2396-402 Level 4 Principles, Design, Erection and Verification of Electrical Installations.

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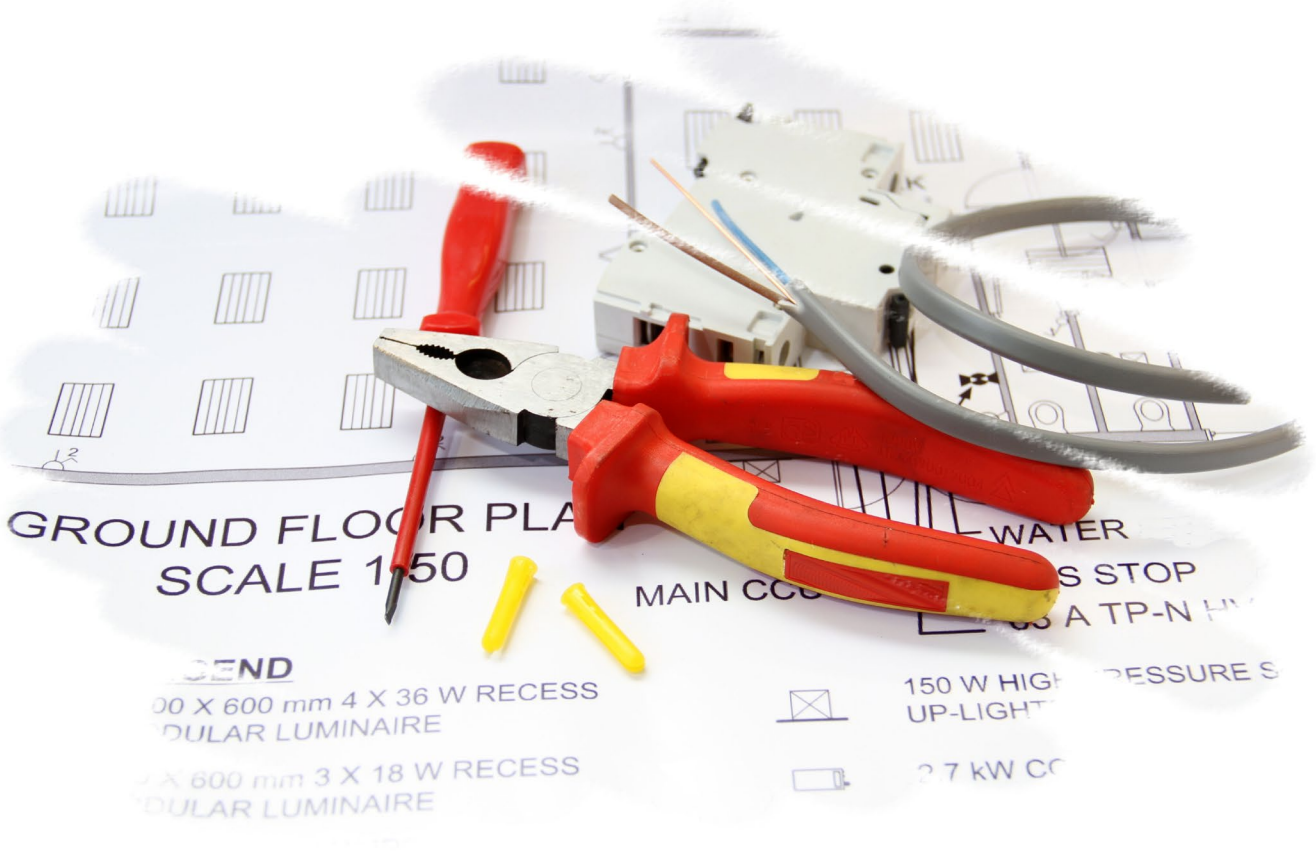
Chief Examiner's report – December 2025



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1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates in the December 2025 examination for 2396-402 Design, Erection and Verification of Electrical Installations.

The Chief Examiners' Report is intended to give centres and candidates guidance in preparing for the written examination.

2 Feedback on candidate performance

General feedback

The following comments are intended to help students prepare for the examination by having a better understanding of what is expected of them. The feedback within this report would also be valuable to tutors in understanding candidates' difficulties in answering questions and the areas where more guidance is required.

As well as the feedback below, centres are encouraged to read the note in **Section 4** of this report regarding the publication of **Amendment 4 of BS 7671**.

The December 2025 question paper was found to be in accordance with the scheme requirements.

The examination entry for this series was approximately 225.

This examination was correctly levelled and compared as being very similar to past series.

Questions in this series covered a wide range of subjects across the assessment criteria and BS 7671.

In this series, most candidates did not demonstrate suitable comprehension when responding to questions. Many candidates answered in 'list' format to questions which require a detailed explanation, with the majority often failing to draw any conclusions.

In many cases, some candidates repeated the question, rephrasing it, rather than answering it. Reading questions carefully and understanding what is being asked is fundamental to success in written examinations.

Using information in the stem or scenario is essential to be awarded marks on offer and candidates must be encouraged to keep referring to the scenario when forming a response. To use an example, few candidates identified that luminaires were Class II when responding to a question relating to their earthing requirements.

Terminology is also very important. Using the term earthing when describing bonding is a frequent error, and this poor use of terminology makes answers invalid in some cases.

Like previous series, set piece design calculation processes are generally performed well.

Section A: Cable Design Calculations

Many candidates were able to undertake the design of live conductors well. A common error however was not applying the value of power factor when calculating voltage drop. This did not disadvantage candidates too much in this series as the same conductor cross-sectional area (CSA) was achieved if power factor was applied or not. This may not be the case in other series.

It was also noticeable that some candidates divide the value of design current (I_b) by the rating factors, to determine the minimum suitable CSA of conductors for current carrying capacity. Centres are encouraged to outline to candidates when the use of design current is suitable, rather than using the nominal rating of protective device (I_n) in the calculation. Candidates should also be reminded that the approach using the design current also requires other stages for the circuit to conform with the requirements of BS 7671.

When it comes to candidates designing the circuit protective conductor (CPC) CSA, approaches were either very logical and precise, or very poorly approached, often with a scattered approach. Rarely were they in between.

Centres are encouraged to outline the following points to candidates:

- When designing the **minimum** CSA of CPC to satisfy the requirements of **ADS**, the critical value to work from is the maximum value of earth fault loop impedance to satisfy disconnection. When this is established from tables in BS 7671, other known values can be applied to determine the minimum CSA of CPC, based on calculated resistance values. Candidates should be reminded that values such as Z_e are within the scenario, and the CSA of line conductor (R_1) has been determined in question 1.
- When confirming the CSA of CPC for thermal constraints by using the adiabatic equation, it is desirable to use the actual disconnection times from Appendix 3 based on the calculated fault current, rather than the maximum permitted disconnection time.
- The use of one version of the adiabatic equation from Chapter 54 of BS 7671 is essential to maximise marks. Other variations do not calculate a CSA. Candidates who use the adiabatic equation from Chapter 43 of BS 7671 can rarely justify the results correctly, as required by the question. Centres must make it clear to candidates when each version of the equation is suitable.
- The adiabatic equation should be used as a means of confirming suitability of a selected protective conductor CSA, not as a way of selecting a minimum CSA (see bullet point one above).

Section B: Knowledge of BS 7671 (Design)

Generally, most candidates scored well in the questions relating to the Fundamental Principles and Assessment of General Characteristics in BS 7671.

Candidates must be able to understand the differences between earthing and bonding. When asked to describe requirements for earthing, many strayed into bonding requirements. It was also notable how many candidates did not understand the difference between exposed or extraneous conductive parts.

When candidates were invited to discuss bonding, and why bonding something could increase the dangers, very few candidates understood the risk associated with bonding the metallic gas installation pipes which were insulated at source. This could be partly due to some not referring back to the detail in the scenario for the question, or a general lack of understanding with regards to when and when not to bond something. Centres should be reminded that since 2008, the protective measure of EEBADS has been replaced by ADS due to many factors

affecting mechanical services. This means that bonding an installation becomes much more of a design factor and choice based on risk, rather than a belt and braces requirement.

A question asked specifically about overload protection for a distribution circuit. Many candidates did not recognise that the 63 A fuse would not provide overload protection for the 6 mm^2 cable, but that overload protection was provided by the downstream devices protecting the final circuits. A small proportion of candidates did not demonstrate the required understanding of the difference between overloads and fault currents. Some candidates seemed to think that disconnection times for ADS seemed to apply to any fault or overload situation. When asked to explain why short-circuit thermal constraints needed to be confirmed for the given distribution circuit, almost all candidates gave a very generic explanation lacking in key detail.

A question about the installation of luminaires in a location with an increased risk of fire was generally well answered. Most candidates recognised the requirements and gave reasonable answers, although some went off topic and discussed in detail the protection of wiring systems from mechanical damage.

Many, however, did not recognise that the Class II luminaires did not need earthing, but exposed conductive parts of the installation would require such protection. It seems that many candidates did not refer back to the scenario when answering this final part of the question as many did not refer to the fact that the luminaires were Class II. It is vitally important that candidates responses reflect the scenario where present.

Knowledge of BS 7671 (Selection and Erection)

A large number of candidates seemed to confuse selectivity between RCDs/RCBOs with unwanted tripping of RCDs/RCBOs and even though they were two distinctly different questions, many candidates provided very similar responses across the two questions.

Candidates did not seem to demonstrate sufficient understanding of the different types of RCD and the effects of DC components or harmonic current on them. Centres may wish to refer candidates to recent articles in Wiring Matters magazine produced by the IET, relating to the specific application of RCD types.

A question relating to emergency lighting and standby generator systems did not score well with a large proportion of candidates not attempting the question.

Verification

Asked to describe the pattern of readings for Step 3 of a ring final circuit many candidates described the overall test procedure, therefore missing the point. Although a reasonable number of candidates did describe the pattern of results expected, few were able to provide the required explanation with sufficient underpinning knowledge to be awarded the marks on offer. Even fewer candidates quantified the results, even though the answer is outlined in GN3.

Part of the question asked to determine the expected measured value at each socket during Step 2, but very few actually provided a numerical answer. Of those who did calculate an expected test result, a large number of candidates applied an irrelevant operating temperature correction factor that does not apply when inspecting and testing at similar ambient temperatures.

Special Locations and Appendices

The final question related to the terminology regarding conductor temperatures. The terminology featured appears often within BS 7671 and is fundamental in electrical design and similar questions have appeared in previous series.

Many candidates did not differentiate between ambient temperature and assumed initial temperature, with some answers indicating that candidates thought a cable had an ambient temperature all of its own.

Some referred to rating factors as affecting design current, rather than the current carrying capacity of conductors.

Candidates need to understand that the thermal effects and constraints on a cable affect all aspects of cable selection and it is the cable’s thermal performance which ultimately lead to a suitable CSA.

3 National pass rate

The national pass rate for the 2396-402 December 2025 examination is as follows:

Exam series	Distinction (%)	Merit (%)	Pass (%)	Fail rate (%)
December 2025	**0%**	**6.02%**	**22.89%**	**71.08%**

Past examination series

Exam series	Distinction (%)	Merit (%)	Pass (%)	Fail rate (%)
December 2024	**2.24%**	**5.22%**	**19.40%**	**73.13%**
December 2023	**0%**	**2.60%**	**19.79%**	**77.60%**

4 Forthcoming Exam Dates

12th March 2026
11th June 2026
3rd December 2026

5 Important Note regarding Amendment 4 of the 18th Edition of IET Wiring Regulations 2026

The IET and BSI have announced that Amendment 4 of BS 7671 will be published in April 2026 and this will lead to a brand-new book (BS 7671: 2018 (A4 2026).

The March 2026 examination will be set and marked to the current amendment 3 of BS 7671.

The June 2026 examination will be set and marked by being sympathetic to both amendment 3 and amendment 4 of BS 7671, on the understanding that candidates may have been tutored and in possession of either version.

The December 2026 examination series will be set and marked to amendment 4 only.

From May 2026 to October 2026, 2396-401 Projects should be marked respecting either version of BS 7671 but projects submitted after October 2026 must conform to BS 7671: 2018 (A4 2026).

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