

2395-302 Level 3 Principles, Practices and Legislation for the Periodic Inspection, Testing and Condition Reporting of Electrical Installations.

Chief Examiner's report – **August 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 **August 2015** examination for 2395-302 Level 3 Principles, Practices and Legislation for the Periodic Inspection, Testing and Condition Reporting of Electrical Installations.

The Chief Examiners' 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 2015 series question paper was found to be in accordance with the scheme requirements.

Candidates appeared to have no issues with the paper format. 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 should keep their responses within the allotted area and any additional sheets should be stapled to the back of the answer book. Any additional sheets should be completed on plain lined paper and not in a second answer book. The blank pages at the back of the answer book should not be used for candidate responses as these are not allocated areas for the marking and so are not included in the scanned marking allocation.

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.

Candidates and centres should be mindful that this qualification relates to the periodic inspection of electrical installations. It was evident from answers provided by some candidates that they had very little experience or understanding of the requirements for periodic inspection. It was further apparent from some of the information given in the candidates' responses that many were referencing initial verification requirements.

A large number of candidates failed to read the questions and scenario carefully. One example being where candidates incorrectly described inspection items related to a steel conduit system when the question clearly stated a PVC conduit system.

It was therefore apparent that some candidates were not reading the question carefully and so not producing appropriate answers. Some candidates gave responses which did not relate to the question being asked or provided generic answers which were not appropriate to the given scenario. These types of responses indicate that the candidates were either not in possession of suitable knowledge or have failed to consider and understand the requirements of the questions.

The requirements of periodic inspection and the actions to be taken by the inspector in given situations and the information which is recorded on the report presented problems for a number of candidates. These areas of the periodic inspection process require a better understanding than is currently being demonstrated. Centres may wish to review the extent to which this is covered in their course presentation.

From the information provided by candidates it appears that, whilst they may be aware of the need for inspection, they had poor understanding of what needs to be inspected and why the inspection is required. A large number of candidates when answering questions related to inspection gave responses related to items inspected at initial verification which are not appropriate at a periodic inspection. A large number of candidates failed to address the

specific items identified in the question when describing inspection items. Many responses indicated that the candidate was not aware of the requirements of periodic inspection in relation to the fixed wiring and terminations.

A common error related to inspection items which require dismantling or cannot be accessed. It is a standard limitation of the model forms in BS 7671 that cables contained within the building structure and within containment systems are excluded from the inspection. Furthermore BS 7671 requires that periodic inspection and testing is carried out with as little taking apart or dismantling as possible. Therefore items which require the dismantling of the containment system in order to inspect should not be included.

The requirements specifically related to the inspection of an electrical installation were a further area of considerable misunderstanding. It appears that the requirements of inspection (that is the inspection items and what they are inspected for) is an area which requires more attention during the related course delivery. This area is important to ensure that candidates have the knowledge required to both carry out an inspection and maximise their chances of success in the examination. Centres may wish to review the extent to which the inspection is covered during their course presentation.

Candidates should be aware that the Schedule of Inspections for the periodic inspection of electrical installations given in Guidance Note 3 provides detailed information on the items of inspection for these installations. Further guidance is given in Appendix 6 of BS 7671 for installations with a supply exceeding 100 A. Candidates becoming familiar with the items they are to consider, inspect and record the outcome will greatly improve both their understanding of the inspection process and their success in any related questions.

Candidates should also be aware that where questions carry high marks these require a more detailed response, for example a three word statement is not going to achieve 10 marks.

The candidates should be aware of the requirement to show calculations and descriptions to demonstrate their conclusions when answering questions. It is also important that candidates include the correct units for the answers produced from their calculations e.g. Ω , m Ω , A, kA, ms etc.

Knowledge of BS 7671 and Guidance Note 3

Many candidates were unable to state the Electricity at Work Regulations (EAWR) as the statutory document relating to live work on electrical installations.

Many candidates appeared to misread the question which asked for information relating to the testing of prospective fault current on a 230V single installation, and gave answers relating to either a three phase system or Z_e test.

It was noticeable that candidates confuse the terms cpc and Earth when referring to conductors, for example stating testing between live and cpc when testing prospective fault current at the origin of the installation.

Many candidates were unable to correctly name the three documents which are completed and handed to the client on completion of a periodic inspection and test.

Determining the suitability of give scenarios for a sampled inspection and test caused problems for many candidates. Centres may wish to consider the information provided during their course delivery regarding determining the suitability of an installation for sampling.

A number of candidates were unable to explain the purpose of the observations and the classification codes recorded on the Electrical Installation Condition Report (EICR) As the observations and classification codes are an essential part of the EICR this represents a considerable concern.

Very few candidates were able to state three reasons why dismantling should be kept to a minimum whilst carrying out a periodic inspection. Common incorrect responses related to time and cost. Centres may wish to consider how this is covered in the delivery of their associated courses.

Many candidates were unable to explain why a main protective bonding conductor installed within the fabric of a building could not have continuity confirmed by inspection alone.

When asked to calculate the expected measured resistance of a main protective bonding conductor, many candidates failed to look at the scenario to pick up the necessary information required to carry out the calculation. Also some incorrectly then included a factor of 1.2 in their calculation which should not be applied when determining the measured value.

One question asked candidates to describe, with the aid of a fully labelled diagram, the earth fault path for a given circuit. The responses to this question were disappointing with candidates describing the wrong system, failing to earth the transformer and showing the fault current going to earth at the transformer. For those who drew a correct earth fault path the labelling was often poor and consequently candidates lost marks for this question. Candidates would be well advised to consider the sample answers to this type of question shown in the City and Guilds Exam Success Book. Those candidates who were familiar with the exam success book sample answers generally scored well.

Test Equipment

Candidates were asked questions relating to carrying out safe isolation, testing prospective fault current and continuity of a main protective bonding conductor. A number of candidates were unable to correctly identify the instruments used for one, two or all three of these activities. Many candidates stated that an earth fault loop impedance tester would be used to test prospective fault current. This needs to be qualified by stating set to kA/Pfc setting. Simpler alternative would be a PFC tester.

Many candidates incorrectly stated that a low reading ohmmeter would be used to test continuity.

Candidates should be aware that the instruments to be identified are those specific to the test in question as identified in Guidance Note 3.

Inspection

The requirements for inspection continue to be a problem for candidates taking this examination.

Candidates were asked about the requirements for inspection of a surface mounted PVC conduit containment system. Many candidates lost marks through failing to read the question carefully and provided answers relating to the cables, removal of Burrs, radius of bends, and other initial verification inspection items

Testing

When describing the test for measurement of prospective fault current (I_{pf}) a large number of candidates apparently failed to read the question carefully and as a consequence described testing prospective fault current on a 3 phase system when the question clearly stated a single phase system.

Many candidates were unable to correctly state at which point of the installation prospective fault current testing must be carried out.

A large number of candidates incorrectly stated that the earthing and bonding conductors should be disconnected from the installation when carrying out a test to establish I_{pf} .

Very few candidates could describe testing of prospective fault current on a 230V single installation. Many candidates either described a Z_e test, or only tested between Live and Neutral. To obtain a I_{pf} value for a single phase installation both PEFC and PSCC need to be tested and the highest value recorded on the EICR. It is also a bit concerning that several candidates think this test is carried out at the end of the circuit. The test should be carried out at the main switch.

Many candidates were unable to explain what must be confirmed once the I_{pf} is determined, several incorrectly stating answers referring to ensuring disconnection times are met. Many also gave vague answers such as “check rating suitable” with no indication of what constitutes ‘suitable’.

On completion of the test it must be established that the I_{cn} of the protective devices installed is equal to or higher than the measured I_{pf} .

A number of candidates failed to identify the test method required when testing the continuity of a main protective bonding conductor.

A surprising number of candidates incorrectly thought the main protective bonding conductor remained connected for the test.

Very few candidates were able to describe the **additional** tests undertaken if access to the main bonding clamp was not possible. GN3 gives guidance on the tests required.

When describing a test, candidates should be aware that the process should include the necessary information which would enable a novice to follow the steps to carry out the test.

3 National pass rate

The national pass rate for the 2395-302 **August 2015** examination is as follows:

Exam series	Pass rate (%)	Fail rate (%)
August 2015	57	43

Past examination series

Exam series	Pass rate (%)	Fail rate (%)
June 15	62	38
April 15	57	43
February 15	68	32

Forthcoming Exam Dates are:

Wed 14 October 2015
Wed 02 Dec 2015

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