694

淡江大學 102 學年度碩士班招生考試試題

系別：管理科學學系　　科目：生產與作業管理

考試日期：3 月 10 日(星期日) 第 2 節　　本試題共 2 大題， 三 頁

本試題雙面印刷

I. Explanation & Discussion (40% total)

1.1) What is the purpose of establishing control limits for forecast errors? (5%)

1.2) What is mass customization? (5%)

1.3) Contrast design capacity and effective capacity. (5%)

1.4) Why are routing and scheduling continual problems in process layouts? (5%)

1.5) What is a time standard? What factors must be taken into account when developing standards? (5%)

1.6) What are the potential benefits of locating in foreign countries? Potential drawbacks? (5%)

1.7) Explain the terms "quality of design and quality of conformance". (5%)

1.8) What are the requirements for effective inventory management? (5%)

背面尚有試題

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89-2

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II. Calculating Problems (60%)

2.1)

(1) Obtain the linear trend equation for the following data on new checking accounts at TKU Bank and use it to predict new checking accounts for periods 16 through 19. (6%)

Period	New Accounts	Period	New accounts	Period	New Accounts
1	200	6	232	11	281
2	214	7	248	12	275
3	211	8	250	13	280
4	228	9	253	14	288
5	235	10	267	15	310

(2) Use trend-adjusted smoothing with α=.3 ß=.2 to smooth the new account data in question a. What is the forecast for period 16? (6%)

2.2) A small firm produces and sells automotive items in a five-state area. The firm expects to consolidate assembly of its battery chargers line at a single location. Currently, operations are in three widely scattered locations. The leading candidate for location will have a monthly fixed cost of $42,000 and variable costs of $3 per charger. Chargers sell for $7 each. Prepare a table that shows total profits, fixed costs, variable costs, and revenues for monthly volumes of 10,000, 12,000 and 15,000 units. (6%) What is the break-even point? (6%)

2.3) Using the information contained in the table shown, do each of the following

Task	Immediate Follower	Task Time(in minutes)
a	b	0.2
b	e	0.2
c	d	0.8
d	f	0.6
e	f	0.3
f	g	1.0
g	h	0.4
h	end	0.3

(1) Draw a precedence diagram. (2%)

(2) Assuming an eight-hour workday, compute the cycle time needed to obtain an output of 400units per day. (3%)

(3) Determine the minimum number of workstations required. (3%)

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(4) Assign tasks to workstations using the rule: Assign tasks according to greatest number of following tasks. In case of a tie, use the tiebreaker of assigning the task with the longest processing time first. (3%)

(5) Compute the resulting percent idle time and efficiency of the system. (3%)

2.4) A clothing manufacturer produces women's clothes at four location in Taiwan. Relative locations have been determined, as shown in the table below. The location of a central shipping point for bolts of cloth must now be determined. Weekly quantities to be shipped to each location are shown below. Determine the coordinates of the location that will minimize distribution costs. (10%)

Location	(x, y)	Weekly Quantity
A	(5, 7)	15
B	(6, 9)	20
C	(3, 9)	25
D	(9, 4)	30

2.5) A toy manufacturer 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 a year. Setup cost for a production run of wheel is $45. The firm operates 240days per year. Determine the

(1) Optimal run size. (3%)

(2) Minimum total annual cost for carrying and setup. (3%)

(3) Cycle time for the optimal run. (3%)

(4) Run time. (3%)