

National Course Assessment

Electrical Installation Fundamentals Intermediate 2

X06C 11

Practical Assignment

1st Edition:

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1. Practical Assignment overview

This national project specification provides details of the assessment tasks and the evidence which candidates are expected to produce. It contains a degree of choice in terms of the way the Assignment is taken forward by centres so that it fits the available resources and candidate's interests and personal strengths.

The Practical Assignment is not concerned exclusively with practical activity, but is designed to emphasise skills relating to the application of practical skills, and related knowledge and understanding to a situation that involves task management.

Candidates are provided with a brief and are expected to demonstrate attainment relating to:

- ◆ interpreting the brief
- ◆ gathering the information to clarify the brief
- ◆ deciding on a product, or activity/event to develop
- ◆ selecting and managing materials /resources
- ◆ producing the product, or organising the activity/event or delivering the performance
- ◆ evaluating the product or activity/event or performance (through feedback)

Candidate evidence requirements are as follows:

- ◆ a plan of action
- ◆ evidence of a product or an organised activity/event or a performance
- ◆ evidence which documents the process underpinning the practical hands-on activity
- ◆ evidence showing an evaluation of the Practical Assignment

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The Scottish Qualifications Authority Helpdesk is available on 0141-242 2214

Note:

Please note that individual specifications should always be read in conjunction with the relevant *Arrangements for Project-based National Courses*. The *Arrangements* document lays down the overall requirements for project-based National Courses for the given SGA.

The specification forms part of the above *Arrangements* document.

2. Recommended entry

We strongly advise that the Units within this course should be taught as an integrated package and that the external assessment be completed by candidates as an integral part of this package. It is envisaged that the external assessment be conducted in parallel with the delivery of the practical Electrical Installation Skills Unit.

Some candidates may, for whatever reason, choose to undertake the external assessment on a stand-alone basis. Any such candidates who have not completed or embarked on the National Course prior to undertaking the external assessment should have demonstrated attainment in (and/or attained) the following qualifications:

- ◆ Scottish Vocational Qualification for the Electrotechnical Industry
'Installing and Commissioning Electrotechnical Systems: Electrician' Level 3

or

- ◆ Appropriate clusters of National Units in Electrical Engineering

Candidates who achieve the external assessment will not be certificated for the Course until they have successfully completed the component Units.

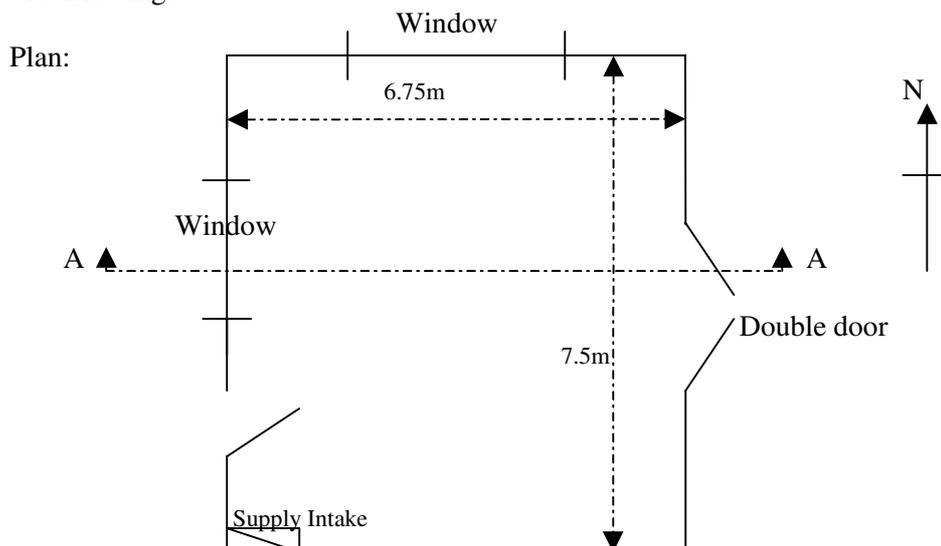
3. Practical Assignment briefs

The two briefs given relate to the installation of wiring systems and equipment in premises. Candidates should choose one of these briefs and develop the installation to show that they have gained the necessary skills and knowledge to implement the installation in a safe and reliable manner taking into account the appropriate points of good installation practice.

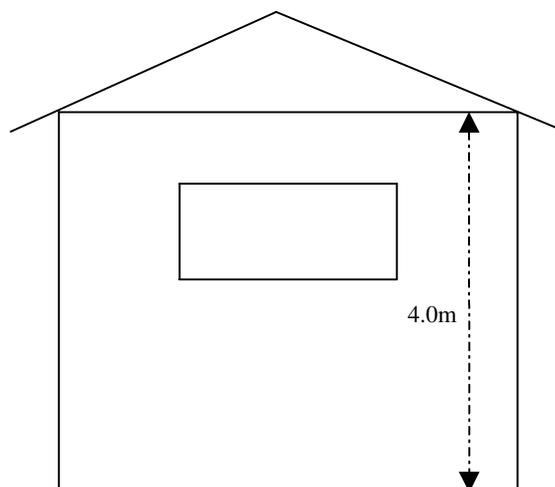
Brief 1: Workshop Installation

- ◆ The candidate is presented with the plan of a small workshop in which light engineering activities take place.
NOTE: Plans may be reproduced to a larger scale as required
- ◆ A new system of lighting is to be installed along with two additional 13A switch-sockets
- ◆ The candidate is required to produce documentation for the design, installation and testing of the installation of two fluorescent luminaries and two single 13A switch socket outlets. The wiring system should use single-core pvc sheathed cables in pvc enclosures and the installation is supplied through a four-way consumer unit located on the south wall of the workshop as shown.

Site Drawings:



Elevation:
through AA



Construction Details:

The building is of brick construction with double-brick cavity walls.

The roof is of apex construction with slates fixed to wooden 'A' trusses

The distance from the floor to the bottom of the 'A' truss is 4.0m

The floor is of solid concrete

1 Lighting:

- ◆ 2 – 1800mm, 70W twin, suspended fluorescent fittings
[controlled together from two positions (at the doors)]
- ◆ The fittings are suspended from the roof trusses at a height of 3m above floor level and are positioned to give an even spread of light over the workshop area.

2 Socket Outlets:

- ◆ 2 – 13A single, switched socket outlets
One mounted on the south wall at a height of 1.25m above floor level and 1.0m from the east wall
The other mounted on the east wall at a height of 1.25m above floor level and 0.5m from the north wall
[both socket outlets will be used to supply hand-held portable equipment].

3 Supply Arrangements:

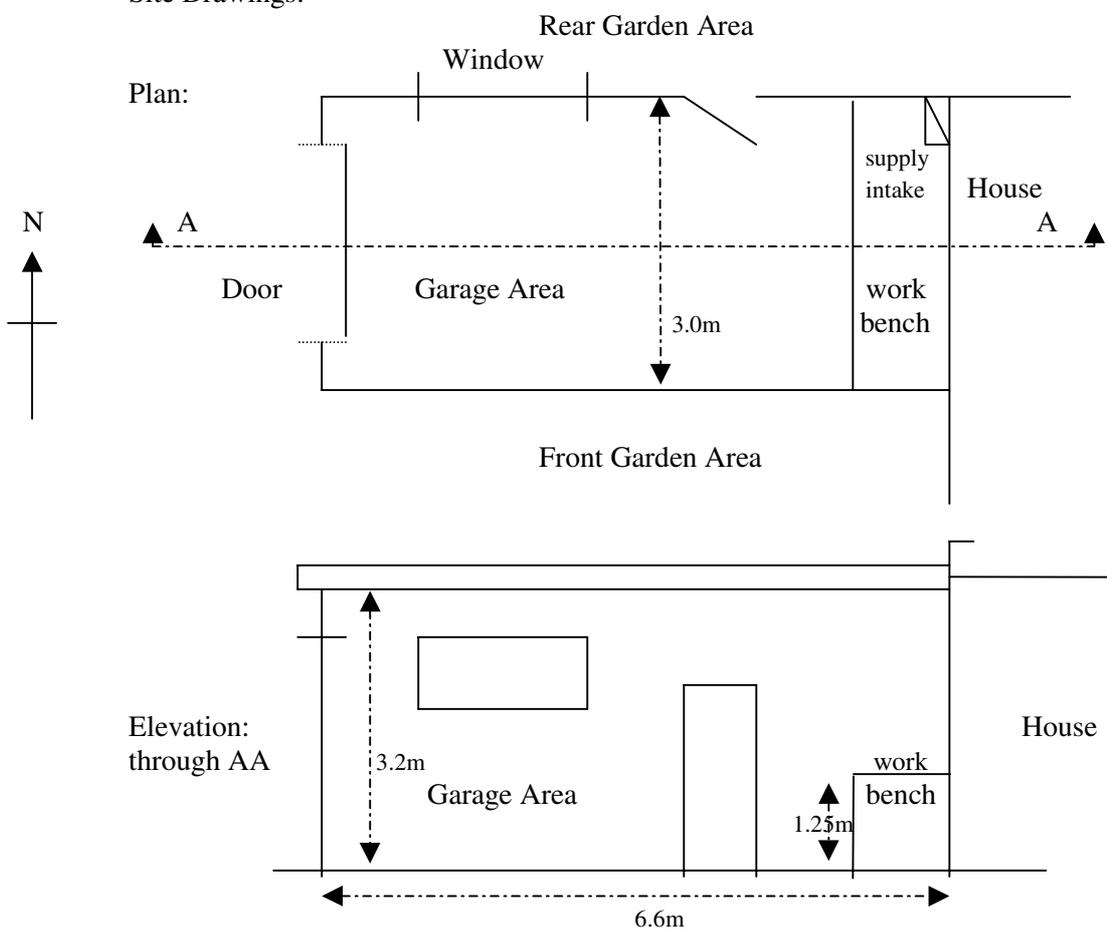
- ◆ a TN-S supply is provided to the workshop
- ◆ a consumer unit with a 30mA RCD is provided at the supply intake position.

Brief 2: Garage Attached to Dwelling House

- ◆ The candidate is presented with the plan of a garage extension which has one wall common to the dwelling house
NOTE: Plans may be reproduced to a larger scale as required
- ◆ In addition to garaging the family car, the area is to be used for bench work activities
- ◆ A lighting system is to be installed in the garage along with two, 13A switch sockets
- ◆ The candidate is required to produce documentation for the design, installation and testing of the installation.

The wiring system should use twin pvc-sheathed cables with an incorporated cpc. Suitable protection against mechanical damage should be provided for the wiring where required. The installation is supplied through a two-way consumer unit located on the common wall between the garage and the house.

Site Drawings:



Construction Details:

The building is of single concrete block construction

The east wall, common with the house, is of double brick cavity construction

The roof is of flat construction with chipboard sheets fixed to horizontal wooden joists.

Bitumin roofing felt is used as weatherproofing

The distance from the floor to the underside of the roofing joists is 3.2m

The floor is of solid concrete

1 Lighting:

- ◆ 1 – 1800mm, 70W ceiling-mounted fluorescent fitting to give general lighting [controlled from two positions (at the doors)]
- ◆ 1 – 600mm, 18W wall-mounted fluorescent to give local lighting at the workbench. Mounted centrally at a height of 1.5m above the bench [controlled from the rear garden door].

2 Socket Outlets:

- ◆ 13A single, switched socket outlets
One mounted on the south wall at a height of 1.0m above floor level and 1.0m from the west wall.
The other mounted on the east wall 0.25m above the workbench and 1.0m from the north wall
[both socket outlets will be used to supply portable hand tools and garden equipment].

3 Supply Arrangements:

- ◆ A TN-S supply is provided to the workshop
- ◆ A consumer unit with a 30mA RCD is provided at the supply intake position.

Specific Tasks: (Common to both briefs)

The candidate should:

- ◆ produce an action plan outlining the sequence of the various stages of the installation and the time allocated to each stage
- ◆ produce a risk assessment outlining the hazards present and the measures taken to minimise the risks
- ◆ show clearly on the site plan, the correct BS 3939 location symbols and the cable routes
- ◆ draw circuit and wiring diagrams for the lighting and power circuits
- ◆ produce lists of materials and resources, including cables, with manufacturer's catalogue numbers.
- ◆ produce a list with diagrams/illustrations of 'good practice installation points'
- ◆ provide data to show how cable sizes and rating of protective devices were determined
- ◆ explain how the earthing requirements were achieved
- ◆ explain the tests that were carried out to ensure that the installation is acceptable
- ◆ give values of typical test results for a satisfactory installation.

4. Outcome coverage

Course Structure		
Unit title	Credit value	Unit number
Fundamental Electrical Principles	1.0	D9AF 11
Basic Electrical Installation Systems and Protection	1.0	D9AG 11
Basic Electrical Installation Skills	1.0	D9AH 11

All external assessments for project-based National Courses cover a minimum of two thirds of the outcomes from the component Units. For this project the outcomes covered are:

Unit: Fundamental Electrical Principles

1. Interpret the requirements of basic electrical circuits
2. Use instruments to measure current, voltage, resistance and power in d.c. networks
3. Determine the relationships between current, voltage and resistance in d.c. networks

Unit: Basic Installation Systems and Protection

1. Identify the stages of transfer of electrical energy
2. Identify the types of protective devices used for overload and short circuit protection
3. Interpret electrical circuit diagrams for 1-way and 2-way switching for lighting circuits and radial power circuits.

Unit: Basic Installation Skills

1. Assemble equipment to form electrical circuits
2. Perform testing procedures on electrical systems

It is strongly advised that candidates should be progressing through the assessments for the individual component Units as they are progressing through the external assessment.

5. Subject/occupationally-related knowledge and skills

The Practical Assignment allows candidates to develop and apply skills in:

- ◆ the design, installation, inspection and testing of simple wiring systems
- ◆ applying health and safety requirements
- ◆ good workmanship
- ◆ recognition of electrical accessories and components
- ◆ basic appreciation of good working practice and procedures
- ◆ properties of wiring systems
- ◆ the use of instruments
- ◆ electrical protection methods
- ◆ estimation of circuit currents and related protection device ratings
- ◆ safe isolation procedures
- ◆ earthing procedures
- ◆ ensuring personal safety and the safety of others
- ◆ providing effective support for wiring systems
- ◆ interpretation of installation requirements
- ◆ implementation of circuit arrangements into practical wiring arrangements

It also allows candidates to further develop and apply knowledge of:

- ◆ electrical circuit principles
- ◆ installation concepts including earthing, overload and short-circuit protection
- ◆ testing procedures
- ◆ the need to interpret test results
- ◆ selection of wiring systems to meet specific requirements
- ◆ the importance of planning as part of the installation process
- ◆ techniques in forming wiring systems
- ◆ the importance of health and safety when working with electricity

6. Candidate evidence requirements and allocation of marks

General Information

The three stages of the Practical Assignment for all project-based National Courses at Intermediate 2 are:

- ◆ planning
- ◆ developing
- ◆ evaluating

Here we describe the evidence requirements which apply to each of the three stages of the Practical Assignment for all project-based National Courses at Intermediate 2. Where there are any specific evidence requirements relating to the Course, these are given later in this section.

Planning

Candidates must produce a 500 word (or equivalent) plan of action. The plan should include an introduction and the main body. Centres should ensure that candidates have, or are taught, the necessary skills to devise their own plan before they start the project.

For the introduction of the plan candidates should:

- ◆ provide a rationale for selecting a particular brief
- ◆ interpret the brief
- ◆ gather information to clarify the brief
- ◆ define the aims and objectives of the Practical Assignment

For the main body of the plan candidates should:

- ◆ identify information sources
- ◆ identify materials and resources
- ◆ establish timescales for completion of stages of the Practical Assignment

The plan of action should be produced in a supervised environment although candidates may carry out the preparation beforehand. Candidates may communicate with each other when producing their plans of action but each plan must be tailored to the candidate's own project and the action points should relate to the work to be carried out by the individual candidate.

The work produced should always be the candidate's own. However, teachers/lecturers are expected to provide candidates with advice, guidance and constructive criticism as necessary when they are devising their plans. It is important to note that, as the plan underpins the rest of the project, centres should ensure that no candidate proceeds to the development stage until that candidate has devised a plan that is potentially workable. The level of support that candidates need to devise a viable plan of action will, of course, vary from candidate to candidate. Centres should indicate the level of support needed for each candidate on the flyleaf for the project provided by SQA. This should not inhibit centres from providing constructive comment nor the candidate from acting on their own initiative and taking on board the advice. In some cases, however, if the level of support and intervention needed is more than that which would normally be seen as reasonable, the authenticity of the candidate's work may be called into question.

If the level of input needed from the teacher/lecturer is above normal (for example, the quality of the plan is such that it would mean the project would be unworkable if the plan was not revised) then the candidates cannot score more than 20 of the 40 marks allowed for the planning stage.

Developing

Candidates must provide evidence that:

- ◆ testifies to the quality of the hands-on practical activity
- ◆ documents the processes underpinning the activity

Specific evidence requirements for this Course are given below.

All of the evidence should be produced in a supervised environment. Candidates may communicate with each other but should produce work which can be clearly attributed to the candidate as being his/her own.

Evaluating

Candidates must produce an extended evaluation report which should:

- ◆ provide a brief summary of what the assignment was about
- ◆ review and update the action plan in the light of experience
- ◆ assess the effectiveness of the action plan
- ◆ summarise any unseen events and how they were handled
- ◆ identify knowledge and skills which have been gained and/or developed
- ◆ assess the strengths, weaknesses and quality of any hands-on activity
- ◆ assess the effectiveness of the research methods used
- ◆ determine to what extent the assignment met the original brief

The evaluation report should be 500 words (or equivalent) at Intermediate 2. Candidates at Intermediate 2 should be allowed up to 1 hour 30 minutes to complete an evaluation (including the summary). Candidates should be allowed to take one side of an A4 page of notes (maximum of 200 words or equivalent allowed) which they have prepared, into the room with them. The centre has the responsibility for ensuring that the notes brought in are the candidate's own work.

For this activity the accommodation should be arranged to reflect centre-invigilated conditions and candidates should not be allowed to communicate with each other in any way.

Specific evidence requirements and assessment arrangements for the Practical Assignment for Electrical Installation Fundamentals at Intermediate 2

Planning	
Evidence:	Plan of action: 500 words <i>or</i> equivalent (40 marks)
Conditions of external assessment:	Supervised
Who assesses it?	Send to SQA for marking after initial marking in Centre

Developing	
Evidence:	For hands-on activity and for processes underpinning the activity: Portfolio of: Risk Assessment (10 marks) BS 3939 symbols and cable routes (5 marks) Circuit and wiring diagrams (10 marks) List of accessories and materials including cable list (10 marks) Breakdown/sequence of activities (10 marks) Good installation practice points observed (30 marks) Determination of cable sizes and rating of protective devices (10 marks) Earthing arrangements (10 marks) Test required (15 marks) Test results (10marks) (120 marks allocated for this stage)
Conditions of external assessment:	Supervised
Who assesses it?	Transportable Evidence: All portfolio Send to SQA after initial marking in Centre

Evaluating	
Evidence:	Evaluation report — including summary 500 words <i>or</i> equivalent (40 marks)
Conditions of assessment:	Centre-invigilated
Who assesses it?	Send to SQA after initial marking in Centre

It is important that candidates know that they will be penalised for submitting evidence that significantly exceeds the stated word count.

Specific additional information and requirements

Marking Instructions

Electrical Installation Fundamentals: planning stage

Total: 40 marks

The candidates should familiarise themselves with the briefs and produce a plan of action to meet the requirements of the one they choose.

The candidate may undertake a preliminary investigation to clarify the brief and establish exactly what is required. The project activities should then be identified and sequenced showing, for each, the resources required, and the sequence order.

Candidates might find it an advantage to cooperate with each other for the planning stage however, each candidate must ensure that they provide all the evidence needed for this stage on an individual basis.

Each candidate must produce a plan of action which contains:

- ◆ an introduction (as detailed earlier in this section) 10 marks
- ◆ a main body which:
 - identifies information sources
 - explains the aims and objectives of the project using one of the assignment briefs
 - identifies stages for the project, the activities within these stages and the information and resources/tools etc required to complete the project
 - sets clear timescales for completion of stages of the project
 - describes the methods used to record progress (i) when producing the installation documentation and (ii) when gathering feedback. 30 marks

Electrical Installation Fundamentals: developing stage

Total: 120 marks

For all briefs, candidates must produce a portfolio of evidence to show successful completion of the developing stage of the practical assignment.

This evidence portfolio should include:

- ◆ a risk assessment sheet to show that the candidate is aware of the hazards involved in the working environment and has identified measures to minimise the risks 10marks
- ◆ a copy of the 'Site Plan' of the premises showing the correct BS 3939 location symbols for the equipment and cable routes 5 marks
- ◆ clearly presented circuit and wiring diagrams for both the lighting and power circuits 10marks
- ◆ a list of materials and accessories, including cables, with manufacturer's catalogue numbers where appropriate 10 marks
- ◆ a breakdown of the planned activities from the start of the installation stage to its completion. These activities should be listed in sequence order and be given time allocations 10marks
- ◆ a listing, with diagrams/illustrations as appropriate, of 'good installation practice points' to show how the wiring and equipment would be installed in a safe manner and to the appropriate standards 30marks
- ◆ calculations to show how (i) cable sizes and (ii) the rating of the protective devices have been determined. 10marks
- ◆ an explanation of how the earthing requirements were achieved 10marks
- ◆ an explanation of the tests required to be made on the installation to ensure it is safe before connecting the supply 15marks

- ◆ a test results sheet showing typical result values for a satisfactory installation 10marks

Further details to consider during the Developing stage are as follows:

Risk Assessment: 10 marks

- ◆ a review of the likely sources of danger (hazards)
- ◆ an assessment of the degree of risk of accident or injury from that danger
- ◆ what measures could be taken to minimise the risk

Site Plan Requirements: 5 marks

- ◆ accurate position of symbols in relation to the information given in the brief
- ◆ cable routes for lighting circuits should take account of the method of installation used (loop-in or joint box)

Circuit and wiring diagrams: 10marks

- ◆ circuit diagram for one-way and two-way control of lighting circuits as required by the relevant brief
- ◆ circuit diagram for radial circuit as required by the relevant brief
- ◆ diagram to show the appropriate wiring arrangement to implement the lighting circuit as specified in the relevant brief (depending on the method used ie loop-in or joint box)
- ◆ diagram to show the appropriate wiring arrangement to implement the radial circuit as specified in the relevant brief

Accessories and materials lists: 10 marks

- ◆ use of manufacturers' catalogues to identify suitable accessories to meet the brief requirements
- ◆ use of manufacturers' catalogues to identify suitable materials to meet the brief requirements
- ◆ use of manufacturers' catalogues to identify suitable types and sizes of wiring enclosures to meet the brief requirements (sizes to include length)
- ◆ use of manufacturers' catalogues to identify suitable circuit control equipment
- ◆ use of manufactures' information sheets to identify suitable circuit protection devices
- ◆ identification of suitable cables in terms of: insulation type, number of cores, outer sheath material (where appropriate), cross sectional area of cores, length, colour of cores
- ◆ identification of suitable cable and enclosure supports in terms of: type, size, number required
- ◆ identification of sundry materials eg fixing screws, terminal blocks, earth sleeving, p.v.c couplings, bushes etc.

Installation activities breakdown/sequence: 10 marks

- ◆ the design of the planning sheet
- ◆ identification of activities
- ◆ the sequence of activities
- ◆ allocation of time-scale to the operation

Good installation practice: 30 marks: 2 per point

- ◆ adequate support of wiring system and accessories
- ◆ use of proper assembly techniques
- ◆ terminal boxes etc securely fixed
- ◆ holes bored in wooden joists at recommended level from top
- ◆ additional mechanical protection for pvc sheathed cables as required
- ◆ appropriate csa of live and cpc conductors
- ◆ appropriate rating of circuit protective devices
- ◆ appropriate level of protection afforded to hand tools and garden equipment
- ◆ adequate cable lengths at terminations

- ◆ use of proper conductor termination techniques
- ◆ radius of bends in cables and enclosures in line with good practice
- ◆ cable cores clearly identifiable throughout their length
- ◆ appropriate earthing arrangements
- ◆ aesthetically acceptable installation
- ◆ diagrams/illustrations to show methods of installation

Cable sizes and rating of protection devices:

10 marks

- ◆ sources of information on cable sizing
- ◆ sources of information on current rating of protective devices
- ◆ calculation of design current from load ratings
- ◆ determination of cable current rating
- ◆ choice of appropriate cable size
- ◆ determination of protection device rating

Earthing arrangements:

10 marks

- ◆ sources of information on earthing arrangements
- ◆ details of earthing arrangements used

Installation tests and results:

Test explanations 15 marks; Test results 10 marks

- ◆ sources of information on testing installations
- ◆ identification of tests to be carried out prior to connecting the supply voltage
- ◆ sequence of tests to be carried out
- ◆ acceptable test result values

Portfolio of evidence produced by the candidate, for developing stage, to include:

Portfolio layout:

- ◆ name of candidate
- ◆ class group
- ◆ project/brief title
- ◆ list of acknowledgements
- ◆ contents page

Portfolio contents (as detailed previously in this section: pages 14, 15, 16)

Electrical Installation Fundamentals: evaluating stage

Total 40 marks

In addition to the requirements given earlier, the evaluations report for this project should include the following:

Points relating to the effectiveness of the original plan eg

- ◆ how well, or otherwise, the project has gone
- ◆ whether any unexpected problems occurred, what these were and how they were dealt with
- ◆ whether or not the work was carried out on schedule
- ◆ any changes made to the original work plan
- ◆ ways in which the planning could have been improved
- ◆ the skills and knowledge gained/developed during the project
- ◆ were the right questions asked in order to interpret the brief
- ◆ what other questions would have been useful
- ◆ whether the project was successful in that the wiring systems and equipment were correctly installed.

7. Marking and Grading

The assessment evidence for project-based National Courses is marked externally by SQA.

The total mark for the Practical Assignment is 200, (this large mark allocation makes it easier to discriminate effectively between performances of candidates across the various parts of the assessment). These marks will be allocated to assessment evidence from the three Practical Assignment stages as follows in *Table A*.

Table A

Practical Assignment Stage	Assessment Evidence	Mark Allocation
Planning	Plan of action	40
Developing	Evidence arising from the hands-on practical activity and from documenting the underpinning process involved	120
Evaluating	Evaluation report	40

To underpin this assessment system there are criteria to which marks are pegged, against which the candidate evidence from each of the three Practical Assignment stages is assessed. The use of such mark categories linked to broad criteria, allows the aggregation of the various parts of the assessment which do not necessarily have the same weighting in the overall grade. *Table B* overleaf outlines the criteria to be used to assess candidate evidence. Assessors in Centres will, for each of the three parts, decide firstly on the broad category of mark which is appropriate and secondly on the precise mark to be given.

Although it is possible for candidates to be given bands 7, 8 and 9 which are described as ‘fails’, no such categories will appear on the candidate’s certificate. This information should help centres agree estimates of candidate performance and provide feedback for remediation purposes.

Practical Assignment

Table B

Intermediate 2		Plan of action	Practical activity and documented process evidence	Evaluation report
		Equivalence to:	Mark Range	Mark Range
Levels of performance:				
Broad level-related criteria				
Content and scope:	appropriate for Int.2	Upper A	34 - 40	34 - 40
Treatment:	excellent	85 – 100% (Band 1)	102 – 120	
Content and scope:	appropriate for Int 2	Lower A	28 – 33	28 – 33
Treatment:	consistently thorough	70 – 84% (Band 2)	84 – 101	
Content and scope:	appropriate for Int 2	B	24 – 27	24 – 27
Treatment:	thorough in parts	60 – 69% (Bands 3 & 4)	72 – 83	
Content and scope:	appropriate for Int 2	C	20 – 23	20 – 23
Treatment:	adequate	50 – 59% (Bands 5 & 6)	60 – 71	
Content and scope:	appropriate for Int 2	Fail	16 – 19	16 – 19
Treatment:	adequate only in parts	40 – 49% (Bands 7 & 8)	48 – 59	
OR				
Content and scope:	basic for Int 2			
Treatment:	thorough			
Content and scope:	appropriate for Int 2	Fail	< 16	< 16
Treatment:	generally poor	Below 40% (Band 9)	< 48	< 16
OR				
Content and scope:	basic for Int 2			
Treatment:	adequate or poor			

NOTE: Content and Scope: Defined as how appropriate or otherwise the candidate interprets the level of demand for the specification
 Treatment: Defined as how successful or otherwise the candidate tackles the project

Estimates and Appeals

Although these project-based National Courses are externally assessed by SQA Markers or Visiting Examiners, candidates will benefit from estimate grades based on accurate internal assessment of their projects, ie the grade assessors judge a candidate should be awarded, based on all the available evidence. The processes for deciding an estimate grade are similar to the process the external assessors ie Marker or Visiting Examiner use for the final assessment. The main benefit of an estimate to an individual candidate is that an appeal can be submitted against an external decision where the estimate given to the candidate was grade C or better. An appeal will not normally be considered for candidates for whom no estimate has been received. The SQA will provide a form for submission of estimates.

For the internal marking process for estimates, internal assessors are expected to:

- ◆ Compare candidate evidence arising from each stage of the Practical Assignment to the criteria outlined in *Table B* and decide on the mark category which most accurately describes it.
- ◆ Decide on a particular mark for the candidate, within the broad mark category for each stage, depending on how marginal the decision.
- ◆ Maintain a brief record of why a certain mark was given for each of the three Practical Assignment stages (for internal moderation purposes).
- ◆ Follow the internal moderation process within their centre (see section on internal moderation below).
- ◆ Aggregate the internally moderated marks for each candidate. That gives a total mark out of 200.
- ◆ Divide that mark by two to give a percentage.
- ◆ Convert the overall % mark for each candidate into an estimate grade and band using *Table C*.

Table C

% Mark range	Grade	Band (for estimates)
85 – 100	A (upper)	1
70 – 84	A (lower)	2
65 – 69	B (upper)	3
60 – 64	B (lower)	4
55 – 59	C (upper)	5
50 – 54	C (lower)	6
45 – 49	Fail (near miss)	7
40 – 44	Fail	8
Less than 40	Fail	9

- ◆ Check the grade already given to candidates against the grade descriptions tabled below (*Table D*). This is to ensure that candidates have effectively integrated each stage of the Practical Assignment. Please use the grade descriptions as a touchstone against which grades can be checked.
- ◆ Provide estimates as bands.

Grade Descriptions for a Practical Assignment at Intermediate 2

Table C

A	B	C
Content and scope appropriate for Intermediate 2		
And looking at the evidence as a whole:	And looking at the evidence as a whole:	And looking at the evidence as a whole:
<p>A practical assignment at Grade A:</p> <ul style="list-style-type: none"> • produces high quality, clearly inter-related documented and process or product-related evidence for the three essential phases of planning, developing and evaluating • is an exercise to which candidates have brought an accurate and enthusiastic interpretation of the practical assignment brief • is tightly structured, relevant to the content of the Units and displays a high level of subject/occupational expertise • applies integrated and consolidated knowledge, understanding and skills effectively and consistently from course Units to situations and/or design specifications with varying degrees of complexity 	<p>A practical assignment at Grade B:</p> <ul style="list-style-type: none"> • produces good quality, inter-related documented and process or product-related evidence for the three essential phases of planning, developing and evaluating • is an exercise to which candidates have brought an accurate and fairly innovative and enthusiastic interpretation of the practical assignment brief • is well structured, relevant to the content of the Units and displays a good level of subject/occupational expertise • applies integrated and consolidated knowledge, understanding and skills fairly effectively and consistently from course Units to situations and/or design specifications with varying degrees of complexity 	<p>A practical assignment at Grade C:</p> <ul style="list-style-type: none"> • produces adequate fairly well inter-related documented and process or product-related evidence for the three essential phases of planning, developing and evaluating • is an exercise to which candidates have brought an acceptable interpretation of the practical assignment brief • is reasonably well structured, relevant to the content of the Units and displays an adequate level of subject/occupational expertise • applies integrated and consolidated knowledge, understanding and skills from course Units with some lack of continuity and consistency

Internal Moderation

The internal moderator should:

- ◆ Oversee the internal moderation process to ensure consistency of judgement or *reliability of assessment*. This process will vary according to the nature of the evidence and the number of assessors and sites. It is likely to involve agreement trials and/or Marker standardisation. The internal moderator should be a specialist in the subject. (It may be helpful in the first few years of these project-based National Courses to do a cross-subject moderation of samples of likely parts such as plans of action and evaluation reports. Such additional cross-subject internal moderation is however not mandatory.)
- ◆ Ensure that all candidates with similar overall marks/bands have been fairly treated. For example, some candidates may have produced more fully integrated projects than others. This may lead to a reconsideration of the individual components for some candidates.
- ◆ Oversee the finalisation of estimate grades and submission of candidates' evidence. A form will be available for this purpose.

(See *Guide to Assessment and Quality Assurance for Schools* (AA0840/2, December 2001) and *Guide to Assessment and Quality Assurance for Colleges* (AA0841/2, December 2001) for further information to internal moderation. A guide to good practice for internal moderation is to be published in summer 2000)

Submitting candidate evidence to SQA

Specific information on this part of the process will be circulated to centres. Where materials have to be sent to SQA for marking you will be provided with any necessary packaging materials.

The following must be sent to SQA for this Practical Assignment:

- ◆ plan of action
- ◆ all transportable evidence
- ◆ extended evaluation report

Note: In addition, centres will be expected to submit all notes used by candidates during write-up sessions.

8. Ensuring Evidence is Authentic

The following methods should be used to ensure that the evidence produced by a given candidate is all their own work. These methods are used outwith any situation where the candidate's work will be produced under supervised or invigilated conditions already stipulated by SQA (eg the plan of action and evaluation).

Candidate portfolio

This should be undertaken and completed under supervised or invigilated conditions.

9. Investigating Tools

Candidates are expected to make use of the following information sources during the Practical Assignment:

Information sources

- ◆ books
- ◆ manufacturers' catalogues and data sheets
- ◆ technical/professional journals (eg '*Cabletalk*')
- ◆ internet
- ◆ CD-ROMs
- ◆ videos (eg from HSE)
- ◆ teaching and lecturing staff
- ◆ demonstrations
- ◆ technical representatives from equipment suppliers
- ◆ British and European Standards (eg BS 7671)
- ◆ course notes and tutorials

Accessing information

- ◆ visiting libraries
- ◆ site/workshop visits
- ◆ sending out questionnaires
- ◆ conducting research
- ◆ accessing information technology
- ◆ attending exhibitions

References supplied by candidates

Please note that it is legitimate for candidates to quote from information sources such as articles (in print or stored electronically) or books. Such quotations must be placed within quotation marks followed by the reference, including the chapter and/or section and page number. Texts referred to should be included in the bibliography.

The following format for references should be used:

Books

Author's surname, followed by the forename or initials, title of the book (in italics or underlined), place of publication, name of publisher, year of publication.

For example:

Barton, T, *Fieldwork for Geographers*, London: Edward Arnold, 1985

Articles

Author's surname, followed by forename or initials, title of the article (in inverted commas), title of the periodical (underlined or in italics), volume number, part number, year of publication, page number(s).

For example:

Sugden, D E, 'Perspectives on the Glaciation of Scotland', *SAGT Journal No 17*, 1988, pp4-10.

Maps and Diagrams

Sources should be given on each map and diagram and should be stated in the same format as for books and articles, as appropriate.

For example:

Microsoft Encarta 1997

Internet

If a website has been used then the address (URL) must be disclosed.

For example:

www.sqa.org.uk

It is important to note that unacknowledged copying will be penalised, usually by cancellation of the candidate entry.

10. Materials and Resources

Candidates are expected to select from the following resources as appropriate:

- ◆ electrical wiring accessories and materials data
- ◆ manufacturers' catalogues and information sheets
- ◆ p.v.c sheathed cables information
- ◆ installation layout diagrams

11. Core Skills

It should be noted that this project, in common with other project-based Courses, follows the planning/developing/evaluating cycle. Successful completion of the course will lead to automatic certification of the following core skills:

Problem Solving (Critical Thinking)	Int 2
Problem Solving (Planning and Organising)	Int 2
Problem Solving (Reviewing and Evaluating)	Int 2
Numeracy (Using Graphical Information)	Int 2
Numeracy (Using Number)	Int 2