Unit Title:	**Testing IT & Telecoms Systems**	
OCR unit number:	227	
Level:	4	
Credit value:	15	
Guided learning hours:	90	
Unit reference number:	M/505/0573	

Candidates undertaking this unit must complete real work activities in a work environment. Simulation is only allowed in exceptional circumstances (please refer to the centre handbook for further details).

Unit aim and purpose

Having completed this unit the learner will have the necessary knowledge and skills to select appropriate and perform a range of testing regimes in line with organisational policies and procedures. The learner will also be able to identify or create the appropriate documentation to properly record the activities and outcomes of the tests undertaken and identify discrepancies and trends which may arise.

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
The Learner will: 1 Understand the principles of IT & Telecoms testing	**The Learner can:** 1.1 Explain the purpose of testing 1.2 Explain the factors which determine the applicability of different classes of test 1.3 Explain the importance of preparation and conclusion activities associated with testing and the circumstances in which they may be required 1.4 Explain organisational requirements and procedures for testing 1.5 Describe the capabilities of available test equipment and software	Candidates must understand: • purpose of testing: 　- acceptance of new product or upgrade; 　- risk reduction response to a problem. • types of test 　- functional 　- parametric 　- fault Tolerant 　- integration 　- regression 　- continuity 　- load 　- security 　- inter-operability • preparation and conclusion activities. • organisational requirements such as 　- documentation 　- planning

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
		- timescales - authority - reporting - rationale - legal and regulatory checks • test procedures eg maintenance, response to customer issues, penetration, recovery, upgrading hardware or software, new hardware or software. • test equipment eg multi-meters, voltage testers, PAT testers, network cable analysers • test Software eg exploratory, mobile, performance, load, functional, test management tools, source, database, Java, security.
2 Plan for the testing of an IT or Telecoms system	2.1 Analyse available information to correctly define the system functionality to be tested and the purpose of the test 2.2 Select and document the types, sequences and numbers of tests required to thoroughly test the defined system functionality 2.3 Select, and where necessary adapt, test equipment or software to be used 2.4 Accurately determine the types and amounts of inputs and expected outputs for the planned tests 2.5 Define all required test preparation and conclusion activities	Candidates must be able to plan the practical application of: • software, hardware and system problem investigation. • analytical and diagnostic techniques. • documentation eg test plan, risk document, features to be tested, features not to be tested, metric requirements, test data, completion requirements. • correct use of tools and documentation.
3 Control the testing of system components	3.1 Ensure that all required preparations are correctly implemented prior to carrying out tests	Candidates must be able to control the testing of the system components: • checking procedures to

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
	3.2 Instruct others in the effective use of test equipment or software 3.3 Ensure that all required activities have been correctly implemented following the completion of testing 3.4 Develop the documentation to be used for recording test results 3.5 Contribute to the development of organisational test strategy	ensure that organisational policies and processes are followed. • demonstrating the correct use of test equipment and software. • recording of test activities during the testing period. • checking compliance with all requirements. • developing documentation to meet the requirements of the test activities and outcomes. • provide feedback on activities to aid development of organisational test strategy.
4 Evaluate test results	4.1 Ensure that records of individual tests are correctly analysed to identify discrepancies between actual and expected outputs and the source of any recorded errors 4.2 Investigate and document the probable causes of identified discrepancies and errors 4.3 Examine multiple test records to identify trends or recurring discrepancies and errors	Candidate must: • select appropriate analytical tools eg graphs, charts • identify discrepancies between actual and predicted results. • document discrepancies and measure taken to identify reasons for the discrepancies. • use methods to identify and recording discrepancies

Assessment

Candidates undertaking this unit must complete real work activities in order to produce evidence to demonstrate they are occupationally competent. Real work is where the candidate is engaged in activities that contribute to the aims of the organisation by whom they are employed, for example in paid employment or working in a voluntary capacity.

Simulation is only allowed for aspects of units when a candidate is required to complete a work activity that does not occur on a regular basis and therefore opportunities to complete a particular work activity do not easily arise. When simulation is used, assessors must be confident that the simulation replicates the workplace to such an extent that candidates will be able to fully transfer their occupational competence to the workplace and real situations.

Internal quality assurance personnel must agree the use of simulated activities before they take place and must sample all evidence produced through simulated activities.

It is the assessor's role to satisfy themselves that evidence is available for all performance, knowledge and evidence requirements before they can decide that a candidate has finished a unit. Where performance and knowledge requirements allow evidence to be generated by other

methods, for example by questioning the candidate, assessors must be satisfied that the candidate will be competent under these conditions or in these types of situations in the workplace in the future. Evidence of questions must include a written account of the question and the candidate's response. Observations and/or witness testimonies must be detailed and put the evidence into context ie the purpose of the work etc.

All of the assessment criteria in the unit must be achieved and clearly evidenced in the submitted work, which is externally assessed by OCR.

Evidence for the knowledge must be explicitly presented and not implied through other forms of evidence.

Evidence requirements

All aspects of the assessment criteria must be covered and evidence must be available that shows where and how the assessment criteria have been achieved.

Assessment Criterion 1

The candidate could provide evidence in the form of a report, personal statement or presentation supported by relevant documentation. This could be supported by a detailed witness testimony, a detailed assessor observation or professional discussion.

Candidates must provide an explanation as to the purpose of testing and the types of tests, which should include the items identified in the teaching content. Candidates should go on to explain the importance of preparation and conclusion associated with testing including the circumstances in which they may be required.

Candidates should explain their organisational requirements for testing which should include:

- the documentation used

- planning for testing

- timescales

- lines of authority and reporting

- legal &regulatory requirements/checks

Candidates must describe a range of different test equipment and a range of different test software, their capabilities etc.

Assessment Criterion 2

The candidate could provide evidence in the form of a report, personal statement or presentation supported by relevant documentation. This could be supported by a detailed witness testimony, a detailed assessor observation or professional discussion.

Candidates must provide evidence of planning the testing of an IT or Telecoms system. They should provide evidence of:

- analysing information to establish testing requirements

- documenting relevant tests to fully test the functionality of the system

- selecting appropriate test equipment and/or software to be used

- accurately define the types of test, the inputs and expected outcomes

- define the test preparation and conclusion activities

Assessment Criterion 3

The candidate could provide evidence in the form of a report, personal statement or presentation supported by relevant documentation. This could be supported by a detailed witness testimony, a detailed assessor observation or professional discussion.

Candidates must provide evidence of controlling the testing of system components. This must include:

- ensuring all preparation activities are correctly implemented

- instructing others in the use of test equipment and/or test software

- quality assure the testing activities to ensure that conclusion activities have been carried out following organisational requirements

- contributing to the development of the organisation's test strategy

Assessment Criterion 4

The candidate could provide evidence in the form of a report, personal statement or presentation supported by relevant documentation. This could be supported by a detailed witness testimony, a detailed assessor observation or professional discussion.

Candidates must provide evidence of evaluating test results. This should include:

- ensuring that records are correctly analysed identifying discrepancies within the results and investigate possible causes

- examining multiple test records identifying trends or recurring discrepancies/errors

You should refer to the '*Admin Guide: Vocational Qualifications* (A850)' for *Notes on Preventing Computer-Assisted Malpractice*.

National Occupational Standards (NOS) mapping/signposting

The mapping in the table below provides an indication of where evidence might be available for assessment against some of the knowledge and understanding contained in the national occupational standards (NOS). It does not claim to guarantee that evidence will meet the NOS.

NOS can viewed on the relevant Sector Skills Council's website or the Occupational standards directory at www.ukstandards.co.uk.

Occupational standards	Unit number	Title
IT Professional	M/502/8332	Computer Networks
IT Professional	J/601/3300	e-skills UK Designing and developing event-driven computer programs
IT Professional	T/601/3308	e-skills UK Designing and developing object-oriented computer programs
IT Professional	L/601/1984	Software Applications Testing

Resources

Black R, (1999) Managing the Testing Process: Practical Tools and Techniques for Managing Hardware and Software Testing (2nd Ed) Wiley

Thomson, G, Williams, P, Samaroo, A (2010) Software Testing: An ISTQB-ISEB Foundation Guide, BCS, The Chartered Institute for IT, ASIN: B004GUS782

Additional information

For further information regarding administration for this qualification, please refer to the OCR document '*Admin Guide: Vocational Qualifications' (A850)* on the OCR website www.ocr.org.uk .