-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

SQA ADVANCED UNIT SPECIFICATION

GENERAL INFORMATION FOR CENTRES

-Unit number-	**HV76 47**
-Unit title-	**FUNDAMENTALS OF QUALITY SYSTEMS**
-Superclass category-	**VD**
-Date of publication- (month and year)	**NOVEMBER 2017**
-Originating centre for unit-	**SQA**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Explaining quality management principles and practices which are used to establish, control and assure that a product or service meets the customer's requirements.

OUTCOMES:

1. explain the role of quality assurance during the contract review cycle of a product or process;

2. explain the role of quality assurance during the design cycle of an entity;

3. explain the methods of process control used in manufactured product and service contracts.

CREDIT VALUE: 1 SQA Credit.

ACCESS STATEMENT: Access is at the discretion of the centre. However, it would be beneficial if the candidate had experience of industrial organisations.

SQA Advanced Unit Specification

STATEMENT OF STANDARDS

Unit title: FUNDAMENTALS OF QUALITY SYSTEMS

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. EXPLAIN THE ROLE OF QUALITY ASSURANCE DURING THE CONTRACT REVIEW CYCLE OF A PRODUCT OR PROCESS

PERFORMANCE CRITERIA

(a) The explanation of the role of quality assurance in a contract review is clear and comprehensive.
(b) A contract review is established using quality assurance principles to enable suppliers to meet customer requirements.
(c) The importance of a contract review is explained clearly.
(c) Information gathered during a contract review is documented according to quality assurance principles.
(e) Appropriate action is taken based on the contract review.

RANGE STATEMENT

Customer requirements: materials; methods; specifications; installation; service; disposal.

Changes to customer requirements: amendments; specification changes; concessions.

EVIDENCE REQUIREMENTS

Written and/or evidence oral is required that the candidate can explain the requirements of the contract review process as specified in the performance criteria and associated range.

OUTCOME

2. EXPLAIN THE ROLE OF QUALITY ASSURANCE DURING THE DESIGN CYCLE OF AN ENTITY

PERFORMANCE CRITERIA

(a) The importance of standards in the preparation of specifications is explained correctly.
(b) The purpose of standards, codes of practice and design guides is explained correctly.
(c) The stages of review in the design cycle are explained correctly.

RANGE STATEMENT

Specifications: product specifications; test specifications; service specifications; external audit specifications; design guides; codes of practice.

Design cycle: development; prototype testing; field trials; failure mode analysis.

EVIDENCE REQUIREMENTS

Written and/or oral evidence is required that the candidate can explain the requirements of the design cycle as specified in the performance criteria and associated range.

OUTCOME

3. EXPLAIN THE METHODS OF PROCESS CONTROL USED IN MANUFACTURED PRODUCT AND SERVICE CONTRACTS

PERFORMANCE CRITERIA

(a) The explanation of the relevant inspection procedures and techniques is correct in accordance with the appropriate quality system.
(b) The control strategies of inspection procedures suitable for different products and circumstances are described correctly.
(c) The use of computers and digital measuring equipment for maintaining process control is described correctly.
(d) The final inspection and test responsibility to the customer is explained correctly.
(e) The description of automatic inspection methods is correct.

RANGE STATEMENT

Inspection procedures: 100% inspection; sampling.

EVIDENCE REQUIREMENTS

Written and/or oral evidence is required that the candidate can explain the methods of process control used in manufactured product and service contracts as specified in the performance criteria and associated range.

ASSESSMENT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

EQUALITY AND INCLUSION

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

SUPPORT NOTES

Unit title: FUNDAMENTALS OF QUALITY SYSTEMS

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE: This unit can be taken as a free standing single credit unit and can be used as part of the SQA Advanced programme. It is included in the frameworks of the SQA Advanced Certificate and SQA Advanced Diploma in Quality, and the SQA Advanced Certificate and SQA Advanced Diploma in Engineering. Further information can be obtained from SQA.

On completion of this unit you will be able to explain the role of quality assurance during the contract review cycle, design cycle and methods of process control used to ensure contracts are fulfilled.

CONTENT/CONTEXT: Candidates should have access to current standards and specifications. These standards should be current revisions being updated as required.

The word “product” should be interpreted in the broadest possible sense, in terms of a physical product or a product with associated services or services only.

In general the teaching should be supported with current literature from quality organisations, eg DTI or others, and supported with videos from current examples of quality assurance issues.

APPROACHES TO GENERATING EVIDENCE: Corresponding to outcomes:

Outcome 1

Candidates should be given examples of how a contract review and recorded documentation enables suppliers to establish their ability to meet customer requirements. The requirements of ISO 9000, customers and the goals of the organisation should be considered.

Outcome 2

Candidates should be given examples of the purpose of standards, codes of practice and design guides in the preparation of specifications and the stages of review in the design cycle.

Outcome 3

Candidates should be given examples of inspection procedures suitable for different products and circumstances, the use of computers and digital measuring equipment for maintaining process control, automatic inspection methods and final inspection and test responsibility to the customer.

ASSESSMENT PROCEDURES

Candidates could be assessed on:

i) a scenario which closely relates to the type of work that they are involved in whilst addressing the issues of the requirements of ISO 9000

ii) a case study related to an area of work in which they are interested whilst addressing the issues of the requirements of ISO 9000

iii) an appropriate method which complies with the SQA's Guide to Assessment

A series of restricted response questions based upon the performance criteria and the range statement should lead the candidate through the assessment with every response of an acceptable standard for a "fundamental – level" unit.

EXEMPLAR/ASSESSMENT SCENARIO

Introduction

All the assessments for this unit are based upon the scenario of the company outlined below. Consequently all the answers that you give should address the application of the theories learned to situations which are likely to prevail in the organisation. It may be possible to research the practicality of your proposed answers by relation them to similar situations in your own place of work.

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Organisational Background

The organisation upon which the questions are based is a major company in the manufacturing and support sector of project engineering. The type of work undertaken varies from maintenance, refurbishment, production of replacement components and remanufacture of equipment, which has been in service to new standards.

Much of the work undertaken by the company is at the customer's premises and involves dismantling, removal from site, refurbishment, and return to the customer for reinstallation and re-commissioning.

There is a workforce of multi-skilled engineers and technicians who are capable of operating the wide range of machinery, testing and measurement equipment in their modern workshops. Where it is not possible to carry out work to the standard required by the customer or specialist equipment is necessary to complete tasks, subcontracting to approved companies is undertaken.

The client base is predominantly in the petrochemical, product manufacturing, and offshore oil production installations.

This results in a need for the company to address many standards for their diverse customer base and in order to ensure that their quality system is properly controlled are in the process of becoming ISO 9002 approved.

PROGRESSION

This unit is one of two fundamental units and is included in the engineering framework and the quality framework.

REFERENCES

1. Guide to unit writing, SQA, 1993 (Code: A018).
2. Guide to assessment, SQA, 1993 (Code: B005).
3. Guide to certification, SQA, 1996 (Code: F025).
4. Notes for unit writers, SQA, 1995 (Code: A041).

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of SQA Advanced Qualifications.

FURTHER INFORMATION: Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our Centre Feedback Form.