

# 1041 機械系博士班資格考試題目

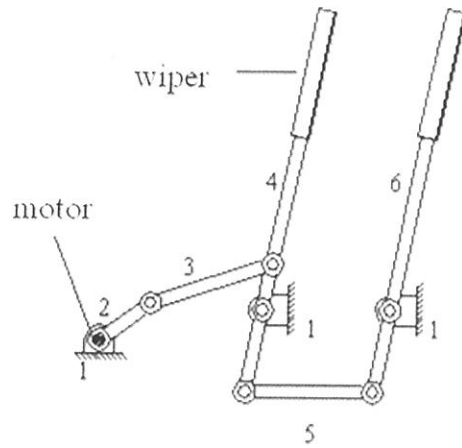
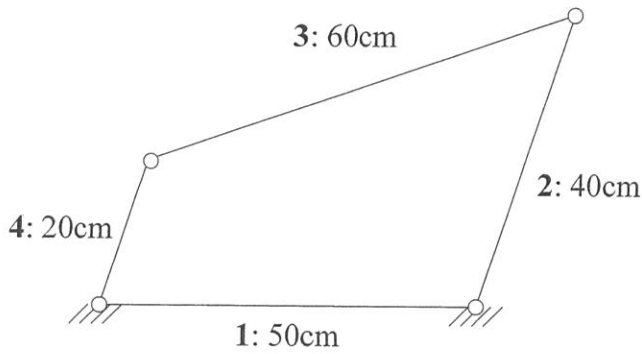
考試科目	方式	
設計製造	Closed Book, 不可使用計算機	Part I

1. The following figure (left) is a simple four-bar linkage mechanism.

(1) Why is the four-bar linkage mechanism so important? (3%)

(2) Give the names of the 4 links. (3%)

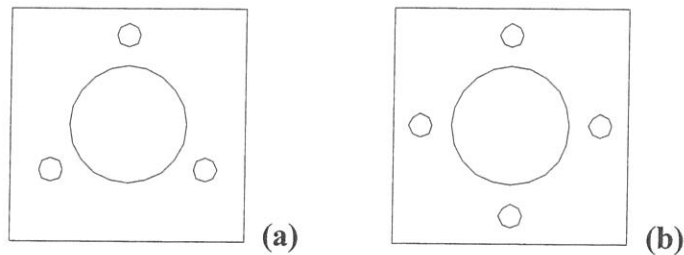
(3) Use professional terms to describe the motion of the windshield wiper in the figure below (left). (4%)



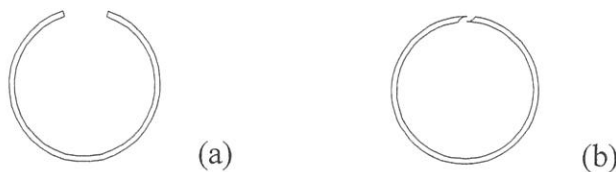
2. What is a “light dependent resistor (LDR)””? Give 2 examples of its applications. (5%) What is a “light emitting diode (LED)””? Give 2 examples of its applications. (5%)

3. Consider design for assembly (DFA), which design in the following pairs is better? Why?

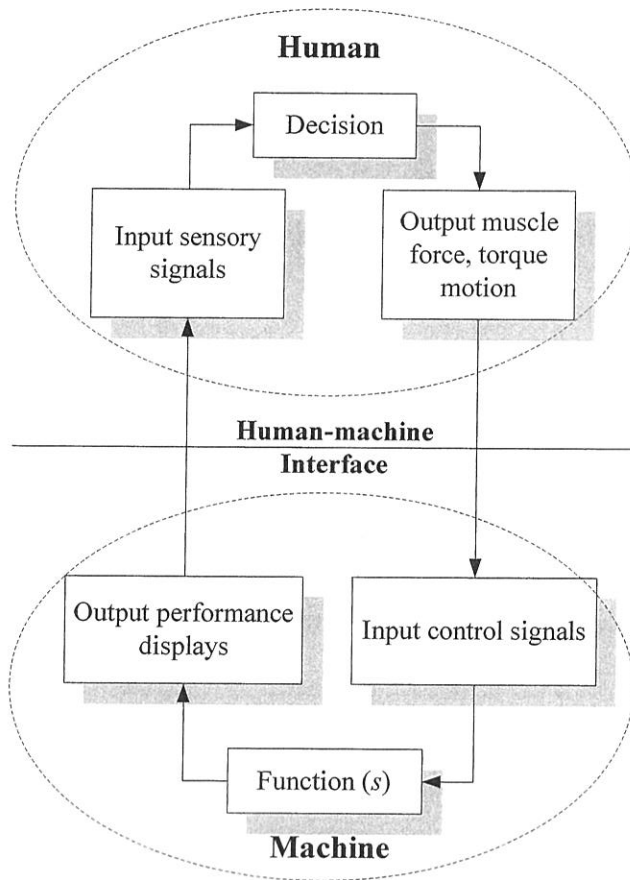
(1) 5%



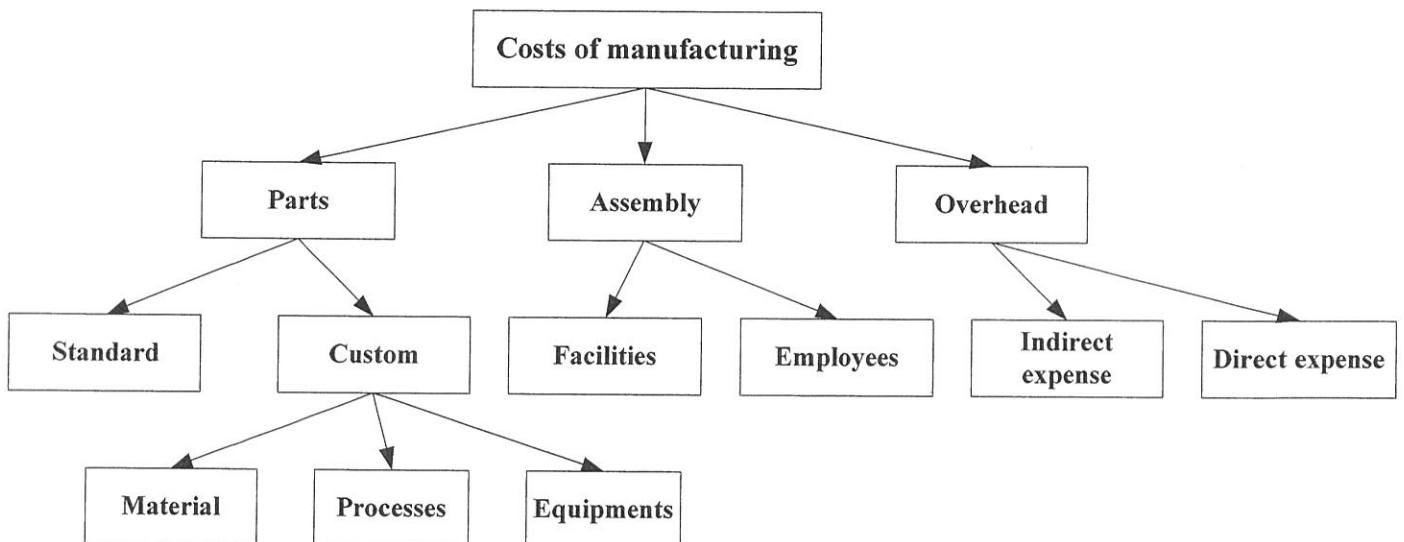
(2) 5%



4. 試以操作三館電梯為例，解釋下圖中的「人機系統」(10%)



5. 請用早餐吃的蛋餅為例，解釋下圖製造成本的項目在蛋餅中分別代表什麼，並估算蛋餅的製造成本(6%)。如要降低蛋餅製造成本，從「蛋餅設計」的觀點，應該怎麼做(4%)?



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考試科目	方式	
設計製造	Closed Book, 不可使用計算機	Part II

1. Give short description of the following terminology. 20%
  - (i) hot hardness
  - (ii) recrystallization temperature
  - (iii) toughness
  - (iv) strain rate
  - (v) glass-transition temperature
2. What are (i) investment casting, (ii) full-mold casting? 10%
3. Why forming processes make the product stronger? 10%
4. What are the four basic steps of powder metallurgy? 10%