

1. 請說明下列原子之間之鍵結為何？ (10%)
(a) Si-Si (b) Si-C (c) Si-N (d) Si-O
2. 何謂 C-C 之間之 sp , sp^2 , sp^3 鍵結？ (10%)
3. 由原子鍵結之差異，解釋金鑽石與石墨之機械性質有何不同？ (10%)
4. 何謂金屬間化合物？此種化合物原子間鍵結為何？ (10%)
5. 如何定義過渡元素 (Transition Metals)？ (10%)

(背面仍有題目,請繼續作答)

(50分)

6. 名詞解釋(8分)
- Retained Austenite
 - Pig iron
 - Widmanstaetten structure
 - Hardness & Hardenability
7. What is the purpose of the following heat treatment (10分)
- Homogenization
 - Quenching
 - Tempering
 - Spheroidizing
 - Solution treatment
8. (a)請繪出鐵碳平衡圖並說明各相區、溫度及變態點。(12分)
(b)繪出含碳量分別為 0.45%, 0.8% 及 1.2% 之碳鋼, 加溫至沃斯田鐵區域持溫一段時間後, 慢速冷卻至室溫之金相組織。
9. What is the difference between SCF and SIF? Please compare their application as well. (10分)
10. Please show us the effect of annealing temperature on tensile strength, grain size, electrical conductivity, and elongation of cold-worked metals by drawing the curves direct in the figure below. (10分)

