

逢甲大學100學年度碩士班招生考試試題 編號：009 科目代碼：306

科目	生產管理	適用系所	工業工程與系統管理學系A組	時間	100 分鐘
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※請務必在答案卷作答區內作答。 共 2 頁 第 1 頁

1. (25%) The XYZ Company was flooded by a thunderstorm and lost part of their forecasting data (Exponential Smoothing, Exponentially Smoothed MAD, and Tracking Signal). Positions in the table that are marked [a], [b], [c], [d], [e], and [f] must be recalculated from the remaining data (you must include the procedure in finding your solutions).

Period t	D _t (demand)	F _t ($\alpha=.3$) (forecast)	e _t =D _t -F _t (error)	$\alpha=.3$ (MAD _t)	Tracking Signal
0				10.0	
1	120	100.0	20.0	[a]	1.5
2	140	106.0	34.0	19.3	[b]
3	160	[c]	[d]	[e]	[f]

2. (25%) Part number XB-2001 has an annual independent demand as spare parts of 4,000 units, a setup cost of \$100, a carrying cost of 30 percent per year, and an item cost of \$266.67. The production facility is open five days per week and 50 weeks per year, making a total of 250 productive days per year. The lead time for this product is nine days and the standard deviation of demand is two units per day. The company wants to have a 95 percent service level ($z = 1.65$) for this spare part. Assume continuous review system (Q-system) is applied in present problem.
- Compute order quantity Q (10%).
 - Compute reorder point R (15%).
3. (25%) FCU Company is run weekly to update the master production schedules (MPS) and material requirements planning (MRP) records. At the start of week1, the MPS for end products A and B is:

Week	1	2	3	4
Product A	10	10	10	15
Product B	10	15	10	15

Two units of part X is used to produce one unit of A and one unit of part X is required for one unit of B. Purchasing lead time for X is two weeks, and order quantity of 30 is used, and safety stock of 10 units is maintained for its MRP record. Inventory balance for X is 55 units at the start of week 1 and there is an open order (scheduled receipt) for 30 units at the beginning of week 1.

- What is the projected inventory balance at the end of week 4 for MRP record of part X? (10%)

During week 1, the following events occurred for part X:

- (1) Actual demands for week 1 were 12 units for Product A and 9 units for Product B.
 - (2) The open order for 30 units was received on Monday, but 5 units were scrapped.
 - (3) An inventory cycle count revealed that 3 units of part X were missing.
 - (4) Two units of MPS quantity for Product A scheduled in week 2 were move to week 3.
 - (5) The MPS quantities for week 5 include 15 units for A and 10 units for Product B.
- (b) What is the projected inventory balance at the week 5 for updated MRP record of part X?
(15%)

4. (25%) 考慮一未完成之 MPS(Master Production Schedules) Record 如下：

Week		1	2	3	4	5	6
Forecast		20	20	20	30	30	30
Order		18	22	10			
Available	40						X
ATP			Y				
MPS(Completion)			40				

其中 ATP 為 Available to Promise 之簡寫，而此 MPS 之規劃規則為當 Available 等於或小於零時，固定生產 40 個。

- (a) 計算 Record 中的 X 與 Y 值。(10%)
- (b) 現有數量 30 單位的 Order (可分批出貨)，試問最快在何時可完全出貨？(5%)
- (c) 公司決定接下(b) 之 30 單位 Order，並安排其在最快時間完成出貨，而在 Week 1 時又接到下列 Orders:

Week	4	5	6
Order	15	20	20

且 Week 7 的 Forecast 為 25，計算 Week 7 期末的 Available 數量。(10%)