1. 解釋名詞 (12 pts) Explain the following terms.
   a. (4 pts) lead time
   b. (4 pts) craft production
   c. (4 pts) Muther's grid

2. 計算題 (10 points) Consider the following payoff table for three product decisions (A, B, and C) and three future market conditions (payoff = $ millions). 【請將計算過程寫出來，否則不計分】

	Market Condition		
DECISION	1	2	3
A	$3.2	$4.2	$1.2
B	2.8	2.6	2.0
C	2.6	2.0	3.6

   Given the probabilities of market conditions as follows: $p(1) = 0.25$, $p(2) = 0.45$, $p(3) = 0.3$. Please calculate the EVPI (Expected Value of Perfect Information) of this problem.

3. 問答題 (8 points) Under what condition will a Hurwicz decision method become a Maximax decision method? (4 points) And, under what condition will a Hurwicz decision method become a Maximin decision method? (4 points)

4. 問答題 (4 points) Under what condition will an exponential smoothing forecast become a naïve forecast?

5. 計算題 (16 points) A computer software firm has experienced the following demand for its "ERP" software package:

PERIOD	UNITS
1	176
2	181
3	175
4	190
5	186
6	185
7	192
8	195

   Develop an exponential smoothing forecast using $\alpha = 0.40$ and an adjusted exponential smoothing forecast using $\alpha = 0.40$ and $\beta = 0.20$. Compare the accuracy of the two forecasts using MAD and cumulative error. 【請將計算過程寫出來，否則不計分】

注意:背面有試題

6. 問答題 (15 points) Please list and briefly explain (a) the commonly used dimensions of service quality, and (b) the seven basic quality tools.

7. 問答題 (15 points) Master scheduling is one of the three primary inputs in MRP. Please list and briefly describe (a) the inputs to the master scheduling, and (b) the output of the master scheduling.

8. 計算題 (20 points) The assumptions of the economic production quantity (EPQ) model are similar to those of the economic ordering quantity (EOQ) model, except that instead of orders received in a single delivery, units are received incrementally during the production. Now consider a toy manufacturer who uses 48,000 rubber wheels per year for its popular dump truck series. The firm makes its own wheels, which it can produce at a rate of 800 per day. The toy trucks are assembled uniformly over the entire year. Carrying cost is $1 per wheel per year. Setup cost for a production run of wheel is $45. The firm operates 240 days per year. Please determine (a) the optimal production quantity (lot-size) per run (5%), (b) the minimum total annual cost for carrying and setup (5%), (c) the cycle time for the optimal run size (5%), and (d) the run time (5%).