

國立台灣科技大學九十六學年度碩博士在職專班招生試題

系所組別： 工程技術研究所博士在職專班

科 目： 科技實務

總分 100 分 (每題 20 分，共 5 大題)；請於答案卷內依序作答。

1. Please write down the full names for the abbreviations of TEM, XRD and SEM, and explain the principles in the operation of the equipments.
2. Please explain the principle of the energy dispersive X-ray analysis (EDXA) in the composition analyses of materials. The EDXA is always equipped in the TEM and SEM.
3. In the processes of cold work of metals in polycrystalline forms, metals with FCC and BCC crystal structures have the properties of cross-slip in the slip systems; however, metals with HCP crystal structures do not. Please explain the reason.

請將第 4 及 5 題的英文翻譯成中文：

4. Society witnessed a technology revolution during the twentieth century with the change from products derived from mechanical technology to those centered on electronic technology. Digital compact disc players replaced record players, and automotive engines are now controlled by electronic ignition systems. Electronic computers quickly perform tasks in nearly every aspect of society, promoting efficient use of our resources. Given the breadth of changes brought by electronic technology, the revolution has just begun.
5. Understanding the structure and bonding of atoms provides the key to knowing how silicon performs its vital role as a semiconductor. Once unlocked, this knowledge provides the foundation for understanding how the simplicity of a semiconductor device can be a part of the complex world of the microchip.