

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

Chief Examiner's report – December 2017



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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 2017 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 December 2017 question paper was found to be in accordance with the scheme requirements.

The number of scripts received for this series was **approximately 30**.

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 good standard.

### Terminology

The terms "live" and "line" are often used incorrectly. Candidates interchange the two terms when describing test procedures which often results in a loss of marks due to the testing procedure being unclear. The incorrect use of these terms has appeared in every examination since the term "line" was introduced into BS 7671. The terminology used in BS 7671 and Guidance Note 3 **must** be used when answering questions.

### Knowledge of BS 7671 and Guidance Note 3

One question required candidates to state the **minimum** IP code requirement for the front of a consumer unit, the accessible top surface of an isolator and a shaver socket-outlet in a bathroom. Some candidates' answers confused IP2X and IP4X. Many candidates were unable to correctly identify the minimum requirement for a shaver socket-outlet in a bathroom.

Another question asked why it was necessary to carry out a phase sequence test on a three-phase installation. The answer given by some candidates only related to the direction of rotation of three-phase electrical machines.

## Safe Isolation

When asked to state the procedure to be carried out to ensure safe isolation of a consumer unit, the answers given by most candidates were of a high standard. Other answers given by candidates omitted important steps. Not confirming the correct operation of the voltage indicator before and after confirming the supply was isolated and not locking off the isolation point were common omissions.

## Inspection

When asked the purpose of Initial Verification some candidates listed individual checks to be made to conductors, connections etc. rather than the overall purpose.

One question asked why inspection needs to be carried out **during** the erection stage. A small number of answers described why inspection was necessary rather than why it is carried while the installation is under construction.

Most candidates provided good answers when asked to identify five checks to be made during an inspection of cables and conductors **within** a three-phase distribution board. A small number of answers incorrectly related to the cables outside the distribution board. Other incorrect answers included reference to the distribution board enclosure.

## Testing

Two full questions were concerned with the testing process. A third question related to understanding the path taken by a test current during an earth fault loop impedance test.

One test related to a test of continuity of circuit protective conductor for a newly installed lighting circuit to determine the value of  $R_1 + R_2$  for the circuit. Most candidates correctly identified the test instrument and the need to "null" the test leads.

The description of the test given by most candidates was incorrect. Most answers involved a single test at the furthest point only. This is not an acceptable procedure. It must be confirmed that each point has been effectively connected to earth. A few candidates used the "long lead" method, which is an acceptable test method. The question required the value of  $R_1 + R_2$  for the circuit to be determined. Unfortunately no candidate using the "long lead" method described the second test in order to determine the required value.

The candidate was asked a number of questions which related to carrying out a test on an RCD protecting a socket-outlet circuit. Almost all candidates correctly identified the test instrument. A number of candidates incorrectly stated that the circuit loads should be connected during the test. Many candidates were unable to correctly state the three test currents to be applied to the RCD and even fewer were able to correctly identify the maximum disconnection times for two of the tests. It appeared that a number of answers included random disconnection times. The most consistent error was stating 200 ms disconnection time for the 30 mA test. Most candidates were aware that the RCD must not disconnect during the 15 mA test.

The final question required the candidate to draw a complete, fully labelled diagram of the earth fault loop path for a radial circuit connected to a TN-S earthing system. Most candidates provided a reasonable circuit diagram, correctly indicating the path and labelled most, if not all, the circuit components. A small number of answers identified the wrong system or produced an incomplete diagram such that the system could not be identified.

### 3 National pass rate

The national pass rate for the 2394-302 December 2017 examination is as follows:

<b>Exam series</b>	<b>Pass rate (%)</b>	<b>Fail rate (%)</b>
<b>December</b>	<b>64</b>	<b>36</b>

#### **Past examination series**

<b>Exam series</b>	<b>Pass rate (%)</b>	<b>Fail rate (%)</b>
<b>October</b>	<b>50</b>	<b>50</b>
<b>August</b>	<b>76</b>	<b>24</b>
<b>June</b>	<b>69</b>	<b>31</b>

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