# 2394-302 Level 3 Principles, Practices and Legislation for the Initial Verification of Electrical Installations.

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## Chief Examiner's report – February 2015

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# 1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates in the February 2015 examination for 2394-302 Principles, Practices and Legislation for the Initial Verification of Electrical Installations.

The Chief Examiner's Report has been reintroduced as a result of feedback from centres, to give them guidance in preparing candidates 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.

The February 2015 question paper was found to be in accordance with the scheme requirements.

The number of scripts received for this series was 619.

Candidates appeared to have no issues with the format of the paper. They need to be aware that the space left for their answer is intended to be generous and, in almost all cases, is more than enough to record their answer.

Candidates and centres should be mindful that this qualification relates to the initial verification of electrical installations. It was evident from answers provided by some candidates that they confused this process with that required during periodic inspection and testing.

Candidates should keep their responses within the allotted area and any additional sheets should be stapled to the back of the answer book. The number of additional attached sheets needs to be recorded in the box on the front cover of the examination paper/candidate response book. These additional sheets should be plain lined paper and not a second answer book. The blank pages at the back of the answer book should not be used for candidate responses. These pages are not allocated areas for recording answers. Where it becomes necessary for centres to copy/print additional answer books these should be produced double sided to facilitate correct scanning into the marking software.

The answers produced by candidates for this examination series were of a much higher standard than those offered in previous series.

When asked to list the required steps to complete safe isolation at the origin of a three-phase installation, a small but significant number of answers indicated dangerous procedures. Some answers did not include locking off, others involved using a voltage indicator which had not been checked for correct operation before, and after, confirming the isolation.

Another question asked the candidate why the result of an $R_1 + R_2$ test could **not** be used to confirm the correct polarity of a circuit when the insulation resistance test result between line and neutral was 0 MΩ. Many answers did not indicate an understanding of how a polarity test is carried out during initial verification. Some candidates were unaware that the $R_1 + R_2$ test result can be used, in part, to confirm polarity. A small number of answers given by candidates did not relate to polarity at all.

One question related to an earth fault loop impedance test and another question related to a prospective fault current test. The candidate was asked, in each case, to state the terminals, between which, the test was to be carried out. In both tests, some candidates stated where the tester would be connected. This would be an acceptable answer if the tester was a two lead instrument, but if the instrument uses three test leads then the question has not been answered. Stating "line, neutral and cpc" when an earth fault loop impedance test is being undertaken does not indicate the terminals, between which, the **test** is carried out.

## Terminology

The use of "live" rather than "line" continues to cost some candidates marks. Candidates interchange the two terms when describing test procedures which often results in a loss of marks due to the testing procedure being unclear.

## Knowledge of BS 7671 and Guidance Note 3

One question required the candidates to list the three documents that must be completed and handed to the client on completion of an initial verification of an installation. A small number of candidates were unable to correctly identify the three documents.

When asked to state the three people responsible for signing the Electrical Installation Certificate, a number of answers were incorrect. Typical errors included "the client", "dutyholder" and "the insurance company".

A small number of candidates were unable to state the value of electrode resistance, above which, the electrode may be unstable. A larger number of candidates were unable to determine the maximum value of earth fault loop impedance for an installation, forming part of a TT system, with a 300 mA RCD main switch.

When asked to state the action to be taken if the earth fault loop impedance test result was too high, most candidates were able to identify the need to reduce the electrode resistance, but few answers included retesting to ensure an acceptable value had been achieved.

## Inspection

One question asked the candidate to explain why inspection needs to be carried out during the erection stage of an installation. Some answers related to why inspection is required rather than why inspection is required ***during the erection stage***. Candidates failed to recognise that cables run within the fabric of the installation cannot be inspected after the work is complete.

Most candidates provided good answers when asked to identify five checks to be made during an inspection of cables and conductors within a metal-clad three-phase distribution board. A number of candidates incorrectly gave information relating to circuit breakers and the integrity of the distribution board which do not relate to cables and conductors. A small number of answers related to the cables outside the distribution board. Some candidates were looking for signs of overheating and arcing on an installation that had not yet been energised.

Some answers were vague such as "cable terminated correctly". Yes the cable must be terminated correctly, but what makes a "correct termination"? Good answers included comments such as "cable terminations are tight", "no copper showing at the termination" and "conductor insulation not damaged".

### Testing

The following tests were covered on the question paper: earth fault loop impedance, earth electrode resistance, phase sequence, prospective fault current and functional testing.

Generally candidates showed a good understanding of these tests. The most common errors were around the use of correct instrument titles, particularly around phase sequence testing. The instrument titles stated in Guidance Note 3 must be used during the examination.

One question asked the candidate to state what must be confirmed when carrying out a functional test on the switchgear. Most candidates correctly identified the need to confirm correct operation but few answers related to the switchgear being properly mounted and adjusted.

## 3 National pass rate

The national pass rate for the 2394-302 February 2015 examination is as follows:

| Exam series | Pass rate (%) | Fail rate (%) |
|---|---|---|
| **February** | **64** | **36** |

### Past examination series

| Exam series | Pass rate (%) | Fail rate (%) |
|---|---|---|
| **December 14** | **41** | **59** |
| **October 14** | **60** | **40** |
| **August 14** | **54** | **46** |
| **June 14** | **62** | **38** |

### Forthcoming Exam Dates are:

Tues 21 April 2015 18:30 – 20:30
Tues 09 June 2015 18:30 – 20:30

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