1. **Please explain the following methods and describe their applications. (25%)**
   Data Mining
   Genetic Algorithm
   Data Envelopment Analysis
   Cellular Layouts
   Bullwhip effect
2. **List and explain ten principles for implementing successful Total Quality Management. (15%)**
3. **A company has accumulated the demand data for its products for the past six months, as shown in the following table, from which it wants to consider exponential smoothing forecasts using smoothing constants α equal to 0.3. Please calculate the smoothed forecasts. (10%)**

Demand for the products	
January	37
February	40
March	41
April	37
May	45
June	50

(背面仍有題目，請繼續作答)

4. Wood County Hospital consumes 500 boxes of bandages per week. The price of bandages is $70 per box, and the hospital operates 52 weeks per year. The cost of processing an order is $60, and the cost of holding one box for a year is 15 percent of the value of the material.
   a. The hospital orders bandages in lot sizes of 900 boxes. What extra cost does the hospital incur, which it could save by using the EOQ method? (12%)
   b. Demand is normally distributed, with a standard deviation of weekly demand of 100 boxes. The lead time is 1/2 week. What safety stock is necessary if the hospital uses a continuous review system and a 97 percent cycle-service level is desired? What should be the reorder point? (12%)
   c. If the hospital uses a periodic review system, with P=2 weeks, what should be the target inventory level, T? (12%)

5. How to apply "Value Analysis" in the Total Quality Management (TQM)? Please use an example to explain it. (14%)