

## Unit 501: Periodic inspection and testing of electrical installations

### Sample scheme of work

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Please revise the following text to suit your requirements.

This sample scheme of work covers both classroom and workshop based learning for 2391-51 Unit 501. It is based on 1.5 hours per session for 28 sessions. It is an example only of a possible scheme of work and is based on theory and practical within an FE centre, but can be amended to suit all learning facilities with the necessary adjustments to meet individual learners' needs.

Unit 501 is designed as a stand-alone unit and should be used in conjunction with the standards set for the qualification, to ensure full coverage of the learning requirements.

**You can use the sample scheme of work as it is, adjust it or extract content to create a scheme of work to suit your delivery needs. It can also be adjusted by adding theory and practical workshops to support learners who have/need additional learning time.**

Reference is made within the scheme of work to **worksheets, and PowerPoint presentations** (in **black bold**) that are available on SmartScreen.co.uk for tutors to use with learners. Any other resources listed are not provided on SmartScreen but provide

guidance for the tutor as to others they may produce. Delivery timings are given, however, these can be amended to suit the group. The content of presentations, discussions, explanations etc are left to the professionalism of the course tutor.

Centres should also incorporate the following themes, where appropriate, as strands running through each of the sections within the qualification. Although they are not specifically referred to in the section content section, City & Guilds regards these as essential in the teaching of the qualification:

- health and safety considerations, in particular the need to impress upon learners the fact that they must preserve the health and safety of others as well as themselves
- Functional Skills (mathematics, English and ICT)
- extension tasks and differentiation, inclusion, entitlement and equality issues
- spiritual, moral, social and cultural issues
- environmental education and related European issues
- British Values
- use of information learning technology (ILT).

## Unit 501: Periodic inspection and testing of electrical installations

### Sample scheme of work

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Course/qualification: \_\_\_\_\_ Tutor's name: \_\_\_\_\_

Number of sessions: 28 Delivery hours: approximately 42 Venue: \_\_\_\_\_ Group: \_\_\_\_\_

#### Aims

- This unit is designed to enable learners to understand principles, practices and legislation for periodic inspection, testing and condition reporting of electrical installations in accordance with statutory and non-statutory regulations and requirements. Its content is the knowledge needed by a learner to underpin the application of skills of the periodic inspection, testing and condition reporting of electrical installations.

#### To enable learners to:

- Understand the requirements for periodic inspection and testing
- Understand safety management procedures when undertaking periodic inspection and testing of electrical installations
- Understand the requirements for the periodic inspection of an electrical installation
- Understand the requirements for testing electrical installations during periodic inspection and test
- Perform periodic inspection and testing of electrical installations.

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
1	<p>1. Understand the requirements for periodic inspection and testing</p> <p>1.1 State why periodic inspection and testing may be required.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the situations that require periodic inspection, to include:</p> <ul style="list-style-type: none"> <li>• legislation requirements</li> <li>• insurance or licencing authority requirements</li> <li>• change of occupancy</li> <li>• change of use of installation or premises</li> <li>• additions or alterations</li> <li>• damage due to fire or flood or similar</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 1</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 1</b>
1	<p>1. Understand the requirements for periodic inspection and testing</p> <p>1.2 State the purpose of periodic inspection</p>	<p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>• Tutor led discussion on what BS 7671 regulation 651.2 means</li> <li>• Tutor led discussion on Guidance Note 3 section 3.1</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 1</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
1	<p>1. Understand the requirements for periodic inspection and testing</p> <p>1.3 Identify the statutory and non-statutory documents that affect the periodic inspection process.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion to identify the key requirements of statutory documents that affect periodic inspection including:</p> <ul style="list-style-type: none"> <li>• Health and Safety at Work etc act 1974</li> <li>• Electricity at Work Regulations 1989</li> <li>• Electricity Safety, Quality and Continuity Regulations 2002</li> </ul> <p>Tutor led discussion on the non-statutory documents that can help provide guidance on the process of periodic inspection including:</p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• On-Site Guide</li> <li>• HSE GS38</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 1</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 2</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
2	1. Understand the requirements for periodic inspection and testing  1.4 Identify information to be provided in order for an inspector to agree with the client:  1.4 a Extent and limitations 1.4 b Appropriate sampling	<p><b>Activities:</b></p> <p>Tutor led discussion on the need for the inspector to be provided with the information relating to the installation, including:</p> <ul style="list-style-type: none"> <li>• the initial verification paperwork</li> <li>• paperwork relating to previous periodic inspections</li> <li>• details of changes and/or alterations if any</li> </ul> <p>Tutor to outline the need for the pre-testing process as outlined in the IET Guidance Note 3 sections 3.8.2 and 3.8.3 including</p> <ul style="list-style-type: none"> <li>• meeting with the client to identify extent and limitations</li> <li>• scope of what needs to be isolated.</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 2</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 3</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
2	<p>1. Understand the requirements for periodic inspection and testing</p> <p>1.5 Describe the purpose of the periodic inspection documentation and the requirements for recording and retention</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the need for documenting electrical work and the purpose and use of each document in accordance with BS 7671 chapter 65, including:</p> <ul style="list-style-type: none"> <li>• the Electrical installation condition report</li> <li>• the Condition report inspection schedule</li> <li>• the Schedule of test results</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 2</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Electrical installation condition report</li> <li>• Condition report inspection schedule</li> <li>• Schedule of test results</li> </ul>	<b>Worksheet 4</b>
2	<p>1. Understand the requirements for periodic inspection and testing and testing of electrical installations</p> <p>1.6 Define the responsibilities of the inspector in relation to the report</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the responsibilities of the inspector with regards to:</p> <ul style="list-style-type: none"> <li>• the need to identify the extents and limitations of the inspection</li> <li>• the overall condition of the installation with regards to electrical safety</li> <li>• any areas of departure from BS 7671 and their associated risk</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 2</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Electrical installation condition report</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
3	<p>2. Understand safety management procedures when undertaking periodic inspection and testing of electrical installations</p> <p>2.1 Identify health and safety requirements which apply when carrying out periodic inspection and testing</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the key health and safety requirements that need to be considered and applied including:</p> <ul style="list-style-type: none"> <li>• working in accordance with risk assessments / permits to work / method statements</li> <li>• safe use of tools and equipment</li> <li>• safe and correct use of measuring instruments</li> <li>• provision and use of PPE</li> <li>• reporting of unsafe situations and the appropriate steps to be taken</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 3</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
3	<p>2. Understand safety management procedures when undertaking periodic inspection and testing of electrical installations</p> <p>2.2 Outline the relevant requirements of the Electricity at Work Regulations for safe inspection and testing of electrical installations</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the requirements of the regulations with regards to those carrying out the work and those using the premises while the work is being undertaken including:</p> <ul style="list-style-type: none"> <li>• Regulation 4 all installations to be safe.</li> <li>• Regulation 12 means of isolation.</li> <li>• Regulation 13 prevention of accidental re-energisation.</li> <li>• Regulation 14 working on or near live conductors.</li> <li>• Regulation 15 access and lighting.</li> <li>• Regulation 16 competence.</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 3</b></li> </ul>	<b>Worksheet 5</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
3	<p>2. Understand safety management procedures when undertaking periodic inspection and testing of electrical installations</p> <p>2.3 Describe the procedure for completing safe isolation in accordance with HSE guidance</p>	<p><b>Activities:</b></p> <p>Tutor to demonstrate how to perform safe isolation on electrical systems including:</p> <ul style="list-style-type: none"> <li>• single phase circuits</li> <li>• single phase distribution boards</li> <li>• three phase circuits</li> <li>• three phase distribution boards</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• single phase demonstration rig</li> <li>• three phase demonstration rig</li> </ul> <p>Candidates may benefit from obtaining copies of the HSE guidance document HSE GS85 from:  <a href="http://www.hse.gov.uk/pubns/books/hsg85.htm">http://www.hse.gov.uk/pubns/books/hsg85.htm</a></p> <p>Candidates may also benefit from access to the Electrical Safety First best practice guide for safe isolation (Best Practice Guide 2) which can be accessed from:  <a href="https://www.electricalsafetyfirst.org.uk/electrical-professionals/best-practice-guides/">https://www.electricalsafetyfirst.org.uk/electrical-professionals/best-practice-guides/</a></p>	<b>Worksheet 6</b>
3	<p>2. Understand safety management procedures when undertaking periodic inspection and testing of electrical installations</p> <p>2.4 Explain why safe isolation is carried out for the protection of the inspector and other persons</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on reasons for performing safe isolation including:</p> <ul style="list-style-type: none"> <li>• compliance with EAWr 89 regulation 14</li> <li>• potential risks involved in initial verification.</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 3</b></li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
3	<p>2. Understand safety management procedures when undertaking periodic inspection and testing of electrical installations</p> <p>2.5 Identify the implications of not carrying out safe isolation</p>	<p><b>Activities:</b></p> <p>Tutor led discussion to identify the implications of not carrying out safe isolation and the implications of performing safe isolation, including how it affects:</p> <ul style="list-style-type: none"> <li>• the inspector’s safety</li> <li>• the safety of other personnel present</li> <li>• customers and clients</li> <li>• members of the public</li> <li>• other building systems</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 3</b></li> </ul>	<b>Worksheet 7</b>
3	<p>5. Perform periodic inspection and testing of electrical installations.</p> <p>5.1 Establish a safe system of work appropriate to the installation.</p>	<p><b>Activities:</b></p> <p>Candidates to identify a safe system of work for both a single phase installation and a commercial three phase installation. Candidates are to observe their own working practices and to identify any issues that can lead to danger and provide guidance and advice to anyone present. Consideration should be given for the following:</p> <ul style="list-style-type: none"> <li>• the inspector’s safety</li> <li>• the safety of other personnel present</li> <li>• customers and clients</li> <li>• members of the public</li> <li>• other building systems</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
3	<p>5. Perform periodic inspection and testing of electrical installations.</p> <p>5.2 Carry out the relevant safe isolation procedure in accordance with HSE guidance</p>	<p><b>Activities:</b></p> <p>Candidates are to perform safe isolation procedures for a variety of installation requirements including:</p> <ul style="list-style-type: none"> <li>• a single phase circuit</li> <li>• a three phase circuit</li> <li>• a single phase DB</li> <li>• a three phase DB</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• simulation test rig</li> <li>• voltage indicator and proving unit</li> <li>• lock off kit c/w signs and notices</li> </ul>	<b>Observation and demonstration</b>
4	<p>3. Understand the requirements for the periodic inspection of an electrical installation.</p> <p>3.1 Identify the items to be inspected during periodic inspection in accordance with the schedule of inspections.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the entries to be inspected on a typical domestic installation consisting of a single phase TN-C-S supply with a location containing a bath or shower present. Tutor to use Guidance Note 3 section 3.5 to outline some of the aspects that would be inspected as part of a Periodic Inspection.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 4</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
4	<p>3. Understand the requirements for the periodic inspection of an electrical installation.</p> <p>3.2 Explain how the items on the Schedule of Inspections would be classified.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion for the various different comments that can be used when filling out a Condition report inspection schedule:</p> <ul style="list-style-type: none"> <li>• tick for compliance with BS 7671</li> <li>• N/A for not applicable</li> <li>• C codes for non-compliance depending on severity</li> <li>• FI for identifying further investigation required</li> <li>• LIM for areas that due to agreed limitations, are not possible to check</li> <li>• N/V for items not inspected or tested due to sample size</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 4</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• blank Schedule of inspections</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
4	<p>3. Understand the requirements for the periodic inspection of an electrical installation.</p> <p>3.3 Describe the appropriate human senses required for a particular inspection</p>	<p><b>Activities:</b></p> <p>Tutor led discussion to outline the human senses used during periodic inspection:</p> <ul style="list-style-type: none"> <li>• touch - to check for security of fixings, tightness of terminations</li> <li>• sight - to check for correctness of equipment and terminations, presence of components and labels etc, absence of damage</li> <li>• smell - to check for overheating and/or arcing within components</li> <li>• hearing – to check for items such as worn bearings</li> </ul> <p>Tutors are to stress that the purpose of the periodic inspection is to look for signs of wear and tear that may present a danger, as well as compliance with BS 7671.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 4</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 8</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
4	<p>3. Understand the requirements for the periodic inspection of an electrical installation.</p> <p>3.4 Describe how to classify an item that is found to be unsatisfactory during the inspection process.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion on the classification codes that can be used when filling in the condition report inspection schedule:</p> <ul style="list-style-type: none"> <li>• C1 for immediately dangerous</li> <li>• C2 for potentially dangerous</li> <li>• C3 for improvement recommended</li> <li>• FI for items that need further investigation</li> </ul> <p><i>NOTE: Mention that LO 4.9 (PowerPoint 22) covers this area in much more detail</i></p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 4</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• blank Condition report inspection schedule</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
4	<p>3. Understand the requirements for the periodic inspection of an electrical installation.</p> <p>3.5 Describe how the IP classification system is used for electrical equipment.</p>	<p><b>Activities:</b></p> <p>Tutors to outline the International Protection code system in accordance with BS EN 60529 including:</p> <ul style="list-style-type: none"> <li>• the meaning of the first character and the range</li> <li>• the meaning of the second character and the range</li> <li>• the meaning of the third character and the range</li> <li>• the use of the letter X in any position</li> </ul> <p>Candidates to identify standard IP codes used within BS 7671 and the meaning of the codes.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 4</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 9</b></p>
5	<p>5. Perform periodic inspection and testing of electrical installations.</p> <p>5.3 Carry out a periodic inspection in accordance with BS 7671 and IET Guidance Note 3.</p>	<p><b>Activities:</b></p> <p>Candidates to perform an initial inspection on a single phase installation consisting of multiple circuits.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• simulation rig of a single phase commercial installation</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• blank Condition report inspection schedule</li> </ul>	<p><b>Observation and demonstration</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
5	<p>5. Perform periodic inspection and testing of electrical installations.</p> <p>5.4 Complete a schedule of inspections in accordance with BS 7671 and IET Guidance Note 3.</p>	<p><b>Activities:</b></p> <p>Candidates to record their findings of a periodic inspection on a single phase installation consisting of multiple circuits.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• simulation rig of a single phase commercial installation</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• blank Condition report inspection schedule</li> </ul>	<b>Observation and demonstration</b>
6	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.1 State the reasons for instruments to be maintained and comply with standards such as BS 7671 and GS38.</p>	<p><b>Activities:</b></p> <p>Tutors led discussion on the need for safe and accurate instruments including:</p> <ul style="list-style-type: none"> <li>• the need for all test instruments to comply with BS EN 61010 / BS EN 61557</li> <li>• the need for instrument readings to be reliable and accurate</li> <li>• basic instrument accuracy level to be observed</li> <li>• the need for test leads to comply with GS38</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 5</b></li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
6	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.2 Describe the characteristics of instruments and leads used for each test.</p>	<p><b>Activities:</b></p> <p>Using Guidance Note 3 chapter 4 and section 2.6.4 candidates are to identify the following:</p> <ul style="list-style-type: none"> <li>• the name of the test</li> <li>• the name of the instrument</li> <li>• the section of BS EN 61557 it is to comply with</li> <li>• the voltage range (where specified)</li> <li>• the measurement range (where specified)</li> <li>• what requirements of GS38 are applicable</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 5</b></li> <li>• Guidance Note 3</li> <li>• HSE GS38</li> </ul>	<b>Worksheet 10</b>
6	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.3 Explain why there is not a recommended test sequence for periodic inspection and test.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion to outline the requirements of BS 7671 regulation 651.1 which identifies that testing may not be required. Though there is no recommended sequence, tutors are to encourage students to always consider the following when testing:</p> <ul style="list-style-type: none"> <li>• the need to keep the inspector safe at all times</li> <li>• the need to keep others safe at all times</li> <li>• the need to satisfy sampling requirements</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 5</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
6	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.4 Explain why certain tests may not be necessary at periodic inspection and test.</p>	<p><b>Activities:</b></p> <p>Tutor led discussion to outline how the following can influence the amount of testing to be undertaken:</p> <ul style="list-style-type: none"> <li>• sampling</li> <li>• unsafe circuits</li> <li>• choice of tests performed</li> <li>• the quality of maintenance performed and records available</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 5</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
7	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Continuity of protective conductors</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the test and the conductors involved including:</p> <ul style="list-style-type: none"> <li>• the circuit protective conductors</li> <li>• main and supplementary bonding conductors</li> <li>• earthing conductor when available</li> <li>• line conductors</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 6</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 11</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
7	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions.</p> <ul style="list-style-type: none"> <li>Continuity of ring final circuits</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with guidance note 3 including:</p> <ul style="list-style-type: none"> <li>test method 1</li> <li>test method 2</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 6</b></li> <li>demonstration rig</li> <li>low resistance ohmmeter c/w leads</li> <li>temporary link lead set</li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 12</b>
7	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>parallel paths</li> <li>conductor temperature</li> <li>material, length and CSA of conductor</li> <li>loose/poor connections</li> <li>'nulling' of test leads</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 6</b></li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
8	5. Perform periodic inspection and testing of electrical installations.  5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3 <ul style="list-style-type: none"> <li>• Continuity of protective conductors</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform test in accordance with agreed procedure on a mix of circuits including:</p> <ul style="list-style-type: none"> <li>• final lighting circuit</li> <li>• radial final circuit</li> <li>• main protective bonding</li> <li>• supplementary bonding conductors</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• simulation rig</li> <li>• low resistance ohmmeter c/w leads</li> <li>• Guidance Note 3</li> </ul>	<p><b>Observation and demonstration</b></p>
8	4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations  4.8 Interpret the result of each test <ul style="list-style-type: none"> <li>• Continuity of protective conductors</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the use of Guidance Note 3 Table B1 to identify the expected values of resistance based on known factors including:</p> <ul style="list-style-type: none"> <li>• the conductor material, length and CSA</li> <li>• the conductor known temperature range</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 7</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 13</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
8	5. Perform periodic inspection and testing of electrical installations  5.6 Verify test results for compliance or classification	<b>Activities:</b> Candidates to use the measured values of resistance to identify by calculation if the results are acceptable based on known factors including: <ul style="list-style-type: none"> <li>• the conductor CSA</li> <li>• the conductor length</li> <li>• acceptable variances</li> </ul> <b>Resources:</b> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
8	5. Perform periodic inspection and testing of electrical installations  5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3	<b>Activities:</b> Candidates to record results in the relevant sections of the Schedule of test results and Electrical installation condition report.  <b>Resources:</b> <ul style="list-style-type: none"> <li>• Guidance Note 3</li> <li>• Schedule of test results</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
9	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>Continuity of ring final circuit conductors</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the test and the conductors involved including:</p> <ul style="list-style-type: none"> <li>the line conductor</li> <li>the neutral conductor</li> <li>the circuit protective conductor</li> </ul> <p>Tutor to explain the purpose of performing each of the different stages during periodic inspection.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 8</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
9	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>Continuity of ring final circuit conductors</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with guidance note 3 including:</p> <ul style="list-style-type: none"> <li>stage 1</li> <li>stage 2</li> <li>stage 3</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 8</b></li> <li>demonstration rig</li> <li>low resistance ohmmeter c/w leads</li> <li>temporary link leads and socket adaptor</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 14</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
9	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the results of each test</p> <ul style="list-style-type: none"> <li>• Continuity of ring final circuit conductors</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>• parallel paths</li> <li>• conductor temperature</li> <li>• material, length and CSA of conductor</li> <li>• loose/poor connections</li> <li>• spurs</li> <li>• 'nulling' of test leads</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 8</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>
10	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>• Continuity of ring final circuit conductors</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform test in accordance with agreed procedure on a ring final circuit</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• Simulation rig</li> <li>• low resistance ohmmeter c/w leads</li> <li>• temporary link leads and socket adaptor</li> <li>• Guidance Note 3</li> </ul>	<p><b>Observation and demonstration</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
10	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the result of each test</p> <ul style="list-style-type: none"> <li>Continuity of ring final circuit conductors</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the use of tables to identify the expected values of resistance based on known factors including:</p> <ul style="list-style-type: none"> <li>the conductor material, length and CSA</li> <li>the conductor known temperature range</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 9</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 15</b>
10	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to use the measured values of resistance to identify by calculation if the results are acceptable, based on known factors including:</p> <ul style="list-style-type: none"> <li>the conductor CSA</li> <li>the conductor length</li> <li>acceptable variances</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
10	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to record results in the relevant section of the schedule of test results.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> <li>Schedule of test results</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
11	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Insulation resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the test and the special precautions involved including:</p> <ul style="list-style-type: none"> <li>• protecting equipment</li> <li>• protecting people</li> </ul> <p>Tutor to explain why installations are tested with as many final circuits connected as possible and distribution circuits tested separately.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 10</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
11	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>Insulation resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>testing installations with all final circuits connected</li> <li>testing distribution circuits</li> <li>testing installations with electrically separated circuits</li> <li>testing installations with integrated SPDs</li> <li>circuits with time clocks or DOL starters involved</li> <li>single and three phase circuits</li> <li>installations with RCDs and/or RCBOs installed</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 10</b></li> <li>demonstration rig</li> <li>insulation resistance tester c/w leads and probes</li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 16</b>
11	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>Insulation resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>number of circuits connected</li> <li>neon and pilot lights left in circuit</li> <li>motor and transformer windings left in circuit</li> <li>long cable runs</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 10</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
12	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>Insulation resistance</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform test in accordance with agreed procedure on circuits including:</p> <ul style="list-style-type: none"> <li>lighting final circuits with dimmers and 2 way switching</li> <li>final circuits with sensitive equipment and pilot lights</li> <li>a DOL motor starter circuit</li> <li>three phase circuits</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>simulated installation</li> <li>insulation resistance tester c/w leads and probes</li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
12	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the results of each test</p> <ul style="list-style-type: none"> <li>Insulation resistance</li> </ul>	<p><b>Activities</b></p> <p>Candidates to use table 64 of BS 7671 to identify the minimum acceptable values of insulation resistance</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 11</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 17</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
12	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to confirm the measured values of insulation resistance are in accordance with table 64 of BS 7671</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Schedule of test results</li> </ul>	<b>Observation and demonstration</b>
12	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to record results in the relevant section of the schedule of test results.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Schedule of test results</li> </ul>	<b>Observation and demonstration</b>
13	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Polarity</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the test including:</p> <ul style="list-style-type: none"> <li>• the dead tests on final circuits</li> <li>• the live test on the incoming supply</li> </ul> <p>Tutor to explain the purpose of performing the tests at different times in the initial verification sequence.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 12</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
13	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>• Polarity</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>• lighting circuits</li> <li>• radial final circuits</li> <li>• ring final circuits</li> <li>• checking supply polarity to a DB</li> </ul> <p><i>NOTE: Worksheet 18a covers only the tests stated in table 3.4 and section 3.10.3. Whereas worksheet 18 covers the complete polarity test.</i></p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 12</b></li> <li>• demonstration rig</li> <li>• low resistance ohmmeter c/w leads and probes</li> <li>• a set of shorting links</li> <li>• approved voltage indicator</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 18/18a</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
13	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>• Polarity</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>• electronic dimmer switches</li> <li>• Edison screw lamp holders</li> <li>• incorrectly wired distribution circuits</li> <li>• incorrect incoming supply</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 12</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
14	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>• Polarity</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform dead polarity tests in accordance with agreed procedure on final circuits including:</p> <ul style="list-style-type: none"> <li>• lighting circuits with 2 way switching</li> <li>• ring final circuits</li> </ul> <p>Candidates to perform live polarity tests in accordance with agreed procedure, on the incoming supply of a single phase DB.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• simulation rig</li> <li>• low resistance ohmmeter c/w leads and probes</li> <li>• a set of shorting links</li> <li>• approved voltage indicator</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
14	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the results of each test</p> <ul style="list-style-type: none"> <li>• Polarity</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the expected results to be obtained. Tutor also to outline how other tests can be used to confirm polarity including:</p> <ul style="list-style-type: none"> <li>• continuity of protective conductors, and insulation resistance</li> <li>• phase sequence test</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
14	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to confirm results obtained were as expected.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
14	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to record results in the relevant sections of the Schedule of test results and Electrical installation certificate</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Electrical installation certificate</li> <li>• Schedule of test results</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
15	4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations  4.5 Explain the purpose of each test <ul style="list-style-type: none"> <li>• Earth electrode resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the test and when this test is required to be performed including:</p> <ul style="list-style-type: none"> <li>• on a TT system</li> <li>• when the system has a generator installed</li> <li>• when the installation includes campsites</li> <li>• when the installation is a TN-C-S and there is an external vehicle charging point</li> <li>• when the installation is taken to an outhouse and similar</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 13</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
15	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>• Earth electrode resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>• where no supply is available</li> <li>• where a supply is available</li> </ul> <p>Tutor to include the use of three lead and four lead electrode resistance testers and the need to ensure safe isolation is kept in place at all times during the test.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 13</b></li> <li>• BS 7671</li> <li>• demonstration rig</li> <li>• earth electrode resistance tester c/w leads and probes</li> <li>• earth fault loop impedance tester c/w leads and probes</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 19</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
15	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>• Earth electrode resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>• parallel paths</li> <li>• weather</li> <li>• depth of burial</li> <li>• type of electrode</li> <li>• soil composition and moisture</li> <li>• ground temperature</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 13</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>
16	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>• Earth electrode resistance</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform a test in accordance with agreed procedure on a single phase supply, either a TT arrangement or a TN.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• simulation rig</li> <li>• earth fault loop impedance tester c/w GS38 leads and probes</li> </ul>	<p><b>Observation and demonstration</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
16	4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations  4.8 Interpret the result of each test <ul style="list-style-type: none"> <li>• Earth electrode resistance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the use of Table 41.5 of BS7671 to identify the maximum values of resistance based on the rating of the RCD fitted.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 14</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>
16	5. Perform periodic inspection and testing of electrical installations  5.6 Verify test results for compliance or classification	<p><b>Activities:</b></p> <p>Candidates to use the measured values of resistance to identify if their results are acceptable.</p> <p>Tutor to provide candidates with a scenario where test results have been measured using an Earth electrode resistance tester and candidates are to establish if the three readings result in an acceptable result, taking into account the average and standard deviation of the three readings.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 20</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
16	5. Perform periodic inspection and testing of electrical installations  5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3	<p><b>Activities:</b> Candidates to record results in the relevant section of the Electrical Installation Certificate</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Electrical installation certificate</li> </ul>	<p><b>Group Q&amp;A</b></p>
17	4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations  4.5 Explain the purpose of each test <ul style="list-style-type: none"> <li>• Earth fault loop impedance</li> </ul>	<p><b>Activities:</b> Tutor to outline the purpose of the tests involved including:</p> <ul style="list-style-type: none"> <li>• measurement of <math>Z_e</math></li> <li>• measurement of <math>Z_s@DB</math></li> <li>• measurement of <math>Z_s</math></li> </ul> <p>Tutor to explain that each test may have to be performed at different stages and that the <math>Z_e</math> test can be used in place of performing an earth electrode resistance test on a TT supply earth electrode.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 15</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
17	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>• Earth fault loop impedance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>• measurement of <math>Z_e</math></li> <li>• measurement of <math>Z_s@DB</math></li> <li>• measurement or calculation of <math>Z_s</math> for final circuits</li> </ul> <p>Tutor to use Guidance Note 3 to explain when candidates should use <math>Z_e</math> and when to use <math>Z_s@DB</math> when calculating <math>Z_s</math> for final circuits.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 15</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• demonstration rig</li> <li>• earth fault loop impedance tester c/w GS38 leads and probes</li> </ul>	<b>Worksheet 21</b>
17	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>• Earth fault loop impedance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>• parallel paths</li> <li>• conductor temperature</li> <li>• use of measured values as opposed to calculated</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 15</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
18	5. Perform periodic inspection and testing of electrical installations  5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3 <ul style="list-style-type: none"> <li>• Earth fault loop impedance</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform tests in accordance with agreed procedure including:</p> <ul style="list-style-type: none"> <li>• measurement of <math>Z_e</math></li> <li>• measurement of <math>Z_s@DB</math></li> <li>• measurement or calculation of <math>Z_s</math> for final circuits</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>BS 7671</b></li> <li>• Guidance Note 3</li> <li>• simulation rig</li> <li>• earth fault loop impedance tester c/w GS38 leads and probes</li> </ul>	<p><b>Observation and demonstration</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
18	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the result of each test</p> <ul style="list-style-type: none"> <li>• Earth fault loop impedance</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the use of Tables 41.2, 41.3 and 41.4 and appendix 3 of BS 7671 to identify the maximum permitted values of impedance based on known factors including:</p> <ul style="list-style-type: none"> <li>• type of circuit</li> <li>• type of protective device</li> <li>• conductor temperature during test</li> </ul> <p>Tutor to explain difference in values contained in the On-Site Guide when compared to values obtained using BS 7671, and the difference between previous versions of BS 7671 and the 18<sup>th</sup> edition values.</p> <p>Tutor to also outline what recommendations need to be made in accordance with regulations 419.3 and 411.4.204 when maximum values cannot be complied with.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 16</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 22</b>
18	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to check measured values against maximum permitted values to confirm compliance.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>BS 7671</b></li> <li>• Guidance Note 3</li> <li>• Schedule of test results</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
18	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to record results in the relevant sections of the Schedule of test results and Electrical installation certificate.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>BS 7671</b></li> <li>• Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
19	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Prospective fault current</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the tests involved including:</p> <ul style="list-style-type: none"> <li>• prospective short circuit current</li> <li>• prospective earth fault current</li> <li>• confirmation that protective devices can clear the fault</li> </ul> <p>Tutor to explain the difference in protective device breaking capacities including the difference between</p> <ul style="list-style-type: none"> <li>• <math>I_{cn}</math></li> <li>• <math>I_{cs}</math></li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 17</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
19	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>• Prospective fault current</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>• single phase using a single phase instrument</li> <li>• three phase using a single phase instrument</li> <li>• three phase using a three phase instrument</li> <li>• at main DB</li> <li>• at sub-boards</li> </ul> <p>Tutor to explain how backup protection can be utilised in accordance with regulation 434.5.1 of BS 7671.</p> <p>Tutor also to identify that on a three phase supply, only the prospective short circuit current need be established.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 17</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• demonstration rig</li> <li>• earth fault loop impedance tester c/w GS38 leads and probes</li> </ul>	<b>Worksheet 23</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
19	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>Prospective fault current</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>single phase vs three phase</li> <li>single phase earthing arrangement</li> <li>using a no-trip test</li> <li>measurement on a supply with fluctuating demand</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 17</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
20	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>Prospective fault current</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform tests in accordance with agreed procedure including:</p> <ul style="list-style-type: none"> <li>on a single phase supply</li> <li>on a three phase supply</li> <li>on a single phase sub board</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>BS 7671</b></li> <li>Guidance Note 3</li> <li>simulation rig</li> <li>earth fault loop impedance tester c/w GS38 leads and probes</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
20	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the result of each test</p> <ul style="list-style-type: none"> <li>Prospective fault current</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the use of table 2.8 of Guidance Note 3 to identify if the device is able to break the prospective fault current and where to look on the device for information.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>PowerPoint presentation 17</li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 24</b>
20	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to check measured values against maximum permitted values to confirm compliance.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
20	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to record results in the relevant section of the Schedule of test results.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> <li>Schedule of test results</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
21	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>Phase sequence</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the tests involved, ensuring correct terminology is used.</p> <p>Tutor also to outline the consequences of incorrect phase sequence.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 18</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
21	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>Phase sequence</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>use of different equipment</li> <li>locations where the test is to be performed within an installation</li> <li>precautions to be taken with regards to rotating machines</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 18</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> <li>demonstration rig</li> <li>phase rotation testers (disk type and indicator type)</li> </ul>	<b>Worksheet 25</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
21	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>Phase sequence</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>incorrect supply polarity</li> <li>incorrect phase sequence</li> <li>loss of one phase</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 18</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
22	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>Phase sequence</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform tests in accordance with agreed procedure including:</p> <ul style="list-style-type: none"> <li>at the origin</li> <li>on a three phase board</li> <li>on a three phase isolator or DOL starter</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> <li>simulation rig</li> <li>phase rotation tester</li> </ul>	<b>Observations and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
22	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the result of each test</p> <ul style="list-style-type: none"> <li>Phase sequence</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline common causes for incorrect phase sequence including:</p> <ul style="list-style-type: none"> <li>cross polarity on line conductors</li> <li>incoming supply not correct</li> </ul> <p>Tutor to identify what correct phase sequence should be and explain the impact on a motor if incorrect phase sequence is present.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
22	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to check sequence against required sequence and verify that it is consistent throughout.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
22	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to record results in the relevant section of the Schedule of test results.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• Electrical installation condition report</li> <li>• Schedule of test results</li> </ul>	<b>Observation and demonstration</b>
23	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Residual current device</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline the purpose of the tests involved including:</p> <ul style="list-style-type: none"> <li>• testing of RCDs for general purpose</li> <li>• testing of RCDs for additional protection</li> </ul> <p>Tutor to explain that each test may have to be performed at different locations including:</p> <ul style="list-style-type: none"> <li>• at socket outlets</li> <li>• at distribution boards</li> <li>• on lighting final circuits</li> </ul> <p>Tutor to explain that the test only needs to be performed once on each RCD.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 19</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
23	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>RCD</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>no trip values 0 and 180 degrees</li> <li>rated trip values 0 and 180 degrees</li> <li>30mA RCDs at 5I<math>\Delta</math>n 0 and 180 degrees</li> </ul> <p>Tutor to explain why we perform tests at 0 and 180 degrees.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>PowerPoint presentation 19</li> <li>BS 7671</li> <li>Guidance Note 3</li> <li>demonstration rig</li> <li>RCD tester c/w GS38 leads and probes</li> </ul>	Group Q&A
23	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>RCD</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>high Zs value of circuit</li> <li>incorrect test current applied</li> <li>worn RCD device</li> <li>stuck RCD device</li> <li>broken Neutral conductor</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>PowerPoint presentation 19</li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	Group Q&A

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
24	5. Perform periodic inspection and testing of electrical installations  5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3 <ul style="list-style-type: none"> <li>• RCD</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform tests in accordance with agreed procedure including:</p> <ul style="list-style-type: none"> <li>• ½ times the device rating</li> <li>• 1 times the device rating</li> <li>• additional protection, 5 times the device rating</li> <li>• manual test button</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• simulation rig</li> <li>• RCD tester c/w GS38 leads and probes</li> </ul>	<p><b>Observation and demonstration</b></p>
24	4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations  4.8 Interpret the result of each test <ul style="list-style-type: none"> <li>• RCD</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain the use of table 3A in appendix 3 of BS 7671 and regulation 643.8 of BS 7671 to identify the maximum permitted operating times for the RCD including:</p> <ul style="list-style-type: none"> <li>• RCDs with a rating 30mA or less</li> <li>• RCDs with a rating above 30mA</li> </ul> <p>Tutor to explain the difference in purpose of RCDs</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 19</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Worksheet 26</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
24	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b> Candidates to check measured values against maximum permitted values to confirm compliance.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
24	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b> Candidates to record results in the relevant section of the Schedule of test results.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>BS 7671</b></li> <li>• Guidance Note 3</li> <li>• Schedule of test results</li> </ul>	<b>Group Q&amp;A</b>
25	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Functional testing</li> </ul>	<p><b>Activities:</b> Tutor to outline why we perform functional tests including:</p> <ul style="list-style-type: none"> <li>• to confirm all equipment operates correctly</li> <li>• to understand how the installation is to operate</li> <li>• to understand where potential problems may exist</li> <li>• to ensure all adjustable settings are set and recorded</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 20</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
25	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>• Functional tests</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>• operation of ventilation fans linked to lighting circuits</li> <li>• operation of water and space heaters</li> <li>• setting of overload trips on circuit breakers</li> <li>• setting of sensors and PIRs etc</li> </ul> <p>Tutor to outline that settings of devices need to be recorded.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 20</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• demonstration rig</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
25	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>• Functional test</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>• incorrectly set overload devices</li> <li>• incompatible dimmer switches</li> <li>• incorrectly set timers or sensors</li> <li>• broken heating elements</li> <li>• defective equipment</li> <li>• open circuit on neutral conductor(s)</li> <li>• borrowed neutrals</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>PowerPoint presentation 20</b></li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
26	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>• Functional tests</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform tests in accordance with agreed procedure including:</p> <ul style="list-style-type: none"> <li>• switching lights on and off</li> <li>• activation of dimmers</li> <li>• operation of heating elements</li> <li>• operation of fan timers</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• <b>BS 7671</b></li> <li>• Guidance Note 3</li> <li>• simulation rig</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
26	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the result of each test</p> <ul style="list-style-type: none"> <li>• Functional tests</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what course of action has to be taken if functional tests fail, including:</p> <ul style="list-style-type: none"> <li>• classification of failure</li> <li>• identification of fault to the client</li> <li>• immediate action required if a C1 code is awarded</li> </ul> <p>Tutor to explain how the process of fault diagnosis is not part of a periodic inspection and needs to be treated separately.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 20</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 27</b>
26	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to check that operation of circuit meets customer expectations, to confirm compliance.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• BS 7671</li> <li>• Guidance Note 3</li> <li>• customer specification</li> </ul>	<b>Observation and demonstration</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
27	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.5 Explain the purpose of each test</p> <ul style="list-style-type: none"> <li>• Voltage Drop</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to outline why we sometimes establish voltage drop when carrying out periodic inspections, including:</p> <ul style="list-style-type: none"> <li>• to confirm the current value of voltage drop</li> <li>• to identify potential performance issues with the existing installation</li> <li>• to identify if the installation can support a change</li> </ul> <p>Tutor to outline the effects of a voltage drop in excess of the permitted values.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 21</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<p><b>Group Q&amp;A</b></p>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
27	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.6 Describe how each test is carried out and how it may be adapted to suit the installation conditions</p> <ul style="list-style-type: none"> <li>• Voltage Drop</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to identify the correct procedure to be followed in accordance with Guidance Note 3 including:</p> <ul style="list-style-type: none"> <li>• evaluation using Ohm’s law after measuring the resistance of line and neutral</li> <li>• evaluation using Ohm’s law after measuring line and CPC resistance</li> </ul> <p>Tutor to explain that pure calculation methods are typically only used during the design process.</p> <p>Tutor to explain the change in process if the circuit in question is a ring final.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 21</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Worksheet 28</b>
27	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.7 Identify factors that affect the result of each test</p> <ul style="list-style-type: none"> <li>• Voltage Drop</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain what factors could affect the results including:</p> <ul style="list-style-type: none"> <li>• conductive material</li> <li>• conductor temperature</li> <li>• accuracy of measured resistance</li> <li>• amount of current that is expected to flow</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>• PowerPoint presentation 21</li> <li>• BS 7671</li> <li>• Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
28	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.5 Carry out tests in accordance with BS 7671 and IET Guidance Note 3</p> <ul style="list-style-type: none"> <li>Voltage drop</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to perform tests in accordance with agreed procedure including:</p> <ul style="list-style-type: none"> <li>using measured values of line and neutral resistance</li> <li>using measured values of line and CPC resistance</li> </ul> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
28	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.8 Interpret the result of each test</p> <ul style="list-style-type: none"> <li>Voltage drop</li> </ul>	<p><b>Activities:</b></p> <p>Tutor to explain with the use of Appendix 4 of BS 7671, the maximum permitted value of voltage drop that is allowed for final circuits.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 21</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>
28	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.9 Explain how test results are verified for compliance or classification.</p>	<p><b>Activities:</b></p> <p>Tutor to explain how to classify non-compliances and to record them on the Electrical condition inspection report</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li><b>PowerPoint presentation 22</b></li> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Group Q&amp;A</b>

Session	Objectives/learning outcomes <b>The learner will:</b>	Activities and resources	Assessment
28	<p>4. Understand the requirements for testing electrical installations during periodic inspection and testing of electrical installations</p> <p>4.9 Explain how test results are verified for compliance or classification</p> <ul style="list-style-type: none"> <li>Perform classifications of non-compliances</li> </ul>	<p><b>Activities:</b></p> <p>Candidates to Classify non-compliances including citing reasons.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Worksheet 29</b>
28	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.6 Verify test results for compliance or classification</p>	<p><b>Activities:</b></p> <p>Candidates to verify that measured values comply with BS 7671 permitted values.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> </ul>	<b>Observation and demonstration</b>
28	<p>5. Perform periodic inspection and testing of electrical installations</p> <p>5.7 Complete documentation in accordance with BS 7671 and IET Guidance Note 3</p>	<p><b>Activities:</b></p> <p>Candidates to confirm Electrical installation condition report and all Condition report inspection schedules and Schedules of test results are complete and signed.</p> <p><b>Resources:</b></p> <ul style="list-style-type: none"> <li>BS 7671</li> <li>Guidance Note 3</li> <li>Electrical installation condition report</li> <li>Condition report inspection schedule</li> <li>Schedule of test results</li> </ul>	<b>Observation and demonstration</b>