UNIVERSITY OF JOHANNESBURG

FACULTY OF ENGINEERING AND BUILT ENVIRONMENT

Main 2016

DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT

PROGRAMME	BTECH: QUALITY
MODULE	QUALITY MANAGEMENT SYSTEMS III
CODE	QMY44-1
DATE	07 June 2016
DURATION	3 HOURS (SESSION 1)
TIME	08h30 – 11h30
TOTAL MARKS	100

EXAMINER	MS N SUKDEO
INTERNAL MODERATOR	MR N MADONSELA
EXTERNAL MODERATOR	MR A INDERLAL
NUMBER OF PAGES	6 PAGES including cover page

INSTRUCTIONS TO CANDIDATES:

- Please answer all questions.
- Question papers must not be handed in.
- This is a closed book assessment.
- Read the questions carefully and answer only what is asked.
- Number your answers clearly.
- Write neatly and legibly.
- Structure your answers by using appropriate headings and sub-headings.
- Clauses of ISO 9001:2008 attached.
- The general University of Johannesburg policies, procedures and rules pertaining to written exam apply.

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Section A - Case study 1

Nkosi Corporation designs, manufactures, and repairs electronic power supplies for a variety of original equipment manufacturers in the computer, medical, and office products fields. The company's focus is summed up in three simple words: quality, service, and value. The top management team started its quality journey in the mid- 1980s, basing it on Total Quality Management (TQM). They established a TQM Steering Committee to guide the process and champion each of the eight principles, and trained most of the employees by sending them to TQM seminars. Although TQM provided the foundation to carry the company into the twenty-first century, the current CEO decided to pursue an ISO 9000 quality management system (QMS) focus and began a process of self-assessment against the requirements to identify opportunities for improvement.

As the preparatory step, the executive team spent a day off-site to think about its management practices and create an initial list of its strengths which are summarized below:

- Senior leaders of Nkosi Corporation set company objectives and guide cross-functional teams to review and develop individual plans for presentation to employees. Each department manager develops a supporting objective, and nearly every employee works on a team to support these objectives.
- Senior leaders participate in quarterly communication meetings with all employees to discuss issues and answer questions. All employees receive full financial information from their leaders each month.
- Senior leaders meet with customers, suppliers, and benchmarking partners in new product development programs; and are actively engaged in professional and community organizations.
- The company collects operational data in every department and evaluates its information requirements in monthly senior staff meetings and cross-functional task team meetings.
- Nkosi Corporation sets Six Sigma goals for most of its processes and converted process measurements to parts per million on all product lines.
- All employees are trained on a five-step problem-solving process based on defining problems, collecting data, analysing the cause of the problem, developing a solution, and implementing change.
- Inputs to the strategic planning process include customer feedback, market research, and benchmarking information from customers, suppliers, competitors, and industry leaders. Team analyses are evaluated at an off-site planning meeting by all managers, resulting in long-range strategic planning documents, which are discussed with the rest of the workforce as well as major suppliers for feasibility. Once agreed upon, department teams develop detailed action plans with measurable goals. The CEO reviews progress every month.
- Nkosi Corporation uses more than a dozen different processes to gather information and validates the information by consolidation and cross-referencing.
- All employees receive customer relationship training. Customer service employees help define service standards, which are tracked on a routine basis.
- All complaints are handled by the vice president of sales and resolved within two days. The vice president is responsible for ensuring that any process that generated a complaint is improved.
- Customer satisfaction data is acquired from sales representatives, executive phone calls and visits, and satisfaction surveys. These data are reviewed and compared by the executive team during the strategic planning process and management review meetings.

- Nkosi Corporation uses self-managed work groups in which employees make most day-to-day decisions related to their processes with assigned responsibility, while managers focus on coaching and process improvement. Hourly workers can make process changes, and salespeople are authorized to travel whenever they feel it is necessary for customer service.
- The average employee receives 72 hours of internal quality/service-related training, and quality training is mandatory for all salespeople, engineers, office staff, and managers. Specialized quality training is contracted to consultants, colleges and other training specialists. In each case the effectiveness of the training provided is evaluated against Nkosi Corporation's expectations.
- Employees are surveyed each year to gauge how effectively the company implemented the TQM principles rating each on a scale of 1 to 10.
- Cross-functional teams guide product development, which includes four interim reviews by executive management. Meetings are held with customers to identify needs and requirements and review progress at the end of each phase of the development process.
- New product introduction teams work with design engineers and customers to ensure that design requirements are met during manufacturing and testing. All processes and necessary information are formerly documented, using statistical process control to monitor variation. Statistical methods are used to optimize processes.
- Quality is assessed through internal audits, employee opinion surveys, and customer feedback.
- Suppliers are involved in early stages of a product development program. Quality requirements for suppliers have been identified, and certified suppliers are exempt from incoming inspection.

QUESTION ONE

1.1 Evaluate how Nkosi Corporation support the eight principles of quality management. **[16]**

1.2 Discuss the application of ***Clause 5.1*** at Nkosi Corporation. **[6]**

1.3 Discuss the application of ***Clause 7.4.2*** at Nkosi Corporation. **[3]**

1.4 ***Clause 7.4.1 – Purchasing process.*** "The type and extent of control applied to the supplier and the purchased product shall be dependent upon the effect of the purchased product on subsequent product realization or the final product."

Suggest how Nkosi Corporation can implement Clause 7.4.1. **[3]**

1.5 Recommend how Clause 7.3, can be applied at Nkosi Corporation. **[4]**

32 marks

Section B – Case study 2

You have been appointed as the quality systems manager for a Shai Manufacturing, and your task would be to prepare the organisation for ISO 9001:2008 implementation and certification. During the interview process it became apparent to you that the CEO of the organisation had little interest of the boarder framework of Total Quality Management principles which forms the basis of the requirements of the certification standard, especially the ***continual***

improvement and ***process approach*** principles of the standard. It is also clear that the CEO was more interested in the marketing benefits of the ISO 9001:2008. At the first project team meeting for the implementation, you have the opportunity to demonstrate to the team members, your understanding of the Quality Management System (QMS).

QUESTION TWO

2.1	Critique with the team the barriers to implementing a QMS.	**[8]**
2.3.1	Evaluate the pre-requisites for implementing a QMS.	**[6]**
2.3	Illustrate how the PDCA cycle is applied in process improvement through clause 4.1 of ISO 9001:2008.	**[6]**
2.4	Discuss why processes are dynamics.	**[6]**
2.5	Explain to the team the steps for process analysis.	**[6]**

32 marks

Section C – Theory Application

QUESTION THREE

3.1	***Clause 5.5 – Responsibility, Authority and Communication*** has three sub-clauses: Responsibility and Authority (5.5.1), Management Representative (5.5.2) and Internal Communication.	
	What is the purpose and benefit of clause 5.5?	**[3]**
3.2	Distinguish between:	
3.2.1	document and record	**[2]**
3.2.2	effectiveness and efficiency	**[2]**
3.2.3	corrective action and preventive action	**[2]**
3.2.4	quality planning and quality control	**[2]**
3.3	Compare quality policy (clause 5.3) of ISO 9001:2008 and environmental policy (clause 4.2) of ISO 14001:2004.	**[6]**
3.4	Differentiate between the following term:	
3.4.1	environmental aspect and environmental impact	**[2]**
3.4.2	environmental target and environmental objective	**[2]**
3.5	Elaborate on the benefits of integrating a quality management system.	**[6]**
3.6	Discuss the scope of the Occupational Health and Safety Management system (OHSAS 18001:2007).	**[5]**
3.7	Explain the purpose of ISO 31000.	**[4]**

38 marks

CLAUSES OF ISO 9001:2008

1.1 General
1.2 Application

2. Normative references
3. Terms and Definitions

4. Quality Management System
4.1. General requirements
4.2 Document requirements
4.2.1 General
4.2.2 Quality Manual
4.2.3 Control of documents
4.2.4 Control of records

5. Management Responsibility:
5.1 Management Commitment
5.2 Customer focus
5.3 Quality Policy

5.4 Planning
5.4.1 Quality Objectives:
5.4.2 Quality Management System Planning

5.5 Responsibility, authority and communication
5.5.1 Responsibility and authority
5.5.2 Management Representative
5.5.3 Internal communication

5.6 Management Review
5.6.1 General
5.6.2. Review Input
5.6.3 Review Output

6. Resource Management
6.1 Provision of resources
6.2 Human Resources
6.2.1 General
6.2.2 Competence, awareness and training
6.3 Infrastructure
6.4 Work Environment

7. Product Realization
7.1 Planning of product realization

7.2 Customer-related processes
7.2.1 Determine of requirements related to the product
7.2.2 Review of requirements related to the product
7.2.3 Customer Communication

7.3 Design and development
7.3.1 Design and development planning
7.3.2 Design and development inputs
7.3.3 Design and development outputs
7.3.4 Design and development review:
7.3.5 Design and development verification
7.3.6 Design and development validation

7.4 Purchasing
7.4.1 Purchasing process
7.4.2 Purchasing information
7.4.3 Verification of purchased product

7.5 Production and service provision
7.5.1 Control of production and service provision
7.5.2 Validation of processes for production and service provision:
7.5.3 Identification and trace ability
7.5.4 Customer property
7.5.5 Preservation of product

7.6 Control and monitoring and measuring devices:

8. Measurement, Analysis and improvement
8.1 General
8.2 Monitoring and measurement
8.2.1 Customer Satisfaction
8.2.2 Internal Audit
8.2.3 Monitoring and measurement of processes
8.2.4 Monitoring and measurement of product

8.3 Control of non-conforming product
8.4 Analysis of data

8.5 Improvement
8.5.1 Continual improvement
8.5.2 Corrective Action
8.5.3 Preventative action