OMGT6213 Exam I - Copy D

Exam I Post Summary

There are 16 parts to the Exam. Each question (crossover chaos, control chart conundrum, line balancing ballyhoo, & block diagramming dilemma) consists of 4 parts.

As the instructions stated, you needed to show your work, explain your answers, and use graphs, diagrams, and/or tables to explain/ discuss your results. You also needed to discuss/compare/contrast your results and recommendations to receive full credit. I did my best to give partial credit when I could, but keep in mind correct answers are the only way to receive full credit.

These solutions provide a basic set of correct answers and minimal dialogue to accompany those answers.

Please peruse these solutions and then if there is still confusion email with a specific question.

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Crossover Chaos

answer.

4 PARTS to this PROBLEM

From time-to-time, outside testing services are used when Schlapfer Inc.'s testing center is overloaded. Jimmy Ahdoot, the Operations Manager, must make a decision on which of two testing centers is a better deal. Center 1 charges a flat fee of $2,000 plus $600 for every hour of testing done. Center 2 charges a much higher flat fee of $10,000, but only charges $20 for every hour of testing done. Jimmy has estimated that when outside testing services must be used, the testing center is overloaded, on average, by about 15 hours, give or take 4 hours. In general, Jimmy attempts to keep outside testing to a minimum and needs to decide on which outside service to go with. Help Jimmy understand the two plans, specifically, the trade-offs and risks involved (HINT: A cost/volume break-even analysis would be a good idea).

$2000+600X = 10000+20X$

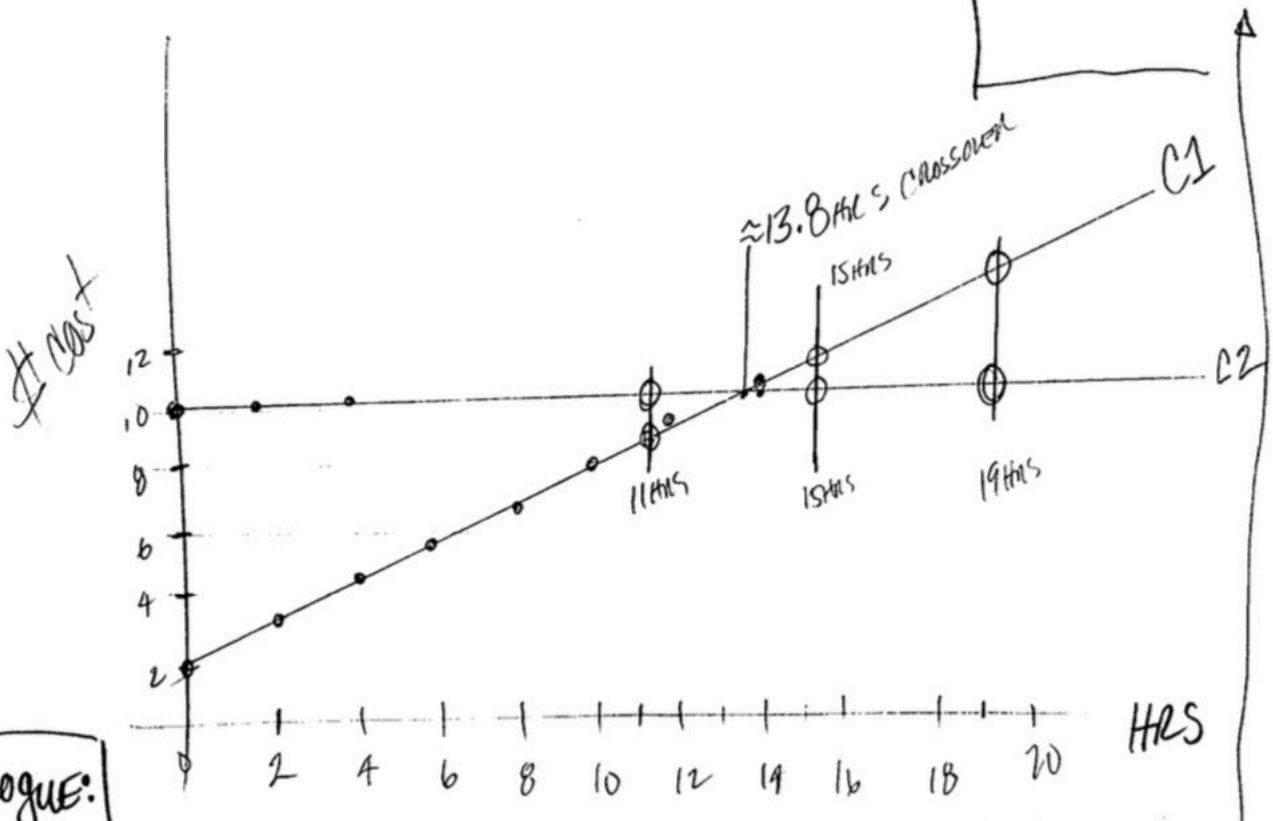
$580X = 8000$

$X = \frac{8000}{580}$

$X \approx 13.8$ HRS

$C1 = 2000 + 600X \qquad C2 = 10000 + 20X$

IS FLAT HE PICKS C1 & THEN GOES OVER 14 HRS & VICE VERSA



DIALOGUE:

So Jimmy could choose C1 if he believes. He will stay UNDER about 14 HRS. However, if he believes he will BE OVER 14 HRS then he can choose C2. The tradeoff is $ Cost, RISK

NEED to FIND & SPEAK to CROSSOVER PT.

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Quality Control Conundrum

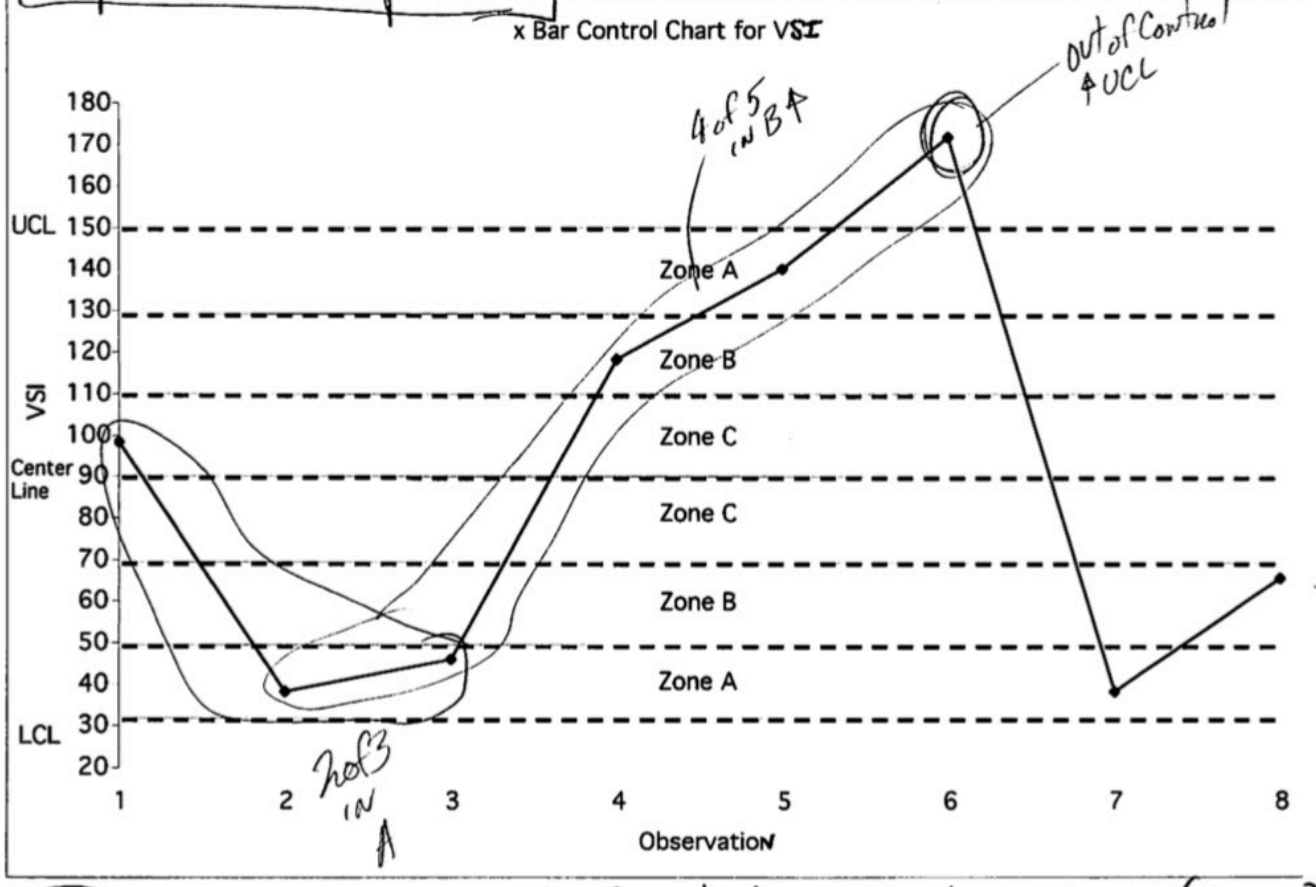
The visibility standard index (VSI) is a measure of solder on a circuit board that is reported each day. The index ranges from 20 (not enough) to 180 (too much). Suppose that for eight days the VSI was observed three times each day. Based on this data an x-Bar chart was constructed and is displayed in Figure 1.1.

a. **Identify all out-of-control signals (high or low) that you find in the chart (NOTE: There could be multiple out-of-control signals).**

b. Explain what else an operations manager would need to completely understand if the VSI was in control or out of control? * ALSO INCLUSION of R CHART to MEASURE DISPERSION.

4 parts to this problem

Figure 1.1 VSI x-Bar Control Chart



DIALOGUE: This process is out of Control: 2 of 3 pts in Zone A (pts 1,2,3)
4 of 5 pts in Zone B (pts 2,3,4,5,6)
1 pt outside of UCL (pt 6)
Someone Needs to Act & investigate what is going on! *

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Line Balancing Ballyhoo

Tina's department needs to service 3,000 calls per 40-hour workweek (i.e., Tina's desired cycle time is 0.8 min). The process of servicing calls can be broken down into the six stations listed above. The precedence and time requirements for each element are as follows in Table 1.2. Tina needs to draw and label a precedence diagram for the service process. Finally, she needs to balance the line, calculate the efficiency of the line, and identify where and how much idle time exists.

4 parts to this problem

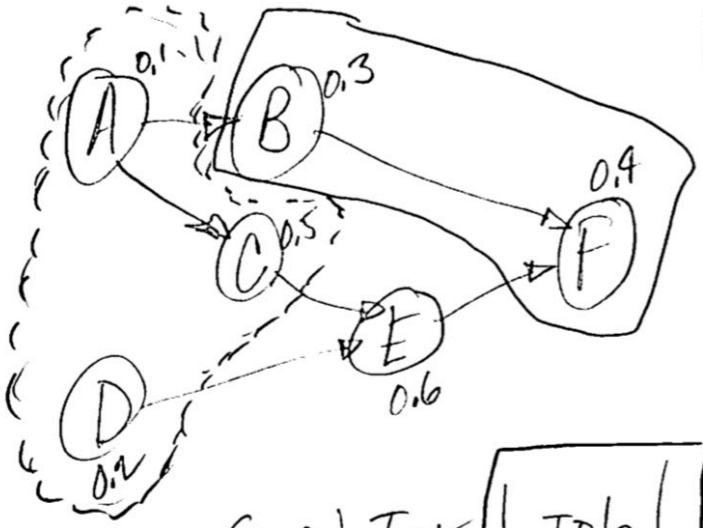
Table 1.2 – Precedence and Time Requirements

Work Element	Predecessor	Performance Time (min)
A-Receive Call	-	0.1
B-Route Call	A	0.3
C-Tag Call	A	0.5
D-Start Form G	-	0.2
E-Fill in Box 22	C, D	0.6
F-Advise Call	B, E	0.4

DESIRED Cycle time = 0.8

Flow time = 0.1 + 0.3 + 0.5 + 0.2 + 0.6 + 0.4 = 2.1

#WS = 2.1 / 0.8 ≈ 2.625 or 3 work stations



Group	Time	Idle
A, C, D	0.8	—
B, F	0.7	0.1
E	0.6	0.2
		0.3

Eff. = 2.1 / 3(0.8) = 2.1 / 2.4 = 87.5% Eff.

Answer: This is one configuration. 3 work centers that leads to about 88% efficiency.

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Block Diagramming Dilemma

4 parts to this problem

Clem is in the process of setting up facility space for a call-in service center for customers having difficulties with their modems. The service center has six stations. The current layout in the space is as shown in Figure 1.1. The anticipated flow of customer calls that will be passed between each station is given in Table 1.1. Clem must revise the current layout so non-adjacent loads are minimized and calls, paperwork, and employees move efficiently. Nonadjacent loads cost the company $2 whereas, adjacent loads cost the company only $1.

Figure 1.1 – Current Layout

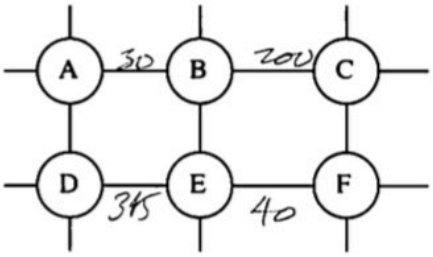


Table 1.1 – Load Summary

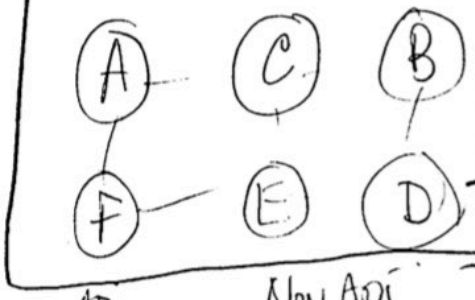
To / From			Station			
Station	A	B	C	D	E	F
A		30	345	--	180	150
B			200	170	--	190
C				140	--	--
D					345	--
E						40
F						

ADJ
AB 30
BC 200
DE 345
EF 40
615

NON ADJ
AC 345
AE 180
AF 150
BD 170
BF 190
CD 140
1175 x 2
= 2350

2350
+ 615
2965

New Layout



This is but 1 layout that improves. There are numerous layouts that improve

ADJ
AC 345
AF 150
BC 200
BD 170
DE 345
EF 40
1250

NON ADJ
AB 30
AE 480
AF 150
BF 190
550 x 2 = 1100
1250
1100
2350

2350 NEW vs. 2965 OLD

DIALOGUE:
By revising the orig layout w/ the New layout there is a savings of 615.