

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

Chief Examiner's report – **August 2016**



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City & Guilds

1 Giltspur Street

London EC1A 9DD

T +44 (0)844 543 0000

F +44 (0)20 7294 2413

www.cityandguilds.com

centresupport@cityandguilds.com

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1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates in the **August 2016** 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 August 2016 question paper was found to be in accordance with the scheme requirements.

The number of scripts received for this series was **approximately 370**.

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 but some candidates did not read the questions carefully. On a number of occasions it appeared that candidates only read part of the question. They also provide answers that relate to similar questions asked on previous papers, rather than the question being asked on this paper. Section B of the paper relates to the scenario provided in the source document. Many candidates do not take this information into account when answering the questions in this section. These are common errors which appear on almost every examination series.

Not reading the whole question carefully

It is important that candidates read each question carefully before constructing their answer. Failure to do so may cost the candidate marks, and in some cases, they will score no marks at all as their answer does not relate to the question being asked.

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. Not all candidates use the correct titles for tests and test

instruments. The terminology used in BS 7671 and Guidance Note 3 **must** be used when answering questions.

A surprising number of candidates were unable to give the correct titles of the three inspection and testing documents that are handed to the client on completion of an initial verification.

Following safe procedures

A significant number of candidates were unable to describe a safe isolation procedure. Many answers did not identify a suitable voltage indicator, did not include all test combinations to ensure safe isolation, did not indicate the use of appropriate signage at the point of isolation and did not ensure that the key was kept secure.

Inspection

One question required the candidate to state what would be verified when inspecting for Basic Protection provided by insulation of live parts. Simple checks such as ensuring live conductors were covered in insulation, no excessive amount of insulation removed at terminations and insulation not damaged, were rarely stated.

Another question related to inspecting for Basic Protection provided by barriers **within** an enclosure. Many answers wrongly referred to the enclosure and not the internal barriers. Checking to ensure that barriers were in place, fixed securely and not damaged were not stated. Vague references to "appropriate IP" were sometimes given as an answer but few answers stated the minimum requirements of IP 2X/XXB.

Candidates were asked to state what would be verified when inspecting for presence of main protective bonding conductors to metallic installation pipework as part of Fault Protection. Many answers wrongly referred to testing the continuity of the conductor. The question clearly stated "when inspecting". A significant number of answers failed to include such checks as the conductor is present, connection to pipework was tight and correctly located, the bonding conductor was tight, "safety electrical connection, do not remove" notice fitted and the conductor was identified green/yellow.

Many candidates were unable to state what would be verified when confirming that Additional Protection had been provided using residual current devices (RCDs). The most common correct answer was stating the RCD must have a sensitivity not exceeding 30 mA. Few answers included the requirement of the RCD disconnecting within 40 ms when tested at $5I_{\Delta n}$.

Most candidates provided good answers when asked to identify five checks to be made during an inspection of three-compartment, steel under-floor trunking prior to the cables being installed. The most common errors included reference to the cables, correctly fitted lids, reference to glands and *bonding* the trunking.

Testing

A large number of candidates were unable to list, in the correct sequence, the first five tests to be carried out on a new **radial** socket-outlet circuit. Wrong test order, incorrect titles of tests and the inclusion of a ring final circuit continuity test even though **radial** was in bold, were common errors. A few answers included two polarity tests, one with the supply off and one with the supply on. This is an initial verification, so the test must be carried out with the supply off. There is no requirement to repeat the test with the supply on.

One question asked for the locations on a three-phase installation where phase sequence testing should be carried out. Many answers were vague so scored little or no marks. Few candidates were able to give the correct title of the test instrument to be used. Only titles of test instruments states in BS 7671 and/or GN3 are acceptable.

Another question asked the candidate to describe, in detail, how a test to confirm continuity of circuit protective conductors and determine the value of $R_1 + R_2$ for a lighting circuit is to be carried out. Generally, the descriptions given when answering this question were of a good standard. Those candidates that scored few marks decided to use a long lead method. This is a perfectly acceptable method but most answers did not produce an $R_1 + R_2$ value. The most common errors/omissions included only measuring at the furthest point instead at "all points" and not operating switches during the test so that the highest value can be determined. Incorrect use of the term "live" continues to lose marks. A number of candidates wasted time and space on the answer sheet by describing, in some detail, the safe isolation procedure. A description of this procedure had been asked earlier in the paper and was not required here. Others repeated information already given when answering previous parts of the question.

The final question on the paper asked the candidate to describe, in detail, how an insulation resistance test would be carried out at the meter tails supplying a metal-clad consumer unit. Some candidates wrongly thought that the tails were energised prior to carrying out the test. This is initial verification. Energising the installation can only be safely undertaken after all relevant dead tests have been successfully carried out. Other candidates thought the test was only being conducted on the tails.

Common omissions included not ensuring that the RCBOs were not damaged during the test procedure, not operating switches during testing, main switch being placed in the off position and not removing loads.

It should be noted that there are a number of different ways that this test could be carried out. All legitimate methods were accepted during marking.

3 National pass rate

Information needs to be added here

The national pass rate for the 2394-302 **August 2016** examination is as follows:

Exam series	Pass rate (%)	Fail rate (%)
August 2016	65	35

Past examination series

Exam series	Pass rate (%)	Fail rate (%)
June 2016	59	41
April 2016	47	53
Feb 2016	70	30

Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)844 543 0000
F +44 (0)20 7294 2413
www.cityandguilds.com

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