

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Name and describe the two atomic mechanisms of diffusion. (10%)
2. Name and describe the two impact fracture testing techniques. (10%)
3. Name the two types of solid solution, and provide a schematic sketch of each. (10%)
4. Describe edge and screw dislocation motion from an atomic perspective. (10%)
5. Explain why, upon solidification, an alloy of eutectic composition forms a microstructure consisting of alternating layers of the two solid phases. (10%)
6. Name and describe the two most common hardness-testing techniques. (10%)
7. Compare the differences between steady-state and non-steady-state diffusion. (10%)
8. Describe and explain powder metallurgy. (10%)
9. Describe and explain athermal transformation. (10%)
10. Explain why metallic materials are opaque to a visible light. (10%)