

國立台灣科技大學九十九學年度碩士班招生試題

系所組別： 機械工程系碩士班戊組

科 目： 材料特性與應用

(總分為100分)

1. Explain why copper (Cu) has drawn increasing attention as a new interconnect material for deep submicron ultra-large scale integrated (ULSI) circuits, as compared to Al or Al alloys. (10%)
2. Describe the working principles of (a) solar cell, and (b) light-emitting diode (LED). (10%)
3. Define the meaning of sintering process, and demonstrate what happened to the ceramic particles during sintering. (10%)
4. Define the glass transition temperature (T_g) of the glass materials, and how to determine the T_g value. (10%)
5. In the evolution of Television or Display, what is the difference between Liquid Crystal Display Television (LCD TV) and Light-emitting diode display (LED TV)? (15%)
6. Write down the difference in magnetic properties between magnetic materials used in electrical applications and those used for computer memories. (15 %)
7. What kind of heat treatment should be performed on copper or aluminum wire for transmission of electrical power after drawing? Explain. (10 %)
8. Explain the reason or reasons why a metal can easily be deformed into a useful shape by hot working rather than cold working the metal. (10 %)
9. Explain the reason why scratched tin-plated steel will corrode very rapidly? (10 %)

