-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

GENERAL INFORMATION

-Module Number- **2150024** **-Session-1994-95**

-Superclass- **XJ**

-Title- **WIRING AND ASSEMBLY TECHNIQUES ($x^1/_2$)**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Acquiring the skills and applying the procedures for the jointing and assembly of electrical and electronic systems.

OUTCOMES

1. prepare and connect conductors;

2. form a cable loom;

3. assemble and test an appropriate system.

CREDIT VALUE: 0.5 NC Credit

ACCESS STATEMENT: There is no access statement for this module.

For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

Additional copies of this unit may be purchased from SQA (Sales and Despatch section). At the time of publication, the cost is £1.50 (minimum order £5).

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STATEMENT OF STANDARDS

UNIT NUMBER: 2150024

UNIT TITLE: WIRING AND ASSEMBLY TECHNIQUES

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. PREPARE AND CONNECT CONDUCTORS

PERFORMANCE CRITERIA

(a) Preparation of cables and materials is correct.
(b) Connection methods are properly applied.

RANGE STATEMENT

Types of cable: solid wires; stranded wires; screened coaxial; multicore; ribbon.

Types of connectors: 13amp plug top; UHF; BNC; 4mm plug; I.D.C.; crimped; turret; wire wrap.

Methods: soldering; crimping; wire wrap; clamped.

EVIDENCE REQUIREMENTS

Performance evidence of the candidate's ability to prepare and connect conductors.

OUTCOME

2. FORM A CABLE LOOM

PERFORMANCE CRITERIA

(a) Formation of cables is correct in terms of the given interconnection schedules.
(b) Completion of the loom is correct.

RANGE STATEMENT

Cables: multistrand; single strand; coaxial.

Methods: spiral wrap; tie wrap; lacing.

Requirements: four breakcarts; two bends; minimum ten cables.

EVIDENCE REQUIREMENTS

Performance evidence of the candidate's ability to form a cable loom to a given requirement.

The loom must contain at least 10 cables including at least one of each type specified in Range Statement.

OUTCOME

3. ASSEMBLE AND TEST AN APPROPRIATE SYSTEM

PERFORMANCE CRITERIA

(a) Termination of loom is neat and correct in terms of the system layout.
(b) Testing of the system is correct in terms of the layout.

RANGE STATEMENT

System: loom; power supply; electrical devices.

Test: function; polarity; continuity; current; voltage.

Test instruments: voltmeter; ammeter; ohmeter; multimeter.

EVIDENCE REQUIREMENTS

Performance evidence of the candidate's ability to assemble an appropriate system to a given layout.

Written or oral evidence of a candidate's ability to test an appropriate system to a given layout.

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 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.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of support notes.

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SUPPORT NOTES

UNIT NUMBER: 2150024

UNIT TITLE: WIRING AND ASSEMBLY TECHNIQUES

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 20 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

On completion of this module, the candidate will be able to use the skills and apply the procedures for jointing and assembling electrical and electronic systems.

CONTENT/CONTEXT The content/context of this module is presented in general terms to allow flexibility in application. It could, for example, be applied to electrical engineering and electronic engineering.

1. Soldering techniques, preparation of wires and cables, appropriate hand tools. Cables and wires could include solid and stranded wires, screened, coaxial, multicore, single core PVC cables. Terminations could include a variety of plugs and sockets for electronic or power applications, tag board, turrent connectors, matrixboard, clamping, crimping, wire wrap.

2. Simple cable forming, template, spot tie and lacing techniques, formation of bends and breakouts. Spiral wrap, tie wrap.

3. Assembly of a functioning circuit to a given specification. Testing would include continuity tests, polarity tests and a functional test.

APPROACHES TO GENERATING EVIDENCE The delivery of the module could be organised in such a way that Outcome 2 flows naturally into Outcome 3.
This module must be taught in a workshop environment and therefore safety is an element which must be emphasised throughout. The skills to be acquired should be demonstrated before the candidate practises on the assembly. The candidate's work must initially be seen to be electrically safe while the quality of the work is likely to improve as the project progresses. The circuits or systems

should be capable of achieving a specific function and be presented to the candidate in the form of an interconnecting schedule and a system layout scheme.

ASSESSMENT PROCEDURES Corresponding to outcomes:

Outcome 1 Relevant practical exercises using cables and connectors listed in Range Statement.

Outcome 2 Relevant practical exercise to meet all of the performance criteria.

Outcome 3 Relevant practical exercise to meet Performance Criterion (a).

Written or oral report to assess Performance Criterion (b).

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised and Recommended Groupings'.

REFERENCES

1. Guide to unit writing.
2. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment.
3. Procedures for special needs statements are set out in SQA's guide 'Students with Special Needs'.
4. Information for centres on SQA's operating procedures is contained in SQA's Guide to Procedures.
5. For details of other SQA publications, please consult SQA's publications list.