

- Q1. You have two different samples (i) soft polymer and (ii) Silicon. Which modes of the AFM will be preferred for these samples and why? What is 'set point' in AFM imaging? The backside of the AFM cantilevers is coated with thin Au film, why? Which type of force is mainly responsible for cantilever deflection in AFM? [5]
- Q2. Describe the working principle of scanning tunneling microscope. Why does STM can achieve atomic resolution? What is scanning tunneling spectroscopy (STS) and what are its applications? What is the order of current in a typical STM imaging experiment? [5]
- Q3. In field ion microscopy (FIM), 'specimen' is kept at very low temperature (~5-50K), why? What information is obtained from FIM? What are the factors that affect resolution of FIM? What is the principle of operation of FIM? [5]
- Q4. What is magnetic force microscopy (MFM)? How the magnetic information is separated from the topography signal in MFM imaging. [5]

