# Course report 2025

## N5 Practical Electronics

This report provides information on candidates' performance. Teachers, lecturers and assessors may find it useful when preparing candidates for future assessment. The report is intended to be constructive and informative, and to promote better understanding. You should read the report with the published assessment documents and marking instructions.

We compiled the statistics in this report before we completed the 2025 appeals process.

For information on the internally assessed component of this course: Practical activity please refer to the 2024-25 Qualification Verification Summary Report on the subject page of our website.

# Grade boundary and statistical information

## Statistical information: update on courses

Number of resulted entries in 2024: 761

Number of resulted entries in 2025: 823

## Statistical information: performance of candidates

### Distribution of course awards including minimum mark to achieve each grade

| Course award | Number of candidates | Percentage | Cumulative percentage | Minimum mark required |
|---|---|---|---|---|
| A | 264 | 32.1 | 32.1 | 70 |
| B | 185 | 22.5 | 54.6 | 59 |
| C | 161 | 19.6 | 74.1 | 49 |
| D | 116 | 14.1 | 88.2 | 38 |
| No award | 97 | 11.8 | 100% | Not applicable |

We have not applied rounding to these statistics.

You can read the general commentary on grade boundaries in the appendix.

In this report:

- ‘most’ means greater than or equal to 70%
- ‘many’ means 50% to 69%
- ‘some’ means 25% to 49%
- ‘a few’ means less than 25%

You can find statistical reports on the statistics and information page of our website.

# Section 1: comments on the assessment

## Question paper

The question paper was structured in a similar way to the specimen question paper and previous years' question papers, containing questions that sampled areas of circuit design, simulation, and construction in approximately equal proportions.

Feedback indicated that the question paper was fair in terms of accessibility and overall, level of challenge. Most questions performed as expected, and there was a good spread of marks across the candidate cohort.

# Section 2: comments on candidate performance

## Areas that candidates performed well in

### Question paper

| | |
|---|---|
| Question 1(b)(i) | Most candidates correctly calculated the resistance of a resistor using the colour code from the data sheet. This continues to be a familiar and well-practised skill. |
| Question 1(b)(ii) | Most candidates accurately stated the tolerance of the resistor from its colour band, showing clear understanding of standard resistor conventions. |
| Question 1(b)(iii) | Most candidates could determine the minimum and maximum resistance values using the stated tolerance, with clear working shown. |
| Question 2 | Most candidates successfully predicted the resistance of a thermistor from a given table. Candidates demonstrated confidence in interpreting data linked to temperature and resistance behaviour. |
| Question 4(a) | Most candidates accurately completed the truth table for a NOR gate, reflecting secure knowledge of basic logic gate behaviour. |
| Question 4(b) | Most candidates correctly identified the logic state that would produce the given output, demonstrating a clear understanding of input-output relationships in logic circuits. |
| Question 4(c) | Many candidates completed most of the combinational-gate truth table correctly, with most achieving at least two of the four |

marks. Where errors occurred, most candidates benefitted from the ‘carry-on’ rule.

Question 7(b)(i) Most candidates correctly identified the two test points used to measure voltage across a resistor R2 on the stripboard. This showed an improved ability to interpret physical layout in circuit testing.

Question 9(a)(i) Many candidates accurately read and interpreted a graph to determine the resistance of an LDR at a specified light intensity. This graphical analysis was well-handled across the cohort.

Question 10 Most candidates gained between 3 and 4 marks for the system block diagram, correctly identifying the input and output stages, and making a reasonable attempt at defining the process section.

## Areas that candidates found demanding

### Question paper

Question 1(a) Some candidates struggled to describe the function of a cell. Responses often confused terms such as voltage, power, and energy, indicating a lack of understanding of fundamental concepts.

Question 5 Many candidates did not identify that the temperature-based control circuit required a thermistor instead of an LDR. This suggests that candidates either misread the context of the question or lacked familiarity with sensor applications and their component symbols.

Question 6(a) Many responses referred to inappropriate looming techniques such as heat-shrink, spiral wrapping and cable ties, rather than stating a valid wiring technique to secure the wires between the motor and stripboard, as shown in the image.

| | |
|---|---|
| Question 7(a)(i) | Candidates often did not state that the red and black wires of the logic probe should be connected to V+ and 0V respectively. Many responses were vague or incorrect. |
| Question 7(a)(ii) | Many candidates struggled to explain how a logic 1 would be detected. Answers frequently lacked technical accuracy, with common misconceptions around the function of logic probes. This indicates limited hands-on experience with this testing tool. |
| Question 7(b)(ii) | Few candidates correctly explained why the LED flashed green when placed at pin 7. Many incorrectly described pin 7 as ‘ground’ rather than stating it was ‘connected to ground’, or misunderstood the significance of the logic state shown by the probe. |
| Question 8(b) | Many candidates found it difficult to calculate the frequency of a waveform, particularly when converting time units from milliseconds to seconds. Although some correctly identified the required formula, errors in substitution and unit handling were common. |
| Question 9(a)(ii) | Most candidates found the voltage divider calculation challenging. Many defaulted to using Ohm’s Law instead of applying the potential divider formula, and those who attempted it often applied the wrong values. |
| Question 9(b)(i) | Only a few candidates provided a coherent explanation of how the voltage divider and comparator circuit operated. Many answers lacked precision, used vague terms, or missed key functional details. Very few gained full marks. |

Question 9(b)(ii) Very few candidates correctly identified the diode as the component used across a relay to prevent back EMF. This aspect may need to be reinforced in teaching, even though it has featured in past question papers. The National 5 Practical Electronics course specification has been updated to clarify this are of content.

Question 10 While most candidates attempted the block diagram, many omitted separating the sections with dashed or solid lines, and some merely listed elements instead of constructing a functioning block diagram. The process section was commonly underdeveloped or unclear.

Question 11 A significant number of candidates either left the circuit diagram blank or submitted incomplete responses. Common issues included missing nodes, incorrect or unlabelled components, and confusion around power rail connections. When attempted, responses showed some improvement from previous years but still highlighted a gap in circuit to layout diagram conversion.

Where candidates were required to describe or explain, many responses continued to lack the depth, precision, or technical accuracy necessary to be awarded marks.

# Section 3: preparing candidates for future assessment

## Question paper

To support candidates in achieving success in future assessments, centres should focus on the following areas:

### Responding to command words

Teachers and lecturers should provide candidates with regular practice in interpreting and responding appropriately to command words such as describe, explain, calculate, and state. Misinterpretation of these terms continues to limit candidates' ability to gain marks, particularly in extended response questions.

### Development of technical vocabulary

Teachers and lecturers should encourage candidates to use correct and specific electronics terminology. Vague responses continue to affect performance in areas such as describing circuit function, explaining probe readings, or interpreting component behaviours. Teachers and lecturers should regularly reinforce technical language during classwork and assessments.

### Understanding of circuit function and application

Candidates would benefit from more practical experience and contextual discussion around common circuit types for example, voltage dividers, comparator circuits, logic probes. This can support deeper conceptual understanding, which is often required in the latter sections of the question paper.

## Use of simulation and testing tools

Candidates should have greater familiarity with simulation software and test equipment such as logic probes, multimeters and oscilloscopes. Many candidates struggled to interpret visual or practical scenarios in these contexts. Hands-on experience and guided practice will help build confidence and improve performance in related questions.

## Circuit diagram drawing skills

Teachers and lecturers should dedicate time to reinforcing the conventions of circuit diagram construction — including the correct use of symbols, node placement, and labelling. Tasks converting from layout to diagram (question 11) require structured practice and attention to visual clarity. To improve circuit diagram drawing skills, candidates should regularly practice using standard symbols, focusing on clarity, correct connections, and component labelling. Teachers and lecturers should start with simple circuits and gradually increase complexity, including tasks that convert stripboard layouts into circuit diagrams. Teachers and lecturers should model good practice, use checklists, and encourage peer review. Using digital tools like simulation software can help reinforce correct layout and symbol use. Integrating diagram tasks into classwork and project activities will build familiarity and accuracy over time.

## Preparation for A-type questions

System block diagrams and layout conversions are typically placed at the end of the question paper and carry significant marks. Teachers and lecturers should regularly practice these task types with candidates and show them how to logically organise their responses.

## Balancing preparation time

Although the question paper is worth 30% of the overall course award, it requires consistent preparation throughout the year. Teachers and lecturers should ensure that candidates are supported in building both theoretical understanding and exam technique, alongside practical activity preparation.

## Understanding Standards materials

Teachers and lecturers should engage with Understanding Standards materials and annotated evidence.

Candidates should pay attention to the command word used in each question and respond accordingly to gain marks.

A few candidates appeared either underprepared or unaware of the level of understanding and application required for the question paper. These candidates struggled to access marks, particularly in questions requiring extended or multi-step reasoning.

Focused support in exam techniques, use of the correct terminology, and developing clear, structured responses will benefit candidates' performance.

By embedding these strategies, teachers and lecturers can enhance candidate confidence, improve exam technique, and better align teaching with the expectations of the external assessment.

# Appendix: general commentary on grade boundaries

Our main aim when setting grade boundaries is to be fair to candidates across all subjects and levels and to maintain comparable standards across the years, even as arrangements evolve and change.

For most National Courses, we aim to set examinations and other external assessments and create marking instructions that allow:

- a competent candidate to score a minimum of 50% of the available marks (the notional grade C boundary)
- a well-prepared, very competent candidate to score at least 70% of the available marks (the notional grade A boundary)

It is very challenging to get the standard on target every year, in every subject, at every level. Therefore, we hold a grade boundary meeting for each course to bring together all the information available (statistical and qualitative) and to make final decisions on grade boundaries based on this information. Members of our Executive Management Team normally chair these meetings.

Principal assessors utilise their subject expertise to evaluate the performance of the assessment and propose suitable grade boundaries based on the full range of evidence. We can adjust the grade boundaries as a result of the discussion at these meetings. This allows the pass rate to be unaffected in circumstances where there is evidence that the question paper or other assessment has been more, or less, difficult than usual.

- The grade boundaries can be adjusted downwards if there is evidence that the question paper or other assessment has been more difficult than usual.
- The grade boundaries can be adjusted upwards if there is evidence that the question paper or other assessment has been less difficult than usual.
- Where levels of difficulty are comparable to previous years, similar grade boundaries are maintained.

Every year, we evaluate the performance of our assessments in a fair way, while ensuring standards are maintained so that our qualifications remain credible. To do this, we measure evidence of candidates' knowledge and skills against the national standard.

For full details of the approach, please refer to the Awarding and Grading for National Courses Policy.