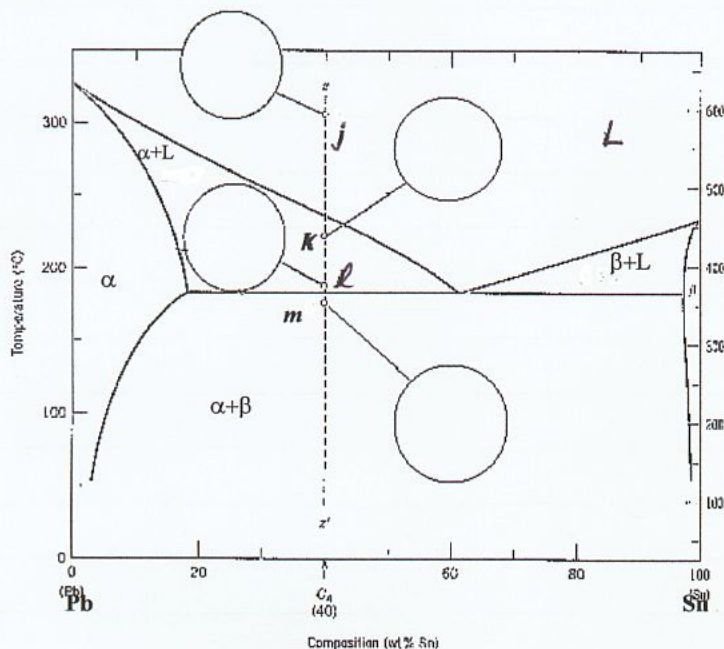| 考試科目 | 材料科學與工程 | 系別 | 材料科學與工程所 | 份 數 | | 考試日期 | 5月3日 | 節 次 | 第 1 節 |

[Problem 1] (20%)
Explain the following specific names.
- (a) Strain hardening
- (b) Young's modulus
- (c) Yield strength
- (d) Toughness

[Problem 2] (20%)
Fill up the empty circles in the figure below by sketching their microstructure.

[Problem3] (10%)
Explain the strengthening mechanism of grain refining in most of metals

[Problem 4] (10%)
What would be the (hkl) indices for the four lowest diffraction angle peaks for a bcc metal and an fcc metal, respectively?

[Problem 5] (20 %)
Explain the mechanism of precipitation hardening in aluminum alloys, i.e. Al-4 % Cu alloy.

[Problem 6] (20 %)
(a) What are the diffusion mechanisms for the solid materials?
(b) List the diffusion paths of atom for the solid materials and compare their diffusion rate.

＊ 備註：試題隨卷繳交