8202-30 Level 3 Advanced Technical Certificate in Electrical Installation

2022

Qualification Report

Contents

Foreword

Results August 2022

As you will likely be aware, Ofqual has announced that grading for General Qualifications this summer will be more generous than prior to the pandemic. This is partly due to managing the impact of disruption and learning loss on learner performance and also managing fairness between learners in different years who had different methods of determining their grades. Therefore, for A levels and GCSEs, grading will seek a midway position between 2019 and 2021, meaning, in general, results will be somewhat higher than prior to the pandemic. This year, 2022, is a transitional year and outcomes and standards will likely return to pre-pandemic levels in 2023.

Similarly, for Vocational and Technical Qualifications (VTQs), this summer will be a transitional year and Ofqual has now been clear that for VTQs "we should expect that this summer's results will look different, despite exams and assessments taking a big step towards normality." Ofqual has published a blog What's behind this summer's VTQ results

In acknowledgement of the disruption to learning and to support fairness for all learners certificating this summer (some of whom will be competing against learners taking General Qualifications for the same progression and higher education opportunities), we will be taking loss of learning into consideration, whilst still acknowledging the need to uphold the validity of the qualifications. On this basis, we have made the decision to apply a form of 'safety net' through some additional 'generosity' to both the theory examinations and synoptic assignments within our Technical Qualifications wherever appropriate, (noting that it may not be appropriate to apply where there is a clear impact on knowledge and skills to practice, particularly health and safety requirements or other relevant legislation). We are therefore also reviewing candidate work a few marks below (equivalent to 5% of maximum marks) the Pass and Distinction notional boundaries – the boundaries used during the awarding process as the best representation of maintaining the performance standard from 2019.

The reason for lowering boundaries, where appropriate, by 5% of the maximum marks available, is that it is broadly commensurate with the level of generosity learners are likely to see in General Qualifications at level 2 and level 3. Providing that senior examiners can support the quality of learners' work seen below the notional boundaries and agree it is sufficient to maintain the integrity, meaning and credibility of the qualifications, the grade boundaries will be lowered across the full set of grades – eg. Pass, Merit, Distinction and Distinction Star.

Given the circumstances, this is the best approach to take into account the disruption to teaching and learning across every learner in a fair and transparent way, and at the same time maintain the integrity and meaning of qualifications. This approach helps to level our Technical Qualifications awarding approach with that adopted for General Qualifications and other qualifications awarded in England and in the wider UK.

Spring examination series 2022

Having taken this decision, we are also mindful of learners who have taken components in **Spring 2022** and believe they should also have access to the same level of generosity. For these learners, we wish to adopt a similar approach. Therefore, for learners taking Technical Qualification assessments in spring there will be similar generosity, through the addition of 5% of the maximum mark available for the assessment. It is a different mechanism to that we are using for the summer assessments but provides the same level of generosity to those learners taking assessments in the summer.

Introduction

This document has been prepared by the Chief Examiner and Principal Moderator; it is designed to be used as a feedback tool for centres in order to enhance teaching and preparation for assessment. It is advised that this document is referred to when planning delivery and when preparing candidates for City & Guilds Technical assessments.

This report provides general commentary on candidate performance in both the synoptic assignment and theory exam. It highlights common themes in relation to the technical aspects explored within the assessment, giving areas of strengths and weakness demonstrated by the cohort of candidates who sat assessments in the 2022 academic year. It will explain aspects which caused difficulty and potentially why the difficulties arose.

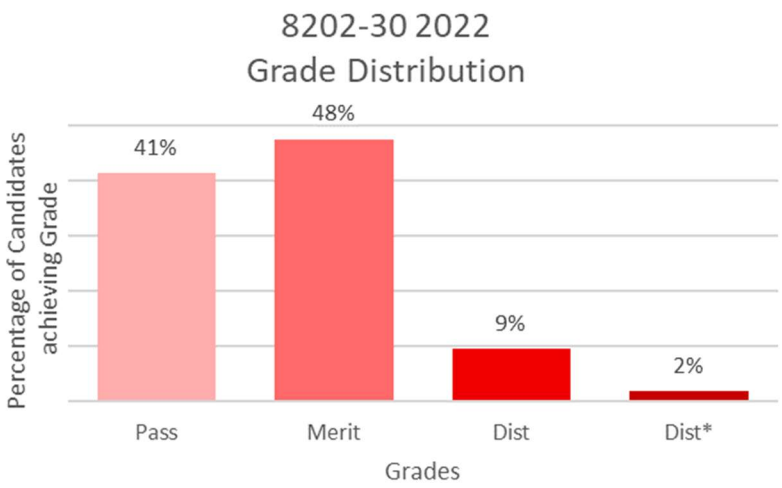
The document provides commentary on the following assessments:

- 8202-531 – Level 3 Advanced Technical Extended Diploma in Electrical Installation (Theory exam)
    - April 2022
    - June 2022

- 8202-032 – Level 3 Advanced Technical Extended Diploma in Electrical Installation (Synoptic Assignment)

Qualification Grade Distribution

The approximate grade distribution for this qualification is shown below:



Please note City & Guilds will only report qualification grades for candidates who have achieved all of the required assessment components, including Employer Involvement, optional units and any other centre assessed components as indicated within the Qualification Handbook. The grade distribution shown above could include performance from previous years.

Theory Exam

8202-531 – Electrical Installation

Grade Boundaries

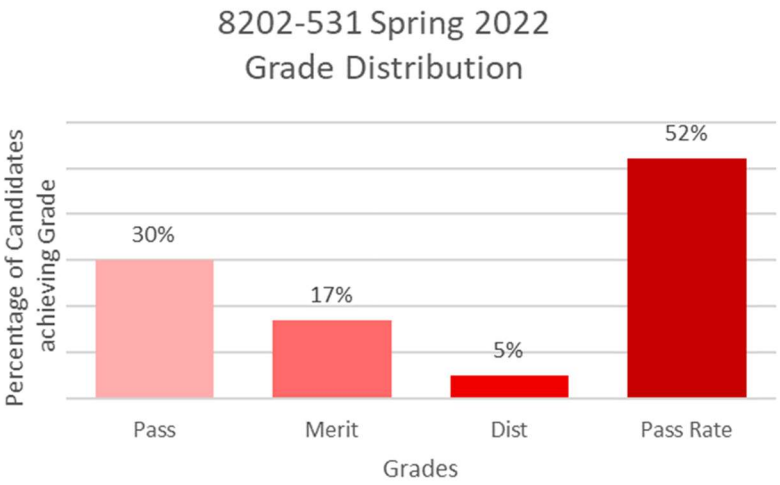
Assessment: 8202-531
Series: April 2022 (Spring)

Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel:

Total marks available	75
Pass mark	29
Merit mark	39
Distinction mark	50

The generosity applied to the summer assessments will also retrospectively be applied to candidates who achieved their best result in spring. 5% of the base mark of the assessment will be added to their score rather than applied to boundaries.

The graph below shows the approximate distributions of grades and pass rate for this assessment, it does not account for any marks that have been amended due to generosity:

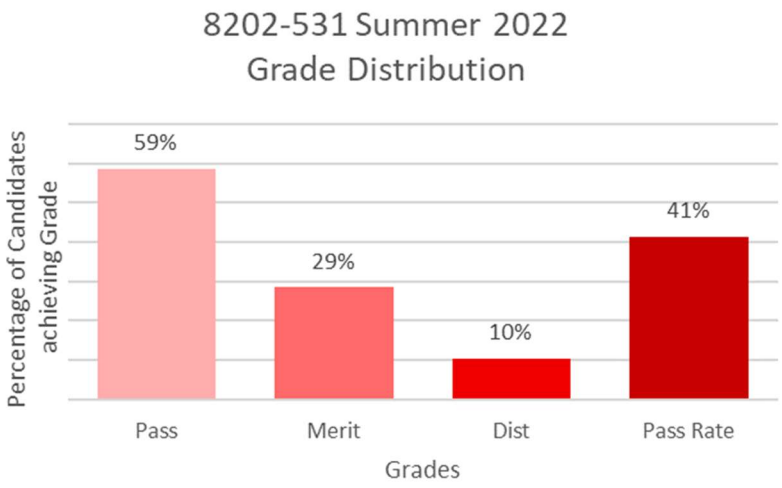


Assessment: 8202-531
Series: June 2022 (Summer)

Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel:

Total marks available	75
Pass mark	24
Merit mark	35
Distinction mark	47

The graph below shows the approximate distributions of grades and pass rate for this assessment:



Chief Examiner Commentary

8202-531 Level 3 Electrical Installation - Theory exam (1)

Series 1 – April 2022

The examination paper covered a good range of learning outcomes from throughout the qualification. All questions were considered to be technically correct, suitable for the level and with no errors.

This examination series was sat two days following the release of Amendment 2 of BS 7671. Marking for this series would have accepted answers from either version of BS 7671; however it was felt that none of the questions in this examination were impacted by the new amendment.

Candidates, on the whole, gave responses which showed a good level of recall throughout the examination. Strong examples of recall included renewable energy sources, inspection and testing sequences, common protective devices, and GS38 requirements. It should be mentioned however, that candidates should fully read the question as many gave an RCD as an example of a device providing overcurrent protection. Whilst an RCD would be accepted as a protective device, this was not the subject of the question.

Particular areas of strength in understanding were evident in some scientific principles, such as determining Neutral current values in a three-phase system, with the majority opting to use the calculation method rather than using graphical methods. Other areas of strength shown included support methods for cables to stop premature collapse and levels of IP protection for the different zones in a bathroom.

Some questions attracted a mixture of responses and these included items relating to surge protection devices and the inspection of a new conduit system. In the latter example, many candidates gave responses that would lead to dangerous practices, such as using the sense of touch to check that there are no sharp edges. Candidates should be encouraged to consider all aspects of risk linked to their responses and consider other options that are more suited to a situation or scenario given in a question. In addition, where a question relates to a specific wiring system, such as conduit, responses must relate to that system and not other items such as the cables within.

Particular areas of weakness included reasons for using AC in transmission systems and many candidates seemed to confuse a thermal cut-out with a thermostat when explaining the purpose of the device. Responses to these questions were generally poor across the majority of candidates.

One specific area of weakness was the lack of knowledge relating to motor controllers with many giving examples of AC motors or not answering the question at all.

Candidates should be encouraged to fully read questions before answering as many missed opportunities to gain marks by not providing detail. For example where questions required two parts such as type and cross-sectional areas (csa) of cables, the majority focused on the csa and not the type of cable.

Candidates should also consider, when undertaking circuit design calculations, to justify calculations or designs as suitable rather than simply going through a process.

Candidates should be reminded that the Permitted Reference Materials for this examination are: BS 7671 and IET On-Site Guide.

Centres are reminded of the City & Guilds Technicals ‘Exam Guides’ available here:

Technicals in Building Services Engineering qualifications and training courses | City & Guilds (cityandguilds.com)

Series 2 – June 2022

The paper for the Summer 2022 series was considered as being technically accurate, contained no errors and was correctly levelled. It was seen as being very similar in terms of rigour and content as the Spring 2022 series and the June 2019 series. It was also seen as being very similar to the paper used for the 2021 Teacher Assessed Grade which was marked by centres.

The first ten questions in the series were AO1 recall questions asking candidates to identify, list or state as the command verb. In these questions, responses were mixed despite the level of questioning, and this being a Level 3 examination.

In these recall questions, particular areas of weakness identified were use of technical language, using key terms within questions, repeating answers, or using permitted materials effectively.

To give some examples; a question asking for 'technical' specifications relating to a light switch will not attract marks unless technical language is used such as those in catalogues or required by suppliers when obtaining the right type of switch.

Key terms in questions should steer candidates to specific answers rather than generic. An example was a question asking for types of fuses used to protect circuits and many responses given were mechanical protective devices such as circuit breakers or RCBOs which are not fuses. Basic errors such as this can cost many marks over one paper.

Repeating answers was very common in this series, and this will restrict the number of marks a candidate can achieve. As an example, one question asking for factors that affect the decision to repair or replace faulty equipment will only attract one mark for 'cost' even when candidate's responses include 'cost to repair' and 'cost to replace'.

Some of the recall questions required candidates to find or identify items or terms from the permitted materials, such as BS 7671, and this is considered obvious when the question contains wording such as "as given in BS 7671". Despite this, questions were poorly answered.

Candidates need to ensure they read questions fully before answering to avoid incorrect answers when a series contains similar questions to those of a pervious series that may have been used as a revision aid. As an example, one question required candidates to identify AC motors, but most responses given were motor starters, which was a question from the previous series.

One area of strength shown was recalling test sequences. Another area that attracted good responses, although marks were lost due to duplication, was identifying factors that affect repair or replacement of faulty equipment.

Questions 11 to 19 were AO2 items requiring understanding to be demonstrated in the answers. Areas of strength were clear in calculations of AC theory such as circuits containing inductances and resistances. Other areas of strength were demonstrated in relation to determination of neutral currents for three-phase systems. Candidates could have used either a graphical based approach or the calculation method. The majority of those applying the calculation method scored marks for recall of formula but some were not able to fully undertake the complex calculation. Of those who chose the graphical method, the majority scored full marks for obtaining the correct answer.

Areas of weakness in understanding were apparent where candidates were required to explain or describe principles or practices. One example was a question relating to types of fault and asking candidates to explain the difference between them, as well as identifying how certain

protective devices react in each situation. Responses indicated confusion between each fault with many getting the two completely mixed up. Very few candidates were able to demonstrate any understanding of how protective devices perform in each situation.

Other gaps in understanding were evident in situations where candidates were given circuit data and were required to analyse these. As an example, one question gave circuit details in the form of a schematic diagram and required candidates to calculate voltage drop. Whilst many could recall the formula required, few could find the suitable value from permitted materials or, for those that did, they did not complete the question by adding the final and distribution circuit values together to determine the overall value. This indicates a lack of attention to detail.

In a similar way, candidates were presented with test data for a ring-final circuit and asked to analyse the reasons why the values obtained were as given. Few candidates linked the values to the cable cross-sectional areas.

Another area of weakness was interpreting the requirements of BS 7671 to a cable installation scenario around a window. It was very disappointing how so few candidates were aware of the requirements for impact protection and that cables should either be in a zone giving protection or have further impact protection measures such as earthed metallic conduit. These requirements are well detailed in BS 7671, but even more detailed in the IET On-Site Guide, both of which are permitted materials.

The ERQ required candidates to evaluate a circuit and system given as a detailed circuit diagram and evaluate if the circuit was in compliance with BS 7671 based on a range of factors or conditions such as capacity, voltage drop, and disconnection under fault conditions.

Most candidates scored within band 1 of the marking grid as they simply recalled formula with some attempts to calculations but little degree of accuracy. Those scoring in band 2 were more accurate with calculations but did not evaluate their findings or compare findings to industry tolerances in permitted materials. The minority scoring marks in band 3 were able to evaluate their findings using all the data and permitted materials as well as justify why the data is suitable and in compliance.

Synoptic Assignment

8202-032 – Electrical Installation

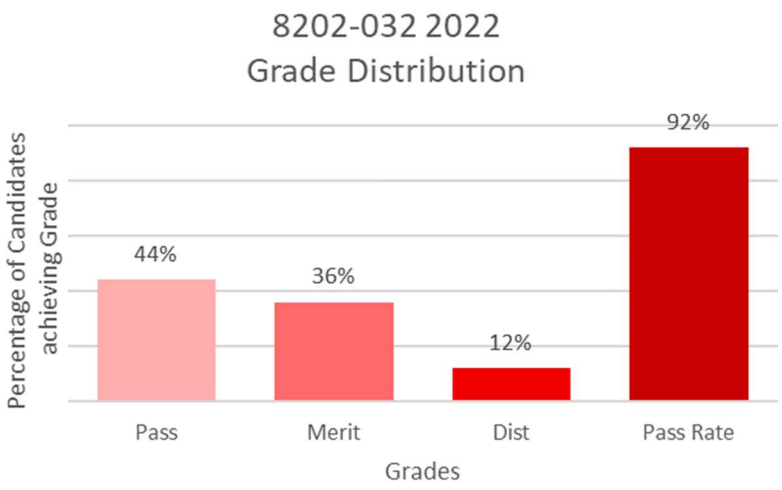
Grade Boundaries

Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel:

Assessment: 8202-032
Series: 2022

Total marks available	60
Pass mark	24
Merit mark	36
Distinction mark	48

The graph below shows the approximate distributions of grades and pass rate for this assessment:



Principal Moderator Commentary

Moderation visits

Most centres were visited once this academic year and, in most cases where Level 3 was the focus of the visit, Task 2 became what the assessment moderators viewed at Level 3. All centre visits were very beneficial to moderators, and we would like to thank centres for their cooperation as well as thanking the candidates as we do understand the pressure a moderation visit can put on them. We also feel that centres benefited from visits as it is a chance to discuss best practice when it comes to generating evidence, completing performance observation (PO) forms or candidate record forms (CRFs).

Uploading evidence to the portal

This was largely undertaken on time with minimal issues. Some centres did not switch the portal to 'marking complete' which meant moderators could not take control of the evidence. This was rectified promptly by some centres once contacted. Unfortunately, some centres did not respond so promptly due to the timing of the portal closing aligning with half-term breaks. Centres should be reminded that somebody should always be available to rectify evidence issues or shortfalls at all times during the moderation window.

There were a number of centres who did not make the deadline for uploading evidence, and this resulted in late moderation and delays in releasing results.

Some centres chose to upload evidence using multiple files which is acceptable, but some candidates had up to nine files of evidence. Additionally, these files often contained no clues to what the evidence contained was, and this made locating evidence very difficult. These files were often zipped; moderators needed to download the .zip files to extract the evidence, meaning files had to be put onto personal hard drives in order to be viewed, a practice that should be avoided.

It would be desirable to have all the evidence in one file or one file for documents and any photographic evidence discarded as this is not required for Level 3 and only increases file sizes. If multiple files were used, please could the filename indicate what evidence is contained. For example, <candidate number-contents> so <ABC1234-CRF-PO-DoA>.

Strength of evidence

In many cases, the evidence submitted was of good quality and as required by the assessment material.

Most PO forms contained very good positive feedback on performance, but many did not use the 'what could be improved' column. Unless a candidate scores maximum marks, which in itself is extremely rare, there would always be room for improvement.

The purpose of a PO form is to support the evidence generated by the candidate. It should capture aspects that cannot be seen by markers or moderators and is not obvious by other means. For example, it is obvious that a candidate has completed a particular test during an initial verification as a result, with an expected value is recorded on the schedule of test results. What is less obvious is the journey the candidate took to obtain that result. Was it fluent or awkward, efficient or hesitant taking several attempts and prompts? What behaviours were displayed and how was the general housekeeping maintained?

CRFs were on the whole well written, but sometimes it became clear from the narratives that centre staff were mentioning candidates' performances throughout the year rather than during the assessment. This would indicate that marking was at times based on familiarity rather than performance on the day. This was further backed up by other forms of evidence submitted, such

as candidate generated evidence. In addition, very few CRFs contained negative feedback or areas of weakness, but these should be just as important as reporting their strengths.
The purpose of a CRF is to signpost the evidence used to support the mark against each AO. As a result, it should not indicate any new evidence or commentary that has not already been generated. It should simply point towards the evidence gathered during the synoptic as justification for marks awarded.

Marking

Marking was well defined across most AOs but evidence for AO4 and AO5 was generally weak across most centres.

Some candidates attracted high marks for AO5, but it was clear from other forms of evidence that attention to detail was not present throughout for these candidates. This included the detail in Task 1, as well as Electrical Installation Certification documentation where high-scoring candidates were leaving some parts of the documentation empty.

Good sources of evidence for AO4 include areas such as fault-finding reports, where understanding can be displayed through performance and knowledge of how faults can be rectified. Whilst it is appreciated the fault report forms ask for 'brief' descriptions, often reports are far too brief and this can be seen as a lack of understanding especially where technical language is lacking.

It is very important that centres are honest with marking as it seemed that some higher scoring candidates, who perhaps did not form part of the initial sample, were marked generously, but this could make awarding problematic when setting grade boundaries. If it is not felt, based on the evidence, that the work produced did not fit the profile of a distinction candidate, the boundary will be raised. This is also an important consideration for lower-scoring borderline pass candidates. Once again, if the evidence does not fit the minimum pass candidate profile, the boundary can rise, excluding some candidates where marking is seen as fairer. Even one or two marks can make the difference.

In a similar way, if centres decide to raise marks for some candidates and, through moderation, this is seen as inflating the marks, regression may be applied across the cohort, disadvantaging lower-scoring candidates or those with honest marks applied.

Where centres have multiple assessors, standardisation of marking must be carried out. Although this was very much in the minority, there were a significant number of cases where marking was vastly different between similar candidates under one centre number.

It is recommended, where a centre has multiple markers, collaborative marking is undertaken where evidence can be shared and marking agreed. Where markers generate their own PO forms and mark from them, it is recommended as good practice for other markers or tutors to challenge marking based on evidence.