

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

Chief Examiner's report – **October 2015**



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Contents

1	Introduction	2
2	Feedback on candidate performance	3
	General feedback	3
	Knowledge of BS 7671 and Guidance Note 3	4
	Test Equipment	5
	Inspection	5
	Testing	6
3	National pass rate	7
	Past examination series	7
	Forthcoming Exam Dates	7

1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates in the **October 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 October 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.

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 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.

It was 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 asked or provided generic answers which were not appropriate to the scenario given. 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 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 correctly state the purpose of a periodic inspection and test as identified in GN 3.

Many candidates were unable to state the correct title of the documents which are completed following a periodic inspection. A large number of candidates were unable to state the correct number of each of these documents to be issued for a given scenario.

A large number of candidates lost marks when determining the compliance of recorded test results and data contained on a schedule of test results for a given scenario.

Many of those candidates who did identify non-compliances were unable to correctly allocate classification codes for the items found. The application of classification codes is a recurring area with which candidates have difficulty in answering correctly. Centres may wish to consider the information and coverage given to this particular area in their course delivery.

Some candidates failed to identify the correct earthing arrangement for the type of system given in the scenario when providing their diagram and description of the earth fault path for a given circuit. Many candidates lost marks through failing to correctly identify the component parts of the earth fault path.

Worryingly there were a number of candidates who stated the earth fault current in a TN-S system returns to the suppliers transformer and then to the mass of earth. This clearly shows

a lack of basic understanding of electrical circuits which every candidate at this level should be aware of.

Test Equipment

Candidates were asked questions relating to testing earth electrode resistance and prospective fault current. A number of candidates were unable to correctly identify the instruments used for one or both of these activities.

Candidates should be aware that the instruments to be identified are those specific to the test in question as identified in GN3.

Inspection

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

Candidates were asked about the requirements for inspection of the main protective bonding conductor connected to the metallic water installation pipework. Many candidates lost marks through failing to read the question carefully and provided answers relating to the continuity of the conductor which would be determined by testing and the location relative to the intake position of the water service and other initial verification inspection items.

Testing

The requirements for testing during periodic inspection and test are different to those required at initial verification.

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.

Candidates were asked questions relating to the testing of earth electrode resistance for a standby generator.

A number of candidates apparently either failed to read the question carefully or were unable to describe the test correctly. Many candidates stated that the 'installation' needed to be isolated for the test. As this was a standby generator it is the generator that needs to be isolated, not the installation. The client would need to confirm this was acceptable as there would be no standby facility available during the testing.

Whilst many candidates managed to describe the test process, with a diagram there were few who correctly identified the additional electrodes used.

A large number of candidates included the required number of electrodes but did not correctly locate them for the initial and subsequent tests. This is an area which centres may wish to consider in their course delivery to ensure candidates are aware of the requirements and procedure.

A surprising number of candidates were unable to identify the document on which the earth electrode resistance would be recorded and/or the maximum acceptable earth electrode resistance for the given scenario.

Candidates were asked questions relating to the testing of prospective fault current (I_{pf}) for a three-phase installation, given that the test instrument was rated at 250 V.

Some candidates appeared not to have read the question correctly or failed to relate it to the scenario and gave answers for a single phase installation.

A large number of candidates carried out tests between line conductors and earth, with many only carrying out that test. Line to earth testing is not required when determining I_{pf} for a three-phase installation, but candidates were not penalised if this was included with their line to neutral tests.

A surprising number of candidates could not identify the result to be recorded once the test was completed.

When asked what was the purpose of measuring pf many candidates failed to identify that the confirmation that the measured I_{pf} was equal to or less than the I_{cn} rating of the circuit breakers.

There are still a large number of candidates who appear to believe that I_{pf} relates to disconnection times.

A large number of candidates were unable to correctly state what is indicated by I_{cn} and I_{cs} of a circuit breaker.

It is apparent that candidates do not fully understand the purpose, procedures and confirmation processes involved with prospective fault current testing and are not familiar with the I_{cn} and I_{cs} ratings of circuit breakers. Centres may wish to review the coverage of these topics in their course delivery.

3 National pass rate

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

Exam series	Pass rate (%)	Fail rate (%)
October 2015	54	46

Past examination series

Exam series	Pass rate (%)	Fail rate (%)
August 15	57	43
June 15	62	38
April 15	57	43

Forthcoming Exam Dates are:

Tues 09 February 2016 18:30 – 20:30
Tues 19 April 2016 18:30 – 20:30

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