

本試題是否可以使用計算機：可使用 · 不可使用 (請命題老師勾選)

1. Define isotropy and anisotropy with respect to materials properties, and explain why the polycrystalline materials are most often isotropic. (10%)
2. The grain boundary energy of a small-angle grain boundary is less than for a high-angle one. Why is this so? (10%)
3. Compare interstitial and vacancy atomic mechanisms for diffusion. Why interstitial diffusion is normally more rapid than vacancy diffusion. (10%)
4. Explain (a) engineering stress, (b) engineering strain, (c) eutectic reaction, (d) phase diagram, (e) unit cell. (20%)
5. If the cold-worked brass is preformed by the annealing treatment. What is the driving force for recrystallization and grain growth? (10%)
6. Describe the differences between pearlite and bainite relative to microstructure and mechanical properties. (10%)
7. The coordination number and the atomic packing factor are two important characteristics of a crystal structure. Please explain and give example. (10%)
8. Describe and make a drawing of the edge, screw, and mixed dislocation. (10%)
9. Draw the crystal structure of (a) NaCl, (b) ZnS, (c) CaF₂, (d) CsCl. (10%)