

大葉大學 九十四 學年度 研究所碩士班 招生考試試題紙

系所別	組別	考試科目 (中文名稱)	考試日期	節次	備註
工業工程及科技管理	甲	生產作業管理	3月27日	第二節 10:30~12:00	可攜計算機

共二頁

壹、解釋名詞 (共 5 題, 每題 5 分; 合計 25 分)

1. Effective Capacity
2. Cycle Counting
3. Distribution Requirements Planning
4. Bullwhip Effect
5. Quality Function Development

貳、計算題 (共 4 題, 合計 75 分)

1. For a following MRP problem:

- the part price is \$10 each,
- the inventory holding cost is \$1 per unit,
- the ordering cost is \$200,

(a) Please apply Silver Meal method to determine the lot size in each period. (10%)

(b) Repeat (a), the part price has 20% off, if order quantity is greater than 50. (15%)

Period	1	2	3	4	5	6
Quantity	20	40	10	30	20	15

2. Solve the following three machine (M#A, M#B, M#C) flow shop scheduling problem with minimization of makespan. (15%)

JOB	Processing Time		
	M#A	M#B	M#C
J1	12	4	6
J2	8	3	10
J3	5	1	9
J4	7	2	3
J5	5	3	4

3. Suppose that you must plan the production of a certain product family and do not want to use backorders. Each worker can produce 5000 units per month. Subcontracting and overtime production are possible options to supplement regular time production, although overtime is limited to 15 percent of the regular time production in any month. Please use linear programming to formulate the following production planning problem with minimization of total cost. (20%).

Variables:

- D_t = demand in month t (presumed known; not a variable). c_w = regular time wages per worker per month.
 W_t = workers on hand at the start of month t . c_h = cost to hire one worker.
 H_t = hires at the start of month t . c_l = cost to layoff one worker.
 L_t = layoffs at the start of month t . c_i = cost to hold one unit of product for one month.
 I_t = inventory at the end of month t . c_s = cost to subcontract one unit of product.
 S_t = subcontracted production in month t . c_o = cost to produce one unit of product on overtime.
 O_t = overtime production in month t .

4. Solve the following discrete single period inventory problem with maximization of total profits. The excess and shortage cost are 2 and 4, respectively. (15%)

Quantity	10	15	20	30	40
Probability	0.05	0.2	0.4	0.3	0.05