



1. (10%) The past demand information of a product indicated that the demand was in a very stable condition. If a planner want to apply the simple exponential smoothing method for forecasting the demand of the next year (by month), what is the α coefficient should be suggested. Please state your reasons.
2. (15%) Please state the difference between two production planning strategies, level capacity strategy and chase demand strategy. State the environments (conditions) that each strategy can be applied.
3. (20%) A product has a reorder point of 260 units, and is ordered ten times a year. The following table shows the historical distribution of demand values observed during the reorder period.

<u>Demand</u>	<u>Probability</u>
240	.1
250	.2
260	.4
270	.2
280	.1

Currently, stockouts are valued at \$5 per unit per occurrence, while inventory carrying costs are \$2 per unit per year. Should the firm add safety stock? If so, how much safety stock should be added?

4. (15%) For a three machine flow shop scheduling problem, the job information is described as below. Please find the optimal job sequence that minimizes the makespan, and state your reasons.

<u>Job</u>	<u>MC#1</u>	<u>MC#2</u>	<u>MC#3</u>
A	8	2	3
B	6	4	6
C	5	1	3
D	9	3	5

5. (10%) For a single machine scheduling problem, what is the dispatching rule that will minimize the mean job lateness. Please state your reasons.
6. (10%) For a 10 activities simple project, the completion time is 50 (days) calculated by both CPM and PERT techniques. Please answer the following problems.
- (a) For a CPM method, what is the probability that the project is finished on 50 days.
- (b) For a PERT method, what is the probability that the project is finished on 50 days.



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7. (20%) Consider the MPS, BOM, and inventory data shown. Please construct the MRP schedule using the following information.

Master Production Schedule: The following table shows the MPS .

Finished Item A	1	2	3	4	5	6	7	8
Finished Item A MPS	20		40	30		20		40

Bill of Material:

- Item A uses 2 each of component D, 1 each of component C and 2 each of subassembly B.
- Subassembly B uses 2 each of component E.

Selected Inventory Data:

Item	Lot Size Technique	Lead Time	Scheduled Receipts	On-Hand
B	Lot-for-Lot	1	40 in period 1	
C	Fixed Period (3 Periods)	2		40
D	Fixed Order Quantity (250)	1		100
E	Lot-for-Lot	2	160 in period 2	