

# **8202-531 Level 3 Electrical Installations – Theory Exam**

**March 2024**

## **Examiner Report**

# Contents

Introduction .....	3
<b>Theory Exam – March 2024</b> .....	4
Grade Boundaries and Distribution .....	4
Chief Examiner Commentary .....	5

## Introduction

This document has been prepared by the Chief Examiner; it is designed to be used as a feedback tool for centres to use in order to enhance teaching and preparation for assessment. It is advised that this document be referred to when preparing to teach and then again when candidates are preparing to sit examinations for City & Guilds Technical qualifications.

This report provides general commentary on candidate performance and 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 the **March 2024** examination series. It will explain aspects which caused difficulty and potentially why the difficulties arose, whether it was caused by a lack of knowledge, poor examination technique or responses that failed to demonstrate the required depth of understanding.

The document provides commentary on the following assessment:  
**8202-531 Level 3 Electrical Installation – Theory Exam.**

# Theory Exam – March 2024

## Grade Boundaries and Distribution

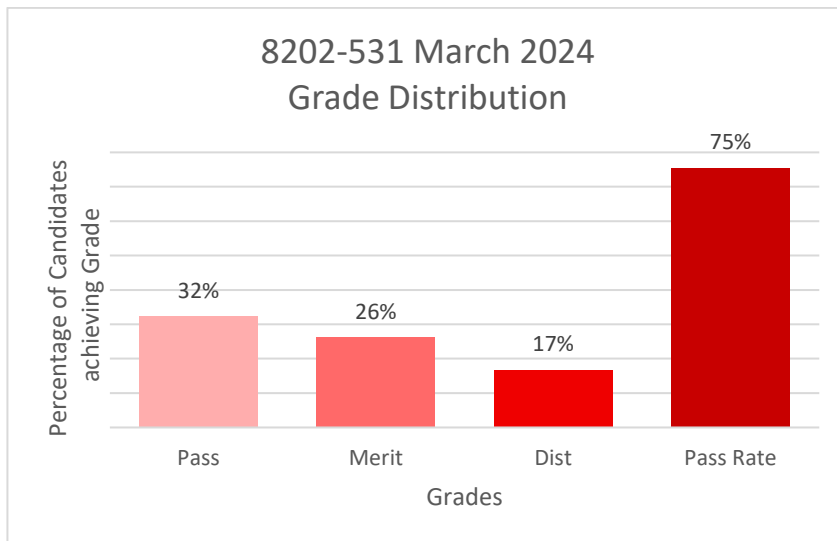
Assessment: **8202-531**

Series: **March 2024**

This series was paper based only. Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel:

<b>Total marks available</b>	<b>75</b>
Pass mark	28
Merit mark	39
Distinction mark	50

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



# Chief Examiner Commentary

## General Comments on Candidate Performance to be published to centres and candidates

**Assessment component: 8202-531**

**Series: March 2024**

This spring series was considered as being comparable to previous examinations and explored a good range across the specification.

Most candidates responded reasonably well to questions requiring information recall such as stating distribution voltages, matching earthing arrangements to the external loop impedance value and researching and stating different types of earth electrodes.

Recall of formula was also a strength for many candidates with a large number scoring at least 50% of the marks for maths based questions such as determining AC circuit values, and phase/line current or voltages in star systems. Whilst many candidates were able to calculate AC inductive and capacitive values up to the circuit current value, most found calculating component voltages a challenge. Calculating Lux values using the inverse square law was a significant strength across the cohort for this series.

A significant number of candidates were unable to recall the alpha-numeric codes used to identify three-phase line conductors together with their colours with many stating the three single-phase colours and conductors such as L, N and E together with brown, blue and green/yellow respectively. Alternatively, many would give hybrid responses giving the three-phase codes and single-phase colours.

Basic principles such as the operating principles of a wind turbine also proved a challenge to many candidates with few attracting full marks. Whilst many could identify that wind caused blades to rotate, many were under the impression a motor then took over and continued to make them rotate, or that the turbine was simply connected to a motor.

Understanding of electrical devices and components was a particular area of weakness across most candidates with very few candidates being able to demonstrate an understanding of the operating principles of a circuit breaker, in terms of the magnetic and thermal tripping mechanisms, but most were able to identify that a short circuit would cause the device to trip. Another area where candidates did not maximise marks was for recalling three types of faults, with many stating overload as a fault when it is in fact a circuit condition. Also, a large proportion of candidates stated overcurrent as a fault and although a fault would cause overcurrent, it is too generic as a term as it describes faults and conditions which is why it is the heading for Chapter 43 of BS 7671. Few candidates explored faults unrelated to excessive current such as arc faults.

Some questions seemed to cause confusion such as the item asking for reasons for a continuity test; many candidates were unable to expand their responses beyond a continuous conductor before straying into what protective bonding conductors connect to. Similarly, when asked the purpose of an Electrical Installation Certificate, the majority stated the situations where one would be issued, rather than its purpose.

Questions based on BS 7671 attracted mixed responses with many being able to research detail relating to bathroom locations although some did seem to confuse bathrooms and swimming pools. Researching the requirements for isolation of a photovoltaic (PV) system was an area of general strength. Understanding linked to external influences and the fundamental principles detailed in BS 7671 did not attract many marks amongst low scoring candidates. Better research of the required materials would have improved marks for these items.

The extended response question (ERQ) attracted much better responses when compared to previous series. Many candidates were able to work through the stages of confirming conductor cross-sectional area for live and protective conductors with some justifications and reasoning. Many of the high scoring candidates did not maximise marks as they did not relate the circuit to the location and did not identify specific needs such as Additional Protection for the circuit. A proportion of lower scoring candidates did not seem to observe that the question was exploring the need to upgrade a circuit and they simply undertook a set procedure with basic justifications and minimal, if any, analysing. Examples of areas where the majority of candidates could have improved their scores were using calculated maximum voltage drop values to compare to rather than percentages and expanding on why a value is acceptable, rather than it is simply bigger or smaller than another value, therefore acceptable.