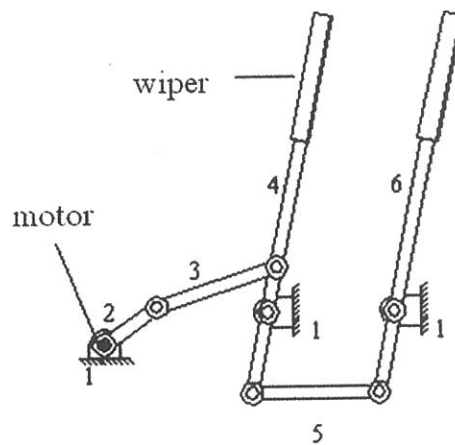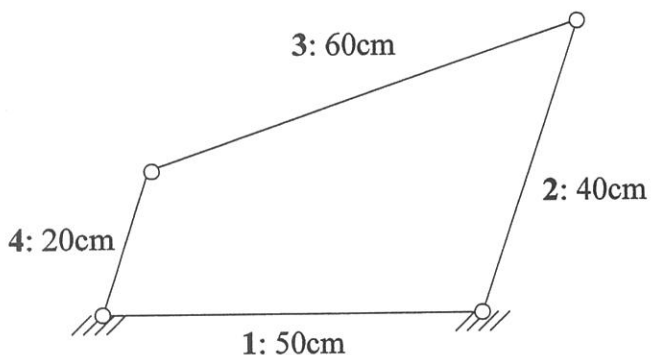½

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

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

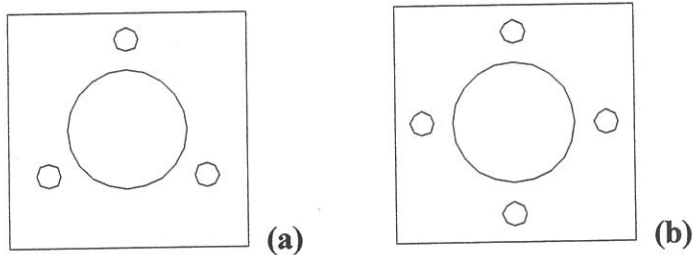   (2) Give the names of the 4 links. (3%)

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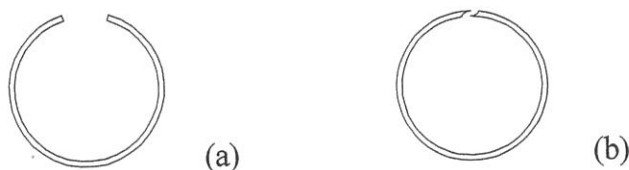

2. What is a "light dependent resistor (LDR)"? Give 2 examples of its applications. (5%) What is a "light emitting diode (LED)"? Give 2 examples of its applications. (5%)

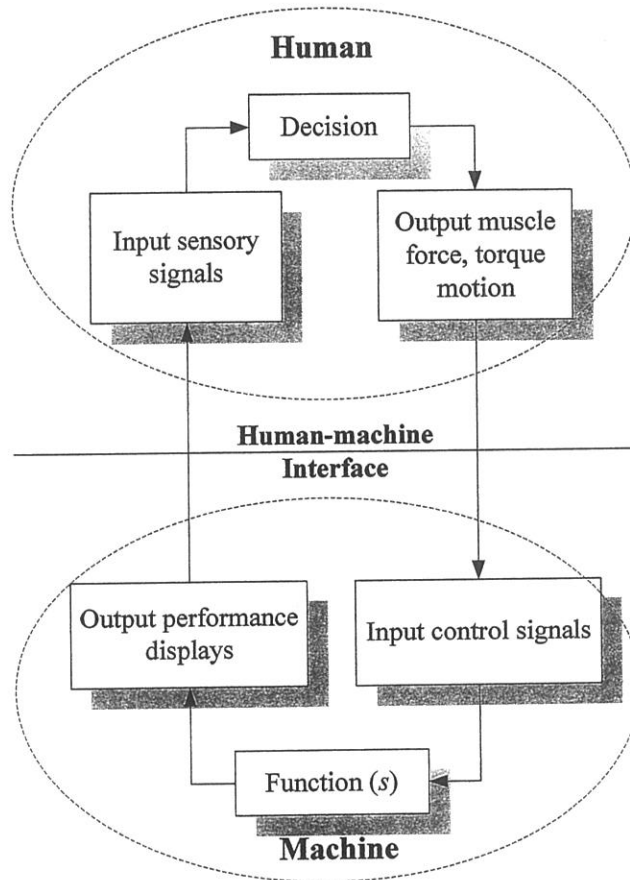3. Consider design for assembly (DFA), which design in the following pairs is better? Why?
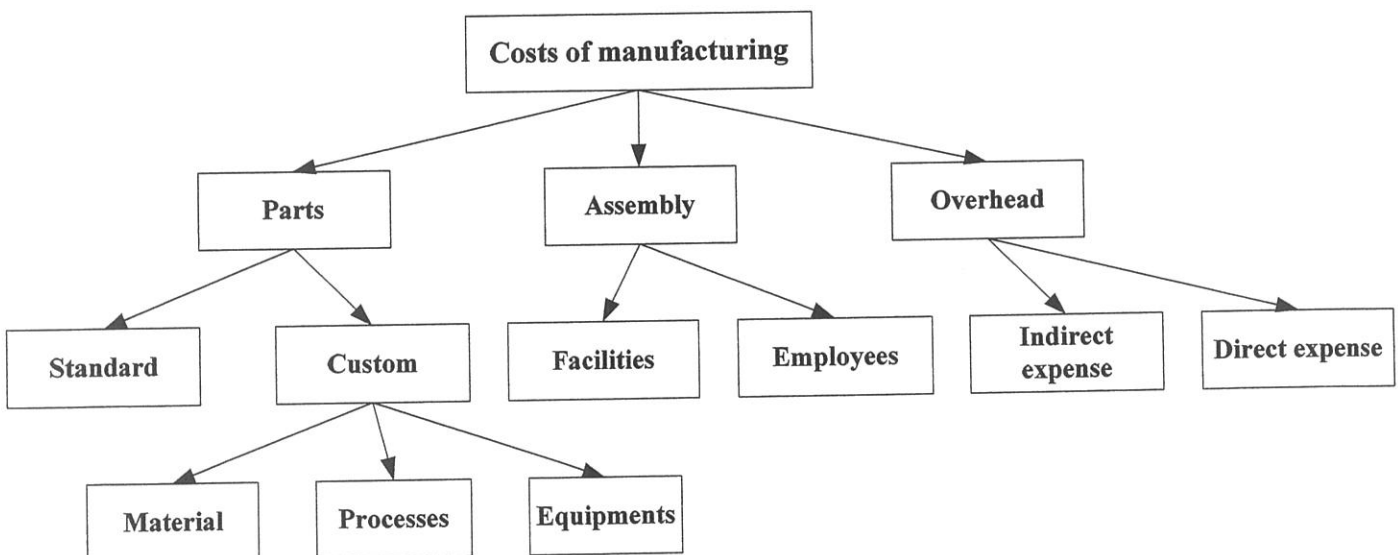
   (1) 5%

   (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%)？

1. Name four non-traditional manufacturing processes and provide short description.   20%

2. (i) describe bulk deformation process.   5%
   (ii) describe sheet metal forming process.   5%
   (iii) describe progressive die process.   5%

3. (i) describe casting process.   5%
   (ii) what are the important parameters affecting the processes?   5%
   (iii) describe investment casting process.   5%