b) Compare isotropic and anisotropic etching. (5)
(c) Give types of Si wafer. (5)
(d) What is Synchrotron radiation? (5)
2. (a) Explain photolithography with neat sketches. (10)
(b) What are Microneedles? Give its types and advantages. Give all steps with neat diagram for fabrication of Microneedle. (10)
3. (a) What is μ - TAS? Explain its block diagram and any one separation technique. (10)
(b) Define surface micromachining. Explain in detail all the process steps involved. (10)
4. (a) Compare IC and MEMS packaging? Explain levels of MEMS packaging. (10)
(b) What is PVD? Give types. Discuss any two techniques in detail with diagram. (10)
5. (a) Discuss dry etching in detail. (10)
(b) Give drug delivery vehicles. Explain any one drug delivery system and any one implantable device. (10)
6. (a) Draw and explain block diagram of Biosensor. Give all Biosensing methods. Explain Amperometric and Piezoelectric Biosensor.
(b) What is etch stop? Explain Boron etch stop with diagram. (10)
7. Write short notes on (any four) of the following. (20)
 - (a) Microcontact printing
 - (b) Properties of Si
 - (c) PCR
 - (d) Doping
 - (e) Electron beam lithography,