



**education**

Department:  
Education  
REPUBLIC OF SOUTH AFRICA

# **NATIONAL CERTIFICATES (VOCATIONAL)**

## **ASSESSMENT GUIDELINES**

### **ELECTRONIC CONTROL AND DIGITAL ELECTRONICS NQF Level 3**

September 2007



# **ELECTRONIC CONTROL AND DIGITAL ELECTRONICS – LEVEL 3 CONTENTS**

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## **SECTION A: PURPOSE OF THE SUBJECT ASSESSMENT GUIDELINES**

This document provides the lecturer with guidelines to develop and implement a coherent, integrated assessment system for Electronic Control and Digital Electronics in the National Certificates (Vocational). It must be read with the *National Policy Regarding Further Education and Training Programmes: Approval of the Documents, Policy for the National Certificates (Vocational) Qualifications at Levels 2 to 4 on the National Qualifications Framework (NQF)*. This assessment guideline will be used for National Qualifications Framework Levels 2-4.

This document explains the requirements for the internal and external subject assessment. The lecturer must use this document with the *Subject Guidelines: Electronic Control and Digital Electronics* to prepare for and deliver Electronic Control and Digital Electronics. Lecturers should use a variety of resources and apply a range of assessment skills in the setting, marking and recording of assessment tasks.

## **SECTION B: ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)**

### **1 ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)**

Assessment in the National Certificates (Vocational) is underpinned by the objectives of the National Qualifications Framework (NQF). These objectives are to:

- Create an integrated national framework for learning achievements.
- Facilitate access to and progression within education, training and career paths.
- Enhance the quality of education and training.
- Redress unfair discrimination and past imbalances and thereby accelerate employment opportunities.
- Contribute to the holistic development of the student by addressing:
  - social adjustment and responsibility;
  - moral accountability and ethical work orientation;
  - economic participation; and
  - nation-building.

The principles that drive these objectives are:

- **Integration**

To adopt a unified approach to education and training that will strengthen the human resources development capacity of the nation.

- **Relevance**

To be dynamic and responsive to national development needs.

- **Credibility**

To demonstrate national and international value and recognition of qualification and acquired competencies and skills.

- **Coherence**

To work within a consistent framework of principles and certification.

- **Flexibility**

To allow for creativity and resourcefulness when achieving Learning Outcomes, to cater for different learning styles and use a range of assessment methods, instruments and techniques.

- **Participation**

To enable stakeholders to participate in setting standards and co-ordinating the achievement of the qualification.

- **Access**

To address barriers to learning at each level to facilitate students' progress.

- **Progression**

To ensure that the qualification framework permits individuals to move through the levels of the national qualification via different, appropriate combinations of the components of the delivery system.

- **Portability**

To enable students to transfer credits of qualifications from one learning institution and/or employer to another institution or employer.

- **Articulation**

To allow for vertical and horizontal mobility in the education system when accredited pre-requisites have been successfully completed.

- **Recognition of Prior Learning**

To grant credits for a unit of learning following an assessment or if a student possesses the capabilities specified in the outcomes statement.

- **Validity of assessments**

To ensure assessment covers a broad range of knowledge, skills, values and attitudes (SKVAs) needed to demonstrate applied competency. This is achieved through:

- clearly stating the outcome to be assessed;
- selecting the appropriate or suitable evidence;
- matching the evidence with a compatible or appropriate method of assessment; and
- selecting and constructing an instrument(s) of assessment.

- **Reliability**

To assure assessment practices are consistent so that the same result or judgment is arrived at if the assessment is replicated in the same context. This demands consistency in the interpretation of evidence; therefore, careful monitoring of assessment is vital.

- **Fairness and transparency**

To verify that no assessment process or method(s) hinders or unfairly advantages any student. The following could constitute unfairness in assessment:

- Inequality of opportunities, resources or teaching and learning approaches
- Bias based on ethnicity, race, gender, age, disability or social class
- Lack of clarity regarding Learning Outcome being assessed
- Comparison of students' work with other students, based on learning styles and language

- **Practicability and cost-effectiveness**

To integrate assessment practices within an outcomes-based education and training system and strive for cost and time-effective assessment.

## 2 ASSESSMENT FRAMEWORK FOR VOCATIONAL QUALIFICATIONS

The assessment structure for the National Certificates (Vocational) qualification is as follows:

### 2.1 Internal continuous assessment (ICASS)

Knowledge, skills values, and attitudes (SKVAs) are assessed throughout the year using assessment instruments such as projects, tests, assignments, investigations, role-play and case studies. The internal continuous assessment (ICASS) practical component is undertaken in a real workplace, a workshop or a "Structured Environment". This component is moderated internally and externally quality assured by Umalusi. All internal continuous assessment (ICASS) evidence is kept in a Portfolio of Evidence (PoE) and must be readily available for monitoring, moderation and verification purposes.

### 2.2 External summative assessment (ESASS)

The external summative assessment is either a single or a set of written papers set to the requirements of the Subject Learning Outcomes. The Department of Education administers the theoretical component according to relevant assessment policies.

A compulsory component of external summative assessment (ESASS) is the **integrated summative assessment task (ISAT)**. This assessment task draws on the students' cumulative learning throughout the year. The task requires **integrated application of competence** and is executed under strict assessment conditions. The task should take place in a simulated or "Structured Environment". The integrated summative assessment task (ISAT) is the most significant test of students' ability to apply their acquired knowledge.

The integrated assessment approach allows students to be assessed in more than one subject with the same integrated summative assessment task (ISAT).

External summative assessments will be conducted annually between October and December, with provision made for supplementary sittings.

### **3 MODERATION OF ASSESSMENT**

#### **3.1 Internal moderation**

Assessment must be moderated according to the internal moderation policy of the Further Education and Training (FET) college. Internal college moderation is a continuous process. The moderator's involvement starts with the planning of assessment methods and instruments and follows with continuous collaboration with and support to the assessors. Internal moderation creates common understanding of Assessment Standards and maintains these across vocational programmes.

#### **3.2 External moderation**

External moderation is conducted by the Department of Education, Umalusi and, where relevant, an Education and Training Quality Assurance (ETQA) body according to South African Qualifications Authority (SAQA) and Umalusi standards and requirements.

The external moderator:

- monitors and evaluates the standard of all summative assessments;
- maintains standards by exercising appropriate influence and control over assessors;
- ensures proper procedures are followed;
- ensures summative integrated assessments are correctly administered;
- observes a minimum sample of ten (10) to twenty-five (25) percent of summative assessments;
- gives written feedback to the relevant quality assessor; and
- moderates in case of a dispute between an assessor and a student.

Policy on inclusive education requires that assessment procedures for students who experience barriers to learning be customised and supported to enable these students to achieve their maximum potential.

### **4 PERIOD OF VALIDITY OF INTERNAL CONTINUOUS ASSESSMENT (ICASS)**

The period of validity of the internal continuous assessment mark is determined by the *National Policy on the Conduct, Administration and Management of the Assessment of the National Certificates (Vocational)*.

The internal continuous assessment (ICASS) must be re-submitted with each examination enrolment for which it constitutes a component.

### **5 ASSESSOR REQUIREMENTS**

Assessors must be subject specialists and should ideally be declared competent against the standards set by the ETDP SETA. If the lecturer conducting the assessments has not been declared a competent assessor, an assessor who has been declared competent may be appointed to oversee the assessment process to ensure the quality and integrity of assessments.

### **6 TYPES OF ASSESSMENT**

Assessment benefits the student and the lecturer. It informs students about their progress and helps lecturers make informed decisions at different stages of the learning process. Depending on the intended purpose, different types of assessment can be used.

#### **6.1 Baseline assessment**

At the beginning of a level or learning experience, baseline assessment establishes the knowledge, skills, values and attitudes (SKVAs) that students bring to the classroom. This knowledge assists lecturers to plan learning programmes and learning activities.

## 6.2 Diagnostic assessment

This assessment diagnoses the nature and causes of learning barriers experienced by specific students. It is followed by guidance, appropriate support and intervention strategies. This type of assessment is useful to make referrals for students requiring specialist help.

## 6.3 Formative assessment

This assessment monitors and supports teaching and learning. It determines student strengths and weaknesses and provides feedback on progress. It determines if a student is ready for summative assessment.

## 6.4 Summative assessment

This type of assessment gives an overall picture of student progress at a given time. It determines whether the student is sufficiently competent to progress to the next level.

## 7 PLANNING ASSESSMENT

An assessment plan should cover three main processes:

### 7.1 Collecting evidence

The assessment plan indicates which Subject Outcomes and Assessment Standards will be assessed, what assessment method or activity will be used and when this assessment will be conducted.

### 7.2 Recording

Recording refers to the assessment instruments or tools with which the assessment will be captured or recorded. Therefore, appropriate assessment instruments must be developed or adapted.

### 7.3 Reporting

All the evidence is put together in a report to deliver a decision for the subject.

## 8 METHODS OF ASSESSMENT

Methods of assessment refer to who carries out the assessment and includes lecturer assessment, self-assessment, peer assessment and group assessment.

|                            |   |
|----------------------------|---|
| <b>LECTURER ASSESSMENT</b> | The lecturer assesses students' performance against given criteria in different contexts, such as individual work, group work, etc.                         |
| <b>SELF-ASSESSMENT</b>     | Students assess their own performance against given criteria in different contexts, such as individual work, group work, etc.                               |
| <b>PEER ASSESSMENT</b>     | Students assess another student's or group of students' performance against given criteria in different contexts, such as individual work, group work, etc. |
| <b>GROUP ASSESSMENT</b>    | Students assess the individual performance of other students within a group or the overall performance of a group of students against given criteria.       |

## 9 INSTRUMENTS AND TOOLS FOR COLLECTING EVIDENCE

All evidence collected for assessment purposes is kept or recorded in the student's PoE.

The following table summarises a variety of methods and instruments for collecting evidence. A method and instrument is chosen to give students ample opportunity to demonstrate the Subject Outcome has been attained. This will only be possible if the chosen methods and instruments are appropriate for the target group and the Specific Outcome being assessed.

|                               | METHODS FOR COLLECTING EVIDENCE  |  |  |
|-------------------------------|--|--|--|
|                               | Observation-based<br>(Less structured)   | Task-based<br>(Structured)   | Test-based<br>(More structured)  |
| <b>Assessment instruments</b> | <ul style="list-style-type: none"> <li>• Observation</li> <li>• Class questions</li> <li>• Lecturer, student, parent discussions</li> </ul>                    | <ul style="list-style-type: none"> <li>• Assignments or tasks</li> <li>• Projects</li> <li>• Investigations or research</li> <li>• Case studies</li> <li>• Practical exercises</li> <li>• Demonstrations</li> <li>• Role-play</li> <li>• Interviews</li> </ul> | <ul style="list-style-type: none"> <li>• Examinations</li> <li>• Class tests</li> <li>• Practical examinations</li> <li>• Oral tests</li> <li>• Open-book tests</li> </ul> |
| <b>Assessment tools</b>       | <ul style="list-style-type: none"> <li>• Observation sheets</li> <li>• Lecturer's notes</li> <li>• Comments</li> </ul>   | <ul style="list-style-type: none"> <li>• Checklists</li> <li>• Rating scales</li> <li>• Rubrics</li> </ul>   | <ul style="list-style-type: none"> <li>• Marks (e.g. %)</li> <li>• Rating scales (1-7)</li> </ul>  |
| <b>Evidence</b>               | <ul style="list-style-type: none"> <li>• Focus on individual students</li> <li>• Subjective evidence based on lecturer observations and impressions</li> </ul> | <p><b>Open middle:</b> Students produce the same evidence but in different ways.</p> <p><b>Open end:</b> Students use same process to achieve different results.</p>   | Students answer the same questions in the same way, within the same time.  |

## 10 TOOLS FOR ASSESSING STUDENT PERFORMANCE

**Rating scales** are marking systems where a symbol (such as 1 to 7) or a mark (such as 5/10 or 50%) is defined in detail. The detail is as important as the coded score. Traditional marking, assessment and evaluation mostly used rating scales without details such as what was right or wrong, weak or strong, etc.

**Task lists** and **checklists** show the student what needs to be done. These consist of short statements describing the expected performance in a particular task. The statements on the checklist can be ticked off when the student has adequately achieved the criterion. Checklists and task lists are useful in peer or group assessment activities.

**Rubrics** are a hierarchy (graded levels) of criteria with benchmarks that describe the minimum level of acceptable performance or achievement for each criterion. Using rubrics is a different way of assessing and cannot be compared to tests. Each criterion described in the rubric must be assessed separately. Mainly two types of rubrics, namely holistic and analytical, are used.

## 11 SELECTING AND/OR DESIGNING RECORDING AND REPORTING SYSTEMS

The selection or design of recording and reporting systems depends on the purpose of recording and reporting student achievement. **Why** particular information is recorded and **how** it is recorded determine which instrument will be used.

Computer-based systems, for example spreadsheets, are cost and time effective. The recording system should be user-friendly and information should be easily accessed and retrieved.

## 12 COMPETENCE DESCRIPTIONS

All assessment should award marks to evaluate specific assessment tasks. However, marks should be awarded against rubrics and not be simply a total of ticks for right answers. Rubrics should explain the competence level descriptors for the skills, knowledge, values and attitudes (SKVAs) that a student must demonstrate to achieve each level of the rating scale.

When lecturers or assessors prepare an assessment task or question, they must ensure that the task or question addresses an aspect of a Subject Outcome. The relevant Assessment Standard must be used to create the rubric to assess the task or question. The descriptions must clearly indicate the minimum level of attainment for each category on the rating scale.



### 13 STRATEGIES FOR COLLECTING EVIDENCE

A number of different assessment instruments may be used to collect and record evidence. Examples of instruments that can be (adapted and) used in the classroom include:

#### 13.1 Record sheets

The lecturer observes students working in a group. These observations are recorded in a summary table at the end of each project. The lecturer can design a record sheet to observe students' interactive and problem-solving skills, attitudes towards group work and involvement in a group activity.

#### 13.2 Checklists

Checklists should have clear categories to ensure that the objectives are effectively met. The categories should describe how the activities are evaluated and against what criteria they are evaluated. Space for comments is essential.

## SECTION C: ASSESSMENT IN ELECTRONIC CONTROL AND DIGITAL ELECTRONICS

### 1 SCHEDULE OF ASSESSMENT

At NQF levels 2, 3 and 4, lecturers will conduct assessments as well as develop a schedule of formal assessments that will be undertaken in the year. All three levels also have an external examination that accounts for 50 percent of the total mark. The marks allocated to assessment tasks completed during the year, kept or recorded in a PoE account for the other 50 percent.

The PoE and the external assessment include practical and written components. The practical assessment in Electronic Control and Digital Electronics must, where necessary, be subjected to external moderation by Umalusi or an appropriate Education and Training Quality Assurance (ETQA) body, appointed by the Umalusi Council in terms of Section 28(2) of the *General and Further Education and Training Quality Assurance Act, 2001 (Act No. 58 of 2001)*.

### 2 RECORDING AND REPORTING

Electronic Control and Digital Electronics, as is the case for all the other Vocational subjects, is assessed according to five levels of competence. The level descriptions are explained in the following table.

#### **Scale of Achievement for the Vocational component**

| RATING CODE | RATING            | MARKS % |
|-------------|-------------------|---------|
| 5           | Outstanding       | 80-100  |
| 4           | Highly competent  | 70-79   |
| 3           | Competent         | 50-69   |
| 2           | Not yet competent | 40-49   |
| 1           | Not achieved      | 0-39    |

The programme of assessment should be recorded in the Lecturer's Portfolio of Assessment for each subject. The following at least should be included in the Lecturer's Assessment Portfolio:

- A contents page
- The formal schedule of assessment
- The requirements for each assessment task
- The tools used for each assessment task
- Recording instrument(s) for each assessment task
- A mark sheet and report for each assessment task

The college must standardise these documents.

The student's PoE must include at least:

- A contents page
- The assessment tasks according to the assessment schedule
- The assessment tools or instruments for the task
- A record of the marks (and comments) achieved for each task

Where a task cannot be contained as evidence in the PoE, its exact location must be recorded and it must be readily available for moderation purposes.

**ASSESSMENT OF ELECTRONIC CONTROL AND  
DIGITAL ELECTRONICS  
LEVEL 3**

### 3 INTERNAL ASSESSMENT OF SUBJECT OUTCOMES IN ELECTRONIC CONTROL AND DIGITAL ELECTRONICS - LEVEL 3

#### Topic 1: Measuring instruments, electronic components and building circuits

| SUBJECT OUTCOME   |   |
|---|---|
| <b>1.1 Demonstrate the practical use of measuring instruments.</b><br><i>Range: Digital multimeter with and without auto-ranging, oscilloscope</i>  |   |
| ASSESSMENT STANDARD   | LEARNING OUTCOME  |
| <ul style="list-style-type: none"> <li>Use and care of the instruments in the range is demonstrated.</li> </ul>   | <ul style="list-style-type: none"> <li>Demonstrate how to take care of the measuring instruments in the range.</li> <li>Demonstrate how to use the measuring instruments in the range.</li> </ul> |
| ASSESSMENT TASKS OR ACTIVITIES  |   |
| <ul style="list-style-type: none"> <li>Physical demonstration and verbal or written explanation of care for the measuring instruments in the range.</li> <li>Physical demonstration of the use of the instruments in the range</li> </ul> |   |

| SUBJECT OUTCOME   |  |
|---|--|
| <b>1.2 Identify and rate electronic components.</b><br><i>Range: Diodes (varactor and tunnel), field-effect transistors (JFET and MOSFET), silicon controlled rectifiers, diacs and triacs</i>  |  |
| ASSESSMENT STANDARD   | LEARNING OUTCOME   |
| <ul style="list-style-type: none"> <li>The components in the range are recognised by their symbols, the symbols are sketched, the components are found in manuals and their functions, basic construction and operation is described.</li> </ul>  | <ul style="list-style-type: none"> <li>Recognise the electronic symbols of the components in the range.</li> <li>Sketch the electronic symbols of the components in the range.</li> <li>Demonstrate how to look up the ratings of the components in the range using a technical manual.</li> <li>Describe the basic function, construction and operation of the components in the range</li> </ul> |
| ASSESSMENT TASKS OR ACTIVITIES  |  |
| <ul style="list-style-type: none"> <li>The symbols are recognised from sketched examples and drawn on paper or appropriate medium</li> <li>Practical demonstration of referencing components</li> <li>Classification, function and operation are explained verbally or are written</li> </ul> |  |

| SUBJECT OUTCOME   |  |
|---|--|
| <b>1.3 Construct basic electronic circuits.</b><br><i>Range: Includes components such as resistors, capacitors, inductors, diodes, transistors and analogue op-amps. Mounting can be done on bread board</i>  |  |
| ASSESSMENT STANDARD   | LEARNING OUTCOME   |
| <ul style="list-style-type: none"> <li>RLC, rectifier, single stage transistor amplifier and op-amp amplifier circuits are described in terms of their uses, applications and functioning. The circuits are all built and tested.</li> <li>Positive and negative feedback is explained</li> </ul> | <ul style="list-style-type: none"> <li>Describe the uses, application and functioning of RLC circuits with particular reference to resonance.</li> <li>Describe the uses, application and functioning of rectifier circuits.</li> <li>Explain the difference between, and applications of positive and negative feedback</li> <li>Describe the uses, application and functioning of single stage amplifier circuits using transistors.</li> <li>Describe the uses, application and functioning of amplifier circuits using op-amps.</li> <li>Demonstrate the ability to construct and test series and parallel resistive circuits, series and parallel RLC circuits, half-wave and full-wave rectifiers, single stage common emitter transistor amplifier circuits and audio op-amp circuits using an op-amp, by choosing the</li> </ul> |

|   |                                |
|---|--------------------------------|
|   | correct measuring instruments. |
| <b>ASSESSMENT TASKS OR ACTIVITIES</b>   |                                |
| <ul style="list-style-type: none"> <li>• RLC, rectifier, single stage transistor amplifier and op-amp amplifier circuits are described in terms of their uses, applications and functioning verbally or in writing.</li> <li>• All circuits described above are to be built and tested practically.</li> <li>• Positive and negative feedback is described verbally or in writing with examples.</li> </ul> |                                |

### Topic 2: Binary arithmetic and assembly of a computer

|   |  |
|---|--|
| <b>SUBJECT OUTCOME</b>  |  |
| <b>2.1 Demonstrate an ability to work within the binary system.</b>   |  |
| <b>ASSESSMENT STANDARD</b>  | <b>LEARNING OUTCOME</b>  |
| <ul style="list-style-type: none"> <li>• Conversion between binary, octal and hexadecimal systems is demonstrated.</li> </ul>   | <ul style="list-style-type: none"> <li>• Demonstrate ability to convert between the binary, octal and hexadecimal systems.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Calculations involving binary are solved</li> </ul>  | <ul style="list-style-type: none"> <li>• Solve arithmetic operations (addition, subtraction, multiplication, division) using the binary system.</li> <li>• Solve subtraction problems in the binary system by using 1's and 2's complement.</li> </ul> |
| <b>ASSESSMENT TASKS OR ACTIVITIES</b>   |  |
| <ul style="list-style-type: none"> <li>• All calculations in binary and conversions between systems are written on paper or appropriate medium with no calculators to be used.</li> </ul> |  |

|  |  |
|--|--|
| <b>SUBJECT OUTCOME</b>   |  |
| <b>2.2 Demonstrate an ability to assemble and boot a computer.</b>   |  |
| <b>ASSESSMENT STANDARD</b>   | <b>LEARNING OUTCOME</b>  |
| <ul style="list-style-type: none"> <li>• A personal computer is assembled to the point where it is bootable and troubleshooting of hardware faults can be undertaken.</li> </ul>   | <ul style="list-style-type: none"> <li>• Demonstrate an ability to assemble a personal computer by connecting components to the motherboard and the power supply to the point where the computer is bootable.</li> <li>• Explain how to troubleshoot hardware faults on a computer.</li> </ul> |
| <b>ASSESSMENT TASKS OR ACTIVITIES</b>  |  |
| <ul style="list-style-type: none"> <li>• A practical demonstration of assembling a computer is given.</li> <li>• Troubleshooting of various hardware faults is demonstrated and explained verbally or in writing.</li> </ul> |  |

### Topic 3: Introduction to ladder logic as used in PLCs

|   |  |
|---|--|
| <b>SUBJECT OUTCOME</b>  |  |
| <b>3.1 Explain how controllers sense and react to physical conditions.</b>  |  |
| <b>ASSESSMENT STANDARD</b>  | <b>LEARNING OUTCOME</b>  |
| <ul style="list-style-type: none"> <li>• Examples of simple mechanical instruments used to measure the physical conditions in the range are explained. Their basic construction and operation as well as modifications to be used as electrical transducers are explained</li> </ul>  | <ul style="list-style-type: none"> <li>• Recognise and name mechanical instruments that will measure the physical conditions in the range.</li> <li>• Describe the construction and basic operation of the instruments in Subject Outcome 1.1.</li> <li>• Identify how these instruments can be modified to act as sensors for an electronic controller</li> </ul> |
| <b>ASSESSMENT TASKS OR ACTIVITIES</b>   |  |
| <ul style="list-style-type: none"> <li>• Examples of non-electrical instruments that will react to conditions in the range are recognised and named and their limitations are explained verbally or in writing</li> <li>• Examples of transducers that will react to conditions in the range are named, recognised, classified and described in terms of their functions, construction and operation verbally or in writing.</li> </ul> |  |

| SUBJECT OUTCOME  |  |
|--|--|
| 3.2 Demonstrate a basic knowledge of PLCs.   |  |
| ASSESSMENT STANDARD  | LEARNING OUTCOME   |
| <ul style="list-style-type: none"> <li>Schematic symbols used in ladder logic diagrams are recognised and sketched.</li> </ul>   | <ul style="list-style-type: none"> <li>Recognise the schematics symbols used in ladder logic diagrams.</li> <li>Sketch the schematics symbols used in ladder logic diagrams.</li> </ul>    |
| <ul style="list-style-type: none"> <li>Given a ladder logic diagram, the working of the programme and the final result of the programme is deduced.</li> </ul>   | <ul style="list-style-type: none"> <li>Indicate how a given simple ladder logic diagram would function.</li> <li>Predict the end result of a given simple ladder logic diagram.</li> </ul> |
| ASSESSMENT TASKS OR ACTIVITIES   |  |
| <ul style="list-style-type: none"> <li>The schematic symbols are recognised from sketched examples and drawn on paper or appropriate medium</li> <li>The workings of and result of a simple ladder logic diagram is explained verbally or in writing.</li> </ul> |  |

#### 4 SPECIFICATIONS FOR EXTERNAL ASSESSMENT IN ELECTRONIC CONTROL AND DIGITAL ELECTRONICS - LEVEL 3

##### 4.1 Integrated summative assessment task (ISAT)

A compulsory component of the external assessment (ESASS) is the **integrated summative assessment task (ISAT)**. The integrated summative assessment task (ISAT) draws on the students' cumulative learning achieved throughout the year. The task requires **integrated application of competence** and is executed and recorded in compliance with assessment conditions.

Two approaches to the integrated summative assessment task (ISAT) may be as follows:

- The students are assigned a task at the beginning of the year which they will have to complete in phases throughout the year to obtain an assessment mark. A final assessment is made at the end of the year when the task is completed.

**OR**

- Students achieve the competencies throughout the year but the competencies are assessed cumulatively in a single assessment or examination session at the end of the year.

The integrated summative assessment task (ISAT) is set by an externally appointed examiner and is conveyed to colleges in the first quarter of the year.

The integrated assessment approach enables students to be assessed in more than one subject with the same integrated summative assessment task (ISAT).

##### 4.2 National Examination

A national examination is conducted annually in October or November by means of a paper(s) set and moderated externally. The following distribution of cognitive application is suggested:

| LEVEL 3 | KNOWLEDGE AND COMPREHENSION | APPLICATION | ANALYSIS, SYNTHESIS AND EVALUATION |
|---------|-----------------------------|-------------|------------------------------------|
|         | 50 - 60%                    | 30 - 40%    | 0 - 10%                            |