

國立臺灣科技大學

八十九學年度碩士班招生考試試題

系所組別：機械工程系乙組

科目：製造學

本試卷共有七大題，合計 100 分。請依序作答

1. 請分別說明下列各小題(20%)，每小題各佔 5%
 - (A) Flow spinning
 - (B) Flashless forging
 - (C) Progressive die
 - (D) Spring back 之定義及影響它之因素。
2. What is Numerical Control (NC) and the components of a NC system? Please make a drawing to explain the definition of control resolution, accuracy, and repeatability of a NC positioning system. What is 'PC based controller'? How can the PC based controller be used in the NC machine? Which kind of advantages can you expect to use a PC based controller in a NC machine? (10 %)

Please briefly compare the advantage and disadvantage of contact and non-contact inspection techniques. What is a machine vision and the operations of machine vision systems? Also list the applications of machine vision in manufacturing. (10 %)
3. The growth in applications of synthetic polymers is truly impressive. On a volumetric basis, current annual usage of polymers exceeds that of metals. Please describe the reasons for the commercial and technological importance of polymers. (5%)

Also, polymers can be divided into three categories. What are they? Please also describe the similarity and difference between these polymers. (6%)

Injection molding is the most widely used molding process for the thermoplastics. Please describe the process and equipment of injection molding. The mold is the special tool in injection molding. How many components are consisted in a mold? Please also describe the effect of these components in a mold. (9%)
4. What is tungsten carbide? Please describe the production process for tungsten carbide sintered products and precision molds and dies. Which kind of mold and die must be produced using tungsten carbide? Which kind of advantage can you expect to use tungsten carbide mold and die? (10%)



國立臺灣科技大學
八十九學年度碩士班招生考試試題

系所組別：機械工程系乙組
科 目：製造學

5. What is "E-commerce"? How can you apply E-commerce in manufacturing? (10%)
6. Please describe the processing steps of Silicone Wafer for IC fabrication. What is Lithography? Also describe the processing sequence in Photolithography. Please describe the layer processes used in IC fabrication to add, alter or remove regions on Si wafer, and the applications of these processes. Also please describe the processing steps in IC packaging. (10%)
7. What is high speed machining? Please describe the key technologies and machining characteristics of high speed machining. Also please list the key components of a high speed machine and explain their effect on the high speed machine. (10 %)

