

工程材料 題庫

參考書籍：工程材料學第五版 楊榮顯著 全華圖書

1. 工程材料學(第五版)，楊榮顯，全華科技圖書公司
2. 工程材料，黃振賢/沈保羅，新文京開發出版有限公司

命題範圍：

1. 相律與平衡狀態圖
2. 結晶結構種類
3. 金屬材料機械性質及檢測方法(含電子顯微鏡)
4. 熱處理
5. 各式合金種類及應用
6. 陶瓷材料種類及應用
7. 高分子材料種類及應用
8. 複合材料種類與應用

1. Please explain and compare the ferrous metal and nonferrous metal?
2. Please explain the lattice defects and classifications?
3. Please explain the features of intermetallic compound and what is the practical value in industry?
4. Please explain the relationship between the crystallization size and degree of supercooling after solidification of metal materials?
5. Please explain the difference between eutectic

- reaction and eutectic reaction?
6. Please explain the movements of edge dislocation and screw dislocation?
 7. Please explain the phenomenon of work hardening from the viewpoint of dislocation?
 8. Please explain which types of strengthening mechanisms are available for metal materials?
 9. What is tensile test and what is the objective of tensile test? What are the types of tensile testing machines?
 10. Please explain the types of steelmaking process and give an example of comparison?
 11. Explain what transformations will occur during the heating of pure iron from room temperature to the melting point.
 12. Please explain the relationship between cooling rate and transformation of carbon steel?
 13. Please explain the process of martensite transformation of carbon steel and explain the M_s and M_f points?
 14. Please explain the steel tempering and its

scope and objective?

15. What is sub-zero treatment? What is its objective?
16. Please explain the classification of carbon steel?
17. Please explain the effectiveness of Ni and Cr contained in stainless steel?
18. Please explain the necessary nature of heat resisting steel?
19. Please explain which alloying elements should be added to cast iron to have corrosion resistance?
20. Please explain the classification, nature and application of the high-strength aluminum alloy in the processing of wrought aluminum alloys?
21. Please explain the classification of magnesium alloys?
22. Explain the classifications and features of the semi-solid forming method of magnesium alloys?
23. Please explain the properties and applications of pure titanium?

24. Please explain the classification of ceramics?
25. Please compare and explain thermoplastic plastics and thermosetting plastics?
26. Please explain which two major parts are composite materials composed of?
27. Please explain the classification of composite materials?