

大同大學 97 學年度研究所碩士在職班入學考試試題

考試科目：科技英文

所別：化學工程研究所

第 全 頁

註：本次考試 不可以參考自己的書籍及筆記； 不可以使用字典； 不可以使用計算器。

一、請將下列三題翻譯成中文 (60%)

1. Solid materials have been conveniently grouped into three basic classifications: metals, ceramics, and polymers. Metallic materials are normally combinations of metallic elements. They have large numbers of nonlocalized electrons; that is, these electrons are not bound to particular atoms. Many properties of metals are directly attributable to these electrons. Metals are extremely good conductors of electricity and heat and are not transparent to visible light. Ceramics are compounds between metallic and nonmetallic elements; they are most frequently oxides, nitrides, and carbides. These materials are insulative to the passage of electricity and heat. Polymers include the familiar plastic and rubber materials. They are organic compounds that are chemically based on carbon, hydrogen, and other nonmetallic elements. These materials typically have low densities and may be extremely flexible. (30%)
2. Many materials that we use are derived from resources that are nonrenewable, that is, not capable of being regenerated. These nonrenewable resources are gradually becoming depleted, which necessitates either the discovery of additional reserves or the development of new materials having comparable properties and less adverse environment impact. (20%)
3. A tensile stress is to be applied along the long axis of a cylindrical brass rod that has a diameter of 0.4 inch. Determine the magnitude of the load required to produce a 10^{-4} inch change in diameter if the deformation is entirely elastic. (10%)

二、請將下列二題翻譯成英文(30%)

4. 應力為測量一平面每單位面積的作用力

$$\sigma = F/A$$

式中F為力，A為面積。(15%)

5. 某些金屬合金可以淬冷 (quenching) 或濺冷 (splating) 技術在很冷的表面上可得不定形 (amorphous) 或玻璃金屬。(15%)

三、Please briefly introduce yourself in English (10%)