City & Guilds
A City & Guilds Group Business

8202-30 Level 3 Advanced Technical Diploma in Electrical Installation (450)

2019

Qualification Report

Contents

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.

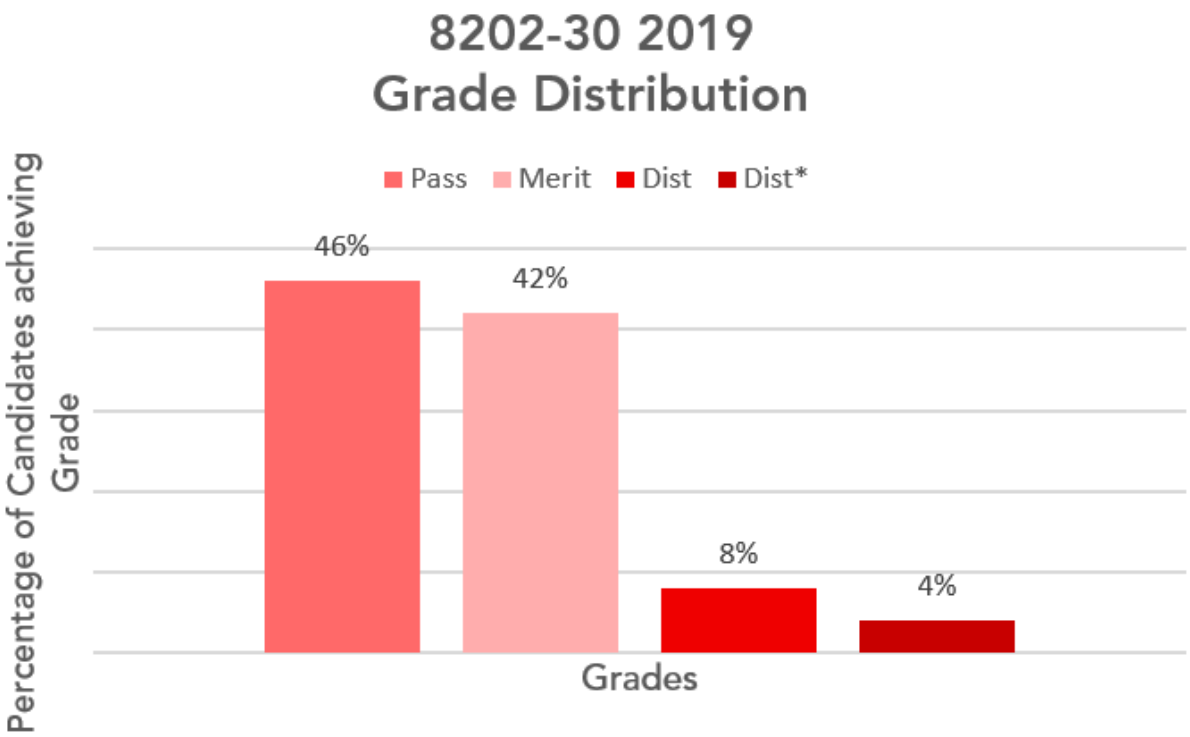
This report provides general commentary on candidate performance in both the synoptic assignment and theory exam. It highlights common themes in relation to the technical aspects explored within the assessment, giving areas of strengths and weakness demonstrated by the cohort of candidates who sat assessments in the 2019 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 Electrical Installation - Theory exam (1)
    - April 2019 (Spring)
    - June 2019 (Summer)
- 8202-032 Level 3 Electrical Installation - Synoptic assignment (1)

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

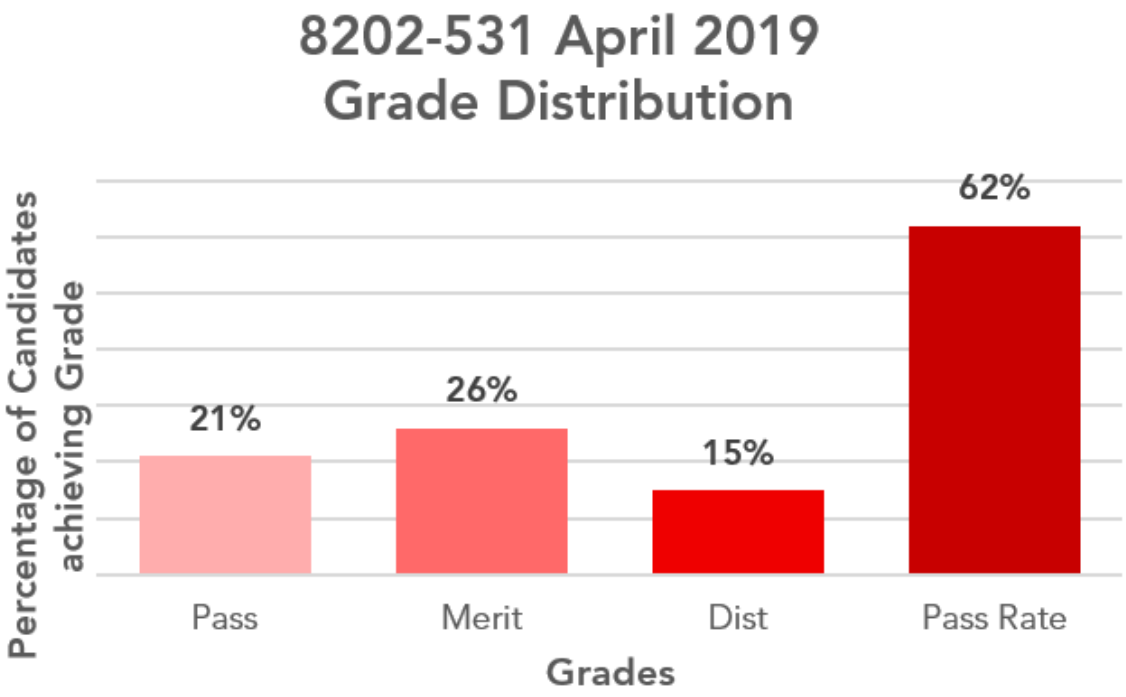
Grade Boundaries

Assessment: 8202-531
Series: April 2019 (Spring)

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

Total marks available	75
Pass mark	30
Merit mark	40
Distinction mark	50

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

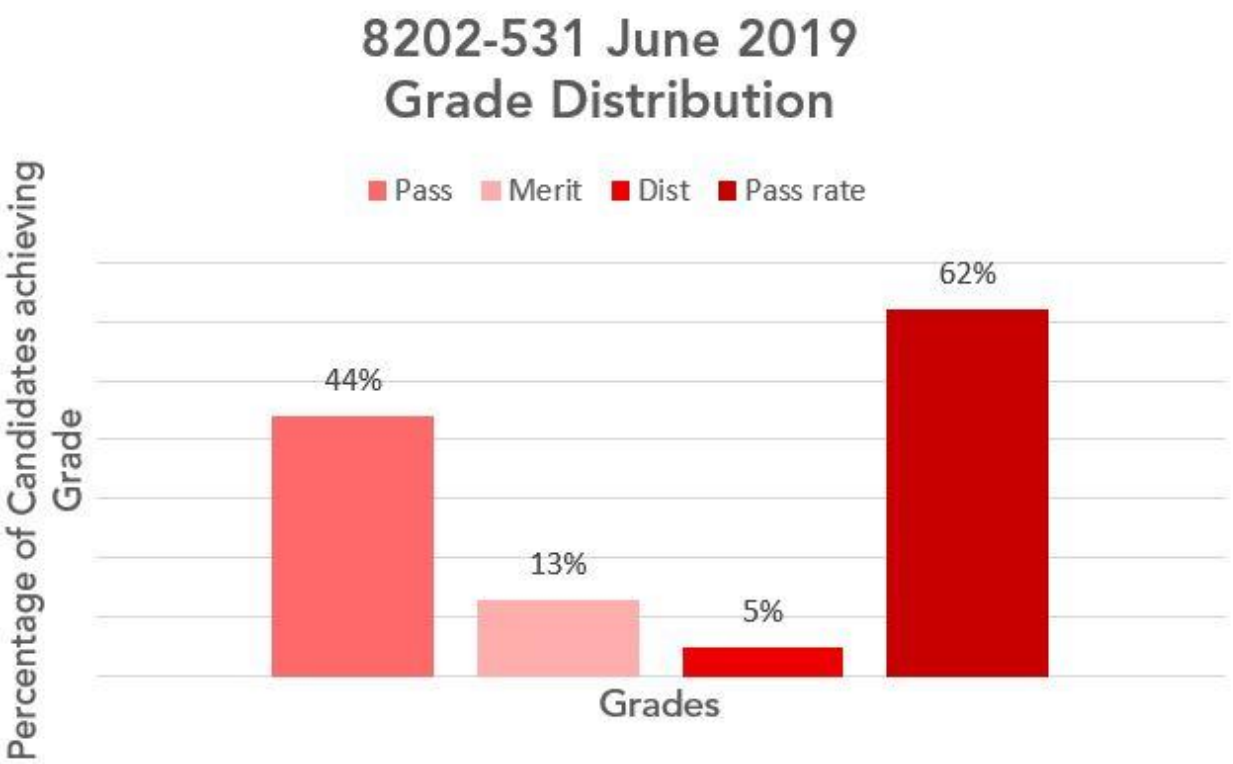


Assessment: 8202-531
Series: June 2019 (Summer)

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

Total marks available	75
Pass mark	28
Merit mark	39
Distinction mark	50

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 2019

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

Candidates, on the whole, gave responses to questions which showed a good level of recall throughout the examination.
Particular areas of strength in understanding were evident in some scientific principles, such as the inverse square law, AC series circuits and three-phase star configurations. Other areas of strength included knowledge of the requirements of BS 7671 in terms of researching the permitted materials or listing particular information such as rating factors for cable selection and equipment permitted in zone 1 of a bathroom. One further area which attracted good responses was the circuit evaluation and compliance question where many candidates were able to identify the procedure for checking the suitability of a circuit for current capacity and fault protection.

Particular areas of weakness included an understanding of DC machines with many confusing DC motor operating principles with the principles of operation for AC induction motors. Other areas of weakness included understanding of delta-star sub-station transformers where the secondary star configuration allows for a four-wire distribution system and why the general characteristics of a supply require assessment.
One area of concern was the lack of knowledge demonstrated on the legal requirements given in the Electricity at Work Regulations. In particular, the statutory duties of persons working on or near live equipment in terms of the dangers electricity may create, competency of persons and the need for suitable space/light to undertake such work.

Candidates should be encouraged to avoid giving answers that overlap/are very similar, particularly where a question requires them to state several things in their response. One example of this is where many candidates, when asked to give considerations relating to fault rectification decisions, listed ‘cost to repair’ and ‘cost to replace’ as two separate answers. As these are both essentially cost related answers, no more than one mark would be awarded for responses such as these.

Candidates should also be encouraged to consider the level of detail when responding to questions requiring an explanation of a common electrical principle such as ADS. When asked to explain why a low earth fault loop impedance is essential to facilitate ADS, many gave responses that were completely unrelated to the question, such as equal potentials with services and the creation of voltage surges back to the sub-station. With consideration and the simple application of Ohm’s law, which most of the candidates demonstrated they know in other questions in the paper, they could have answered the question with technical accuracy, gaining maximum marks.

Centres are encouraged to link outcomes throughout the qualification and apply scientific principles to installation concepts such as ADS, rather than delivering the qualification in a unit-based approach.

Series 2 – June 2019

The examination paper covered a good range of learning outcomes over the whole qualification. All questions were considered to be technically correct, and suitable for the level with no errors. This examination was considered to be similar to the April series in terms of range, suitability and level.

Candidates, on the whole, gave responses to questions which showed a good level of recall throughout the examination, but areas of understanding were limited.

Particular areas of strength in understanding were evident in questions relating to health and safety, design procedures and certain scientific calculations. In particular, candidates gave good responses to questions relating to transformer ratios, voltage drop evaluation, space heating concepts and earth fault loop impedance values. Recall of GS38 requirements was good, along with certain areas of research of the permitted reference publications. In addition, most candidates understood the basic function of an inverter as well as voltages utilised during insulation resistance testing.

Particular areas of weakness included circuit power and reactive power calculations. Where most candidates could determine reactance, few could take this further by determining circuit impedance, the power factor and power.
Understanding of TT installations and the reasons why these require RCD protection was particularly poor, as was the understanding of the causes of overcurrent in circuits.

Where questions relate to information ‘as given in BS 7671’, candidates should focus on what the actual requirements are when considering their responses.
Candidates also need to be aware that there is a significant difference between a DOL starter and other methods used to start motors, such as capacitive start motors which most of the responses more aligned to.

Particular areas of concern were in relation to the protection of cables concealed in walls, including methods used where cables are outside of the prescribed zones. In addition, levels of protection for equipment in relation to external influences was also of concern.
Candidates need to take great care when reading questions as many candidates lost marks through this, such as providing installations that are within the scope of BS 7671 as opposed to those that are **not** in the scope.

Many candidates did not seem to read the ERQ question fully as many attempted to design a full circuit, including protective conductors, instead of focussing on what the question actually required, live conductors.
It seemed that many candidates were simply following a pre-defined checklist when it comes to elements of circuit design and even though this procedure is, in part, dispersed within the permitted publications, many still followed the exact same step by step system from centre to centre. As a result of this, some candidates did not give the actual cable size selection in their response.
Responses to the ERQ did show recall but certain areas of understanding were lacking amongst the majority of candidates. This includes reasons for selecting type as well as the rating of the protective device, comparisons between calculated current capacity to tabulated ones, providing installation method references and why specific cable capacity tables are referenced.
For candidates to achieve high marks within an ERQ, justifications are necessary for every stage of a design, such as what the result of each calculation means and why is a value suitable or not.

Candidates are encouraged to understand what is required by the command verbs used for each question across the whole paper as far too many responses were simply stated answers where questions required explanations or descriptions.

Synoptic Assignment

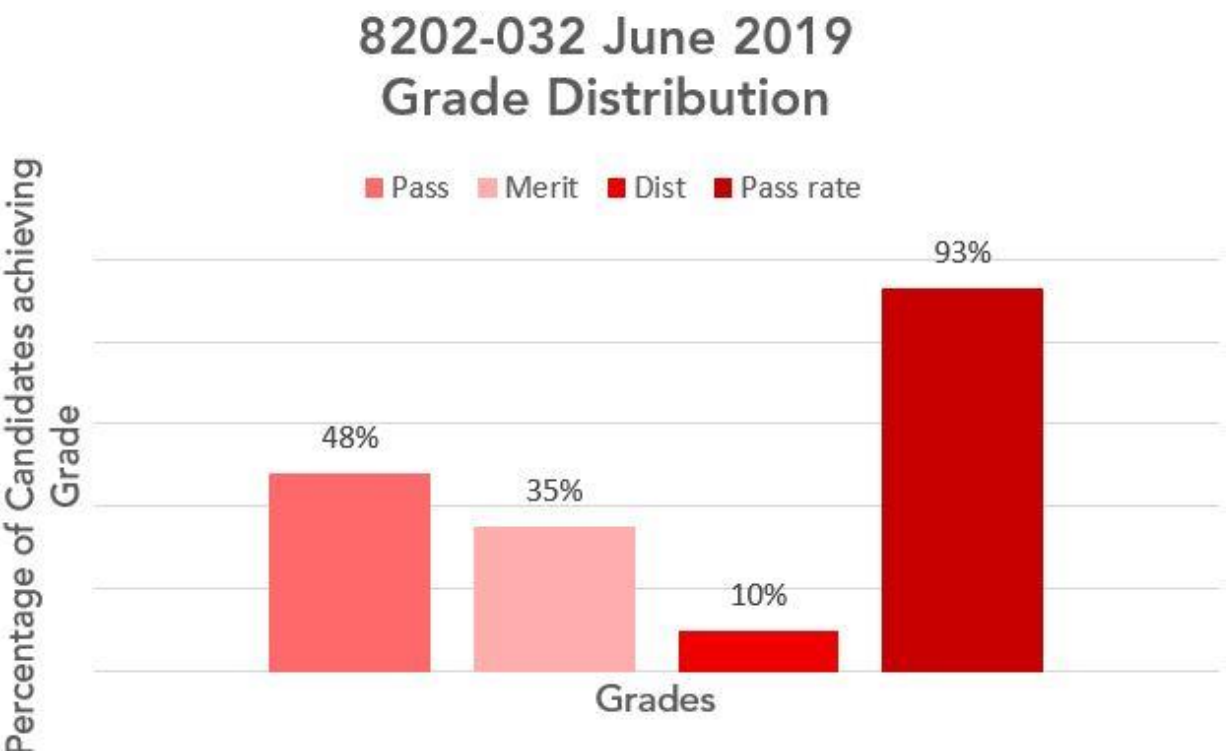
Grade Boundaries

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

Assessment: 8202-032
Series: 2019

Total marks available	60
Pass mark	26
Merit mark	38
Distinction mark	51

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



Principal Moderator Commentary

The synoptic assignment brings together knowledge and understanding as well as skills learnt across the whole of the Level 3 of this qualification.
All centre visits were very beneficial to moderators and centres are thanked for their cooperation as well as the candidates as the pressure a moderation visit can put on them is understood.

Candidates' performance against each AO were as follows:

AO1
Most candidates scored reasonably well, showing a good ability to state information within regulations and employ suitable techniques when using test equipment. A reasonable use of technical language was also evident throughout.

AO2
Candidates who scored well overall demonstrated a good level of understanding when working on design procedures. They also showed a high level of understanding when evaluating risk assessments and understanding test results.
Candidates who scored low seemed to lack understanding of circuit characteristics and could not seem to evaluate results to conclude faults, or use and evaluate information effectively. The ability to find detail within permitted publications was evident but the application of the information was less evident.

AO3
Most candidates scored mid-to-high range in this objective, demonstrating a good-to-high level of practical ability in using tools and equipment effectively. Lower scoring candidates seemed to seek reassurance from assessors that techniques used were correct and were not always neat in their work.

AO4
Good sources of evidence include areas such as fault finding reports where understanding can be displayed through performance and understanding 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.

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

Through the moderation process best practice has been identified that centres should incorporate into running their synoptic assignments in 2020:

- Where centres have multiple assessors, standardisation of marking must be carried out.
- 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/tutors to challenge marking based on evidence.
- Rather than centres uploading multiple files with names that don't always relate to the content, it would be desirable to have all the evidence in one file or one file for documents and another for photographic evidence. If multiple files were used, please could the filename indicate what the evidence contained is.
- Whilst most PO forms contained very good positive feedback on performance, 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.