



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF APPLIED CHEMISTRY

Quality Assurance Management and Control

SCH 2211

Second Semester Examination Paper

May 2015

This examination paper consists of 4 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements:

Examiner's Name: Mr Donatus Dube

INSTRUCTIONS

1. Answer all questions from Section A and any three (3) questions from Section B.
2. Each question in Section B carries 20 marks.
3. Use of calculators is permissible.

MARK ALLOCATION

QUESTION	MARKS
1.	25
2.	15
3.	20
4.	20
5.	20
6.	20
TOTAL POSSIBLE MARKS	100

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SECTION A [Answer All Questions from this Section. This Section carries forty (40) marks].

1. Study the attached case and answer all the questions that follow.
 - a) Discuss the PDCA cycle and explain how it was implemented at AtlantiCare. (10 marks)
 - b) What is the quality culture at AtlantiCare? How was it achieved? (4 marks)
 - c) Draw the company's performance excellence framework. (4 marks)
 - d) Citing relevant examples compare this performance excellence framework to the TQMEX model. (10 marks)
 - e) Cite six deliverables that the company achieved using the excellence framework. (6 marks)
 - f) Using at least 3 examples explain benchmarking in quality management. (6 marks)

SECTION B [Answer any three (3) questions from this Section. Each question carries twenty (20) marks].

2.
 - a) Using examples explain Taguchi's quadratic quality loss function and how it differs from the traditional goal post approach. (10 marks)
 - b) Discuss in detail the dimensions of quality in the context of "service". (8 marks)
 - c) How is quality defined by the American Society for Quality. (2 marks)
3.
 - a) Describe the procedure for contract review in ISO 9000. (4 marks)
 - b) Discuss 4 shortcomings of ISO 9000 and how these can be overcome. (8 marks)
 - c) Food served at a restaurant should be between 38°C and 49°C when it is delivered to the customer. The process used to keep the food at the correct temperature has a process standard deviation of 2°C and the mean value for these temperatures is 23. Determine whether this process is capable or not of meeting the specifications? (8 marks)

4. Discuss the following statements/terms citing relevant examples;
- a) Quality is free
 - b) Learning organization
 - c) Poka yoke
 - d) Kaizen team
 - e) Quality audit
- (20 marks)
5. a) Examine the role of leaders in transformation or changing the organization. What principal reasons do you think, might be responsible for many leaders not being able to succeed in managing change in the context of TQM in Africa? (10 marks)
- b) Kinder Land Child Care uses a c-chart to monitor the number of customer complaints per week. Complaints have been recorded over the past 20 weeks. Develop a control chart with three-sigma control limits using the following data:

Number of Week	Complaints	Number of Week	Complaints
1	0	11	4
2	3	12	3
3	4	13	1
4	1	14	1
5	0	15	1
6	0	16	0
7	3	17	2
8	1	18	1
9	1	19	2
10	0	20	2

Comment about the results that you obtained. (10 marks)

6. With the help of relevant diagrams and illustrations explain the following Quality management tools;
- a. Pareto analysis
 - b. Scamper
 - c. Reverse brainstorming
 - d. Force field analysis
- (20 marks)

.....THE END.....

The case

The customer knows best: AtlantiCare

TQM isn't an easy management strategy to introduce into a business; in fact, many attempts tend to fall flat. More often than not, it's because firms maintain natural barriers to full involvement. Middle managers, for example, tend to complain their authority is being challenged when boots on the ground are encouraged to speak up in the early stages of TQM. Yet in a culture of constant quality enhancement, the views of any given workforce are invaluable.

One firm that's proven the merit of TQM is New Jersey-based healthcare provider AtlantiCare. Managing 5,000 employees at 25 locations, AtlantiCare is a serious business that's boasted a respectable turnaround for nearly two decades. Yet in order to increase that margin further still, managers wanted to implement improvements across the board. Because patient satisfaction is the single-most important aspect of the healthcare industry, engaging in a renewed campaign of TQM proved a natural fit. The firm chose to adopt a 'plan-do-check-act' cycle, revealing gaps in staff communication – which subsequently meant longer patient waiting times and more complaints. To tackle this, managers explored a sideways method of internal communications. Instead of information trickling down from top-to-bottom, all of the company's employees were given freedom to provide vital feedback at each and every level.

AtlantiCare decided to ensure all new employees understood this quality culture from the onset. At orientation, staffs now receive a crash course in the company's performance excellence framework – a management system that organises the firm's processes into five key areas: quality, customer service, people and workplace, growth and financial performance. As employees rise through the ranks, this emphasis on improvement follows, so managers can operate within the company's tight-loose-tight process management style.

After creating benchmark goals for employees to achieve at all levels – including better engagement at the point of delivery, increasing clinical communication and identifying and prioritising service opportunities – AtlantiCare was able to thrive. The number of repeat customers at the firm tripled, and its market share hit a six-year high. Profits unsurprisingly followed. The firm's revenues shot up from \$280m to \$650m after implementing the quality improvement strategies, and the number of patients being serviced dwarfed state numbers