

# 國立中央大學八十五學年度碩士班研究生入學試題卷

所別: 機械工程研究所 乙組 科目: 機械製造 共 1 頁 第 1 頁

- 一 以條文式比較 Evaporative Pattern Casting (Lost Foam Process) 和 Green Sand Casting, 二種鑄件在(1)模板(match plate); (2)模砂; (3)造模; (4)鑄件尺寸; (5)澆鑄溫度的差異。(20%)
- 二 (a) 焊接時, 選用保護氣體的種類時, 主要考慮的因素為何?(4%)  
(b) 為何超塑性成型後的機件, 常使用擴散結合?(3%)  
(c) 某一汽車零件裝配廠原設計完全自動化, 後改為部份聘用人工裝配, 敘述其考慮因素為何?(8%)
- 三、試繪圖說明下列三種非傳統加工法 (Nontraditional Machining Processes) 並列舉其各種加工法的應用例。(18%)
- (a) 電氣化學加工法 (Electrochemical Machining)  
(b) 化學銑切加工法 (Chemical Milling)  
(c) 放電加工法 (Electrical Discharge Machining)
- 四、試解釋下列專有名詞。(12%)
- (a) 堆積刃 (Built-Up Edge; BUE)  
(b) 高速鋼 (High-Speed Steel)  
(c) 陽極處理 (Anodizing)  
(d) 電鍍 (Electroplating)
- 五. (a) A plastic product is found to contain small pores. Give a suggestion to solve this problem economically. (5%)
- (b) By inspecting plastic containers, such as for baby powder, you can see the lettering on them is raised rather than sunk. Can you offer an explanation as to why they are molded in this way? (5%)
- (c) Explain the effects of using fine powders and coarse powders, respectively, in making P/M parts. (5%)
- 六. (a) Explain why cupping tests may not predict the formability of sheet metal in actual forming processes. (5%)
- (b) Describe the similarity and differences between extrusion and drawing. (5%)
- (c) Explain the function of flash in impression-die forging. (5%)
- (d) Rolling reduces the thickness of plates and sheets. However, it is possible to reduce the thickness by simply stretching the material. Would this be a feasible process? Explain. (5%)

