

Answer all questions. Be brief and specific in your answers.

1 See the Fig 1. A layer of silica having thickness (t) is to be grown on silicon substrate. Suggest the process. State the thickness of silicon consumed. An aluminum layer is then to be deposited on grown silica layer. Explain the process of deposition. How do you grow the fourth layer shown in Fig1.

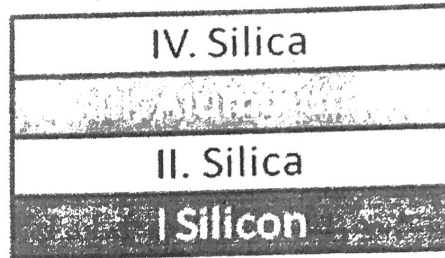


Fig1

2 Observe Fig.2. (a&b) Comment on the etching process to fabricate the same. Starting material is of polycrystalline silicon.

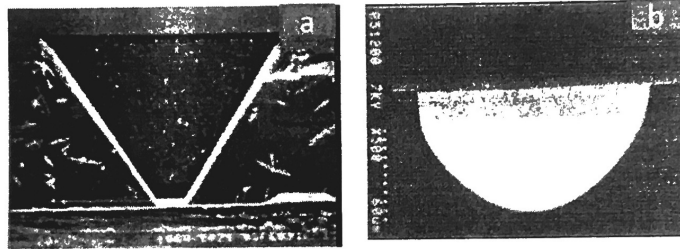


Fig 2

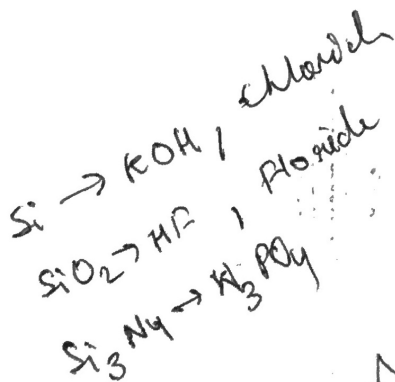
3 A substrate having Ra value of 10 micrometer. Suggest the imaging mode for STM & List the possible defects in tip preparation for STM.

4 How do you use nano scratching on silicon for maskless printing

5 State the reasons for the variation in DVEE in MUSM- a. tool rotation b. concentration of abrasive slurry c. feed rate d. amplitude of vibration

6 Write the difference between the tips used in STM and AFM.

$$\frac{P}{NA} = \text{resolving power}$$



erosive  
↓  
Slurry =

Barium Carbide + Slurry  
SiC



Si → NaOH etching

