

大葉大學九十三年度碩士班甄試試題紙

所 別	組別	考 試 科 目 (中 文 名 稱)	考 試 日 期	考 試 時 間	備 註
工業工程與科技管理學系碩士班		生 產 管 理	12月8日	9:00 - 10:30	共 乙 頁

註：備註欄若未註明可攜帶計算機或其他輔助工具作答時，考生一律不准攜帶。

一、Timberland manufactures hiking shoes for serious hikers. The demand for its product occurs from April to July of each year. Timberland estimates the demand of the four months to be 100, 200, 300, and 200 units, respectively. Production capacity of Timberland varies monthly, and is estimated to be 250, 200, 250, and 100 units for April to July. Production cost per pair of shoes is \$20.00. Additional holding cost is estimated to be \$0.5 per pair of shoes per month. Additional penalty / shortage cost is estimated to be \$2.0 per pair of shoes per month.

- (1) Give the LP formulation of the above production-inventory control problem. (15%)
- (2) Determine the optimal production plan. (20%)

二、Given a continuous review (Q) system. Records show that the average for an item is 50 units a week, with a standard deviation of 10 units. The lead time is constant at 5 weeks. Determine the safety stock and reorder point if management wants a 99 percent cycle-service level. (Hint: the inverse of cumulative density function $\phi^{-1}(0.99)=2.33$. Cycle-service level=1 - probability of stockout.) (15%)

三、The following discrete probability distribution has been estimated for demand (in units) during the lead time. (20%)

Demand	Probability
0	0.15
50	0.30
100	0.20
150	0.10
200	0.10
250	0.10
300	0.05

- (1) With a continuous review system and a 75 percent cycle-service level, what is the reorder point?
- (2) What is the safety stock for this reorder point?

四、Consider a 10 job - 2 machines (M#A、M#B) job shop scheduling problem. Scheduling information is given as follows. Please use Jackson's rule to determine a schedule which makes the minimum makespan. (30%)

job	routing and processing time	job	routing and processing time
1	M#A(12)	6	M#A(25) - M#B(12)
2	M#A(16) - M#B(8)	7	M#B(16)
3	M#B(8) - M#A(15)	8	M#B(7) - M#A(25)
4	M#B(12)	9	M#B(18) - M#A(4)
5	M#A(10) - M#B(30)	10	M#A(13)

() presents the processing time for the machine