義守大學 94 學年度研究所碩士在職專班考試試題

系所別	材料科學與工程學系	考試日期	94/4/23
考試科目	材料科學與工程	總頁數	1

※此為試題卷，請將答案填寫在答案卷內，未寫於答案卷內者，不予計分。

※不可使用計算機

1. To plot the stress-strain behavior for brittle, plastic and highly elastic polymers. (12%)

2. To plot the stress-strain relationship for the four materials: SAE 1006, SUS 304, polymethyl methacrylate and Al_2O_3 at 60^0C. How about the test results if these four materials are impact tested? Use a suitable diagram to explain them. (24%)

3. Lead and tin are solved to a solid solution with a eutectic point at 183^0C if 62% tin is contented. The melting point of pure lead is 327^0C that is 95^0C higher than that of tin. Two single phases are limited as the compositions of tin reach 18% and 98% respectively. To fulfill this phase diagram and figure out all of the phase fields. How many single-phase fields are included in this diagram? (24%)

4. What properties make magnesium often used in the handy and lap-top housing instead of polymers. Why are these magnesium parts die cast mostly? What can be their more effective manufacturing processes? Why are these magnesium shell often doped with alloying elements? Explain them according to the knowledge of material engineering. (20%)

5. To declare: (a) interfaces in materials (b) relationship between unit cell length a and atomic radius R of BCC unit cells (c) affecting factors on the diffusivities of materials (d) dynamic recovery during hot working (20%)