UNIVERSITI SAINS MALAYSIA

Second Semester Final Examination
Academic Session 1994/95

April 1995

ASU661 - PRODUCTIVITY AND QUALITY MANAGEMENT

Time : [3 hours]

INSTRUCTION

Please make sure that this examination paper consists of **FIVE (5)** printed pages before you begin.

There are **EIGHT (8)** questions here. All questions from Section A are **COMPULSORY**. In addition, answer any **TWO (2)** from Section B.

SECTION A : Answer **ALL** the questions.

1.   Service, Inc.:   Service, Inc., is a distributor of automotive replacement parts. With no manufacturing capability, all products it sells are purchased, assembled, and repackaged. Service, Inc., does have extensive inventory and final assembled facilities. Among its products are private-label carburettor and ignition kits. The company has been experiencing difficulties for the last two years. First, profits have fallen considerably. Second, customer service levels have declined, with late deliveries now exceeding 25% of orders. Third, customer returns have been rising at a rate of 3% per month.

Bob, vice president of sales, claims that most of the problem lies with assembly department. He says that they are not producing the proper mix of the product, they have poor quality control, their productivity has fallen, and their costs are too high.

Dick, the financial controller, believes that problems have arisen due to investment in the wrong inventories. He thinks that marketing has too many options and products. Dick also thinks that the purchasing department buyers have been hedging their inventories and requirements with excess purchasing commitments.

John, assembly manager, says "The symptom is that we have a lot of parts in inventory, but no place to assemble them in the production schedule. "An additional comment by John was, "When we have the right part, it is not very good, but we use it anyway to meet the schedule".

Freddy, manager of purchasing has taken the stance that purchasing has not let Service, Inc., down. He has stuck by his old suppliers, used historical data to determine requirements, maintained what he views as excellent prices from suppliers, and evaluated new sources of supply with an aim of lowering the cost. Where possible, Freddy reacted to the increased pressure for profitability by emphasizing low cost and early delivery.

The president of Service, Inc., has recruited you for the task of getting the firm back on a course towards improved profitability and productivity.

Questions :

1.   Identify both the symptoms and problems at Service, Inc.

2.   What specific programmes would you suggest for implementation?

3.   How would you go about implementing your suggestions?

[25 marks]

2.   You are appointed as the Chief-Productivity and Quality in your Organisation with a brief to implement Productivity and Quality drive. Develop a detailed plan of action for the same, including strategies for implementation.

[20 marks]

3.   A telephone company serving a large number of residential and business customers, wishes to improve the quality of its service by testing on a daily basis, a sample (of 200 daily) of telephone lines at certain locations in the country. A central automatic system generates calls every three minutes throughout the busy period (8 am to 5pm, Monday to Friday), testing a number of access points at each location. An automatic analysis of failed calls also takes place, providing information on the various reasons for failure. These types of failure, together with their daily frequencies for a particular location are given below. Draw a pareto diagram to present this information, use an appropriate control chart and draw conclusions about the process.

[16 marks]

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N	Characteristic	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F
1	Abnormal tone	1	0	0	1	0	3	2	0	1	2	1	0	1	0	4	2	1	0	1	4
2	No test modem	2	1	0	1	2	3	0	0	1	1	0	1	1	1	1	0	0	0	1	2
3	Failure due to overload	6	3	1	3	8	9	6	2	3	9	7	4	4	2	8	10	3	1	2	8
4	Host call failed	6	2	1	1	6	6	2	1	1	6	4	2	2	1	5	6	1	0	1	6
5	No dial tone	3	1	0	1	2	1	0	0	1	2	4	1	1	0	3	4	1	0	1	2
6	Carrier lost	0	0	2	2	1	0	0	1	0	2	1	0	0	1	0	1	0	1	0	1
7	TPAD closed link	2	1	0	1	2	1	1	0	0	1	0	2	0	0	1	0	0	0	0	2
8	TPAD ignored NUA	1	0	1	1	1	2	1	1	0	2	2	1	1	1	1	0	1	1	0	2
9	RTNR from TPAD	3	2	1	2	0	1	2	1	0	1	1	0	0	1	2	1	0	0	1	0
10	Block retrons > 3	2	1	0	1	1	1	1	2	0	2	1	0	1	3	0	1	2	0	0	2
11	X25 to site failed	3	0	1	2	3	2	1	1	0	0	1	0	1	1	2	0	1	0	0	1
	Sample size	200																			200
	Days	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F

[16 marks]

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4. Six jobs have to be processed using two machines (drilling and finishing) in the same order in which they are taken on the first machine and no passing is allowed. Determine an optimal sequence for these jobs (giving the steps that you follow) so as to reduce the total machine idle time. The data given below refers to the processing time in minutes.

JOBS	PROCESSING TIME	(IN MINUTES)
	Drilling	Finishing
A	60	50
B	120	220
C	80	160
D	200	150
E	70	110
F	50	90

What is the total elapsed time for all the jobs and the minimum idle time for finishing machine?

[14 marks]

SECTION B : Answer any TWO from the following.

5. Discuss Deming's philosophy on quality management. What are the bottlenecks in implementing his quality management plan?

[12.5 marks]

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6. What are the major problems in implementing TQM in an organisation? Give suggestions to overcome these problems.

[12.5 marks]

7. Discuss important productivity improvement techniques. Using examples (problems) from your organisation, which of these techniques can be used to improve productivity.

[12.5 marks]

8. Discuss the different approaches to productivity measurement. What are the benefits arising out of measuring productivity?

[12.5 marks]

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