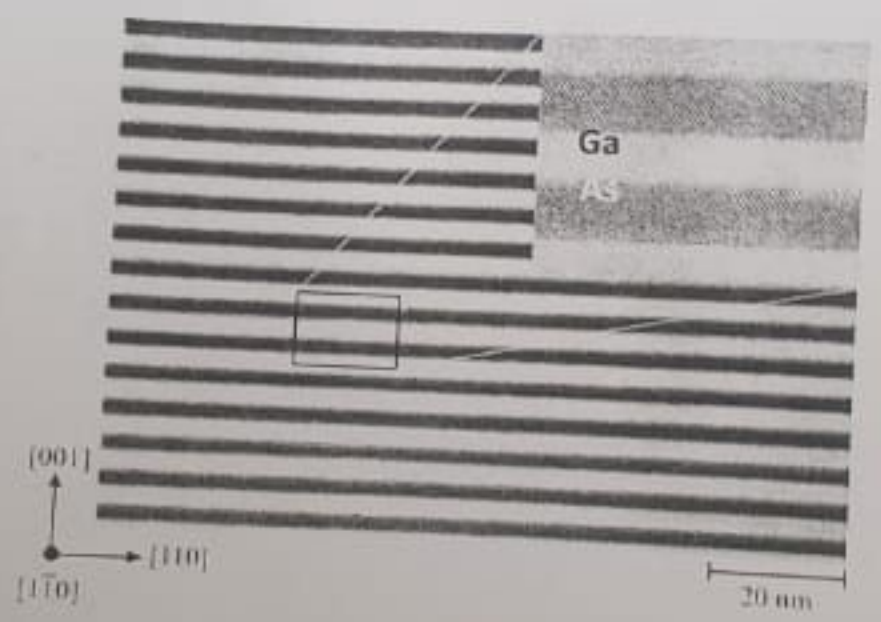
VIT

School of Electronics Engineering
Fall Semester (2019-20), CAT-II
Introduction to Nanoscience and Nanotechnology

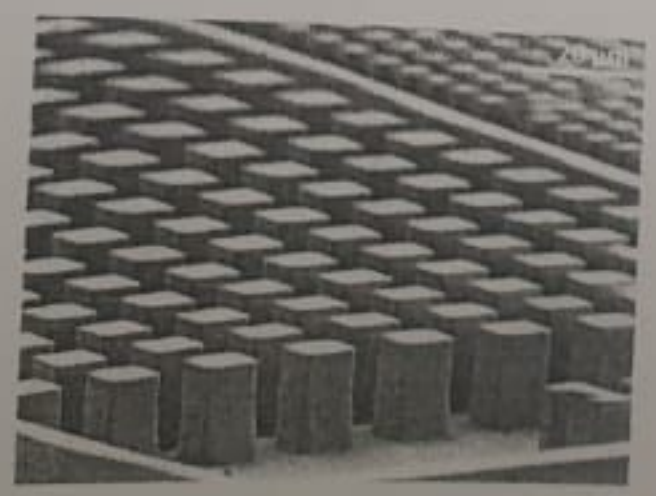
Course Code : ECE1006 **Slot:** A2
Max. Marks : 50 **ClassNbr.:** 1490, 1496, 1494
Duration : 90 Minutes **Date** : 29/09/19
Faculty: Dr. Sathyanarayanan .P, Dr. Sakthi Swarrup, Dr. Mangaiyarkarasi

Answer ALL the questions

1. You have to study and measure the crystal lattice and arrangement of atoms in a material. Identify a suitable microscopic technique to measure the same. Discuss with proper schematic. (12 marks)
2. Explain the technique with a neat sketch to fabricate crystalline thin films in ultrahigh vacuum (UHV) with precise control of lattice matched structure (see below) (13 marks)



3. Discuss about the technique involved in the fabrication of below structure and explain the steps involved in fabrication with a neat sketch. (13 marks)



4. Differentiate the two approaches for the fabrication of nanostructured materials/devices. Explain a suitable technique which exploits bottom up approach used to fabricate thin layer of material for instance a quantum well on to a suitable substrate. (12 marks)