e-Quals Unit Syllabus

Level 3 Maintain ICT equipment and systems 3

7266/7267-510

www.cityandguilds.com/e-quals07
August 2008
Version 2.0

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Unit 510 Maintain ICT equipment and systems 3

Rationale

This unit will enable the candidate to maintain ICT networks and multi-user systems.

Learning outcomes

There are **three** outcomes to this unit. The candidate will be able to:

- identify types of system maintenance
- collect information on technical problems with ICT systems
- evaluate technical problems and implement solutions

Guided learning hours

It is recommended that 60 hours should be allocated for this unit. This may be on a full time or part time basis.

Connections with other qualifications

This unit contributes towards the knowledge and understanding required for the following qualifications:

NVQ for IT Professionals (4324) Level 3

Outcome	Unit
1	319 1 The testing process to be followed
2, 3	319.2 The purpose of testing
3	319.3 What test preparation and conclusion activities are necessary for specific tests

NVQ for IT Services Customer Systems Support (4348) Level 3

Outcome	Unit
1, 2	21.1 Prepare tests for IT systems
2, 3	21.2 Test IT systems
3	21.3 Return |IT systems to service after testing
2	22.1 Collect information on technical problems with IT systems
3	22.2 Evaluate information on technical problems with IT systems
3	22.3 Identify potential causes of technical problems with IT systems
3	23.1 Supply solutions for technical problems with IT systems
3	23.2 Implement technical solutions for IT systems
3	23.3 Assist the recovery of the operation of IT systems

Key Skills

Application of number	N/A
Communication	2.1, 2.2, 2.3
ICT	2
Working with others	N/A
Problem solving	3
Improving own learning	2

Assessment and grading

Assessment will be by means of a **set assignment** covering both practical activities and underpinning knowledge.

Unit 510 Maintain ICT equipment and systems 3

Outcome 1 identify types of system maintenance

Practical activities

The candidate will be able to:

1 prepare a system maintenance plan (for peer to peer and client server) to include

- a equipment comprising the system
- b maintenance options for each item of equipment
- c method of recording maintenance carried out

2 identify types of system maintenance

- a preventative - routine, such as backup
- b predictive - forward prediction, what monitoring system used to predict maintenance likely in the future
- c remedial – repair, component replacement, software upgrade, operating system repair.

Underpinning knowledge

The candidate will be able to:

1 describe the properties of different types of maintenance

- a preventative, eg time interval, hours run, processes completed (pages printed)
- b predictive, eg system monitoring tools requests
- c remedial, eg break/fix

2 describe the key activities in each type of maintenance, including preventative, predictive and remedial, and their benefits to, eg servers, networks, high volume printers

- a preventative, eg replacement of specified components, inspection and assessment of wear or degradation, cleaning, lubrication, measurement and adjustment
- b predictive, eg replacement/adjustment of identified components
- c remedial, eg replacement/adjustment to effect a fault resolution

3 describe types of remote maintenance, eg remote log-in by service personnel, system to system diagnostic link

4 describe the importance of negotiating system priorities and availability with customers.

Unit 510 Maintain ICT equipment and systems 3

Outcome 2 collect information on technical problems with ICT systems

Practical activities

The candidate will be able to:

1. obtain information to resolve technical problems with ICT systems eg
   - a how the problem has manifested itself
   - b when the problem was identified
   - c frequency of probable occurrences
   - d results of tests
   - e is the fault solid or intermittent?
2. select and justify the test to be undertaken for a given problem eg
   - a physical/mechanical
   - b substitution
   - c electrical
   - d software
   - e measurement
3. ensure the tests have been applied correctly
4. create and maintain operational records.

Underpinning knowledge

The candidate will be able to:

1 describe the information needed to resolve technical problems with ICT systems, eg problem isolation, system interrogation, system/unit histories, questioning relevant people (user, system administrator, direct supervisor, network administrator)

2 identify what types of technical problems could occur in ICT systems, eg

- a continuous
- b intermittent
- c unusual
- d on/off
- e hardware – mechanical, electronic control
- f firmware – corruption, wrong type
- g operating system software – incompatibility, corruption
- h application software network software – incompatibility, corruption, configuration
- j network connection environmental
- k user induced
- l system changes

3 describe how to ensure tests have been applied correctly, eg

- a by referral to test specifications
- b from previous personal experience/knowledge
- c by referral to higher technical expertise
- d by confirmation of expected results of tests

4 identify types of technical problems which might occur in ICT systems, eg

- a hardware component failure/degradation
- b operating system configuration/corruption problems
- c system capacity problems
- d software/hardware compatibility
- e transmission problems (routers, hubs, bridges)
- f cabling problems

5 identify routine maintenance procedures

- a cleaning
- b virus scan
- c defragmentation
- d file and registry checks
- e renewal of backup media
- f revision of passwords/authorities.

Unit 510 Maintain ICT equipment and systems 3

Outcome 3 evaluate technical problems and implement solutions

Practical activities

The candidate will be able to:

1. identify any significant differences between the test data collected and the equipment specification, eg
   - a network configuration
   - b server
   - c router
   - d hubs/switches
   - e bridges
   - f work stations
   - g printers
2. determine the most effective solution and identify the resources required to resolve the problem, eg
   - a replacement system modules
   - b operating system and software upgrade/patches
   - c replacement cables/connections
3. implement the technical solution, and check that it has been carried out successfully
4. restore the system to operational use by, eg
   - a testing the system/sub-system
   - b confirming the problem has been resolved
   - c re-configuring to original
5. hand back to the customer providing demonstration/training as required.

Underpinning knowledge

The candidate will be able to:

1 describe factors which may cause differences between actual and estimated performance, eg

- a firmware version
- b hardware revision
- c engineering changes
- d software version
- e throughput
- f capacity
- g compatibility

2 identify factors not associated with the ICT system itself eg

- a environmental
- b consumables
- c user

3 state what other information might be evaluated eg

- a virus checking software
- b system configuration

4 state types of resources which may be needed to apply solutions to technical problems, eg

- a hardware
- b software
- c network
- d environment
- e human
- f time
- g customer input
- h tools
- j spare parts

5 identify where to access information on how to apply the solution, eg

- a reference materials
- b consultation with immediate supervisors or experienced personnel
- c from previously acquired knowledge.

Unit record sheet

Use this form to track your progress through this unit.

Tick the boxes when you have covered each outcome. When they are all ticked, you are ready to be assessed.

Outcome	✓	Date
1 **identify types of system maintenance**	☐	
2 **collect information on technical problems with ICT systems**	☐	
3 **evaluate technical problems and implement solutions**	☐	

Candidate Signature ..... **Date** .....

City & Guilds Registration Number .....

Quality nominee (if sampled) ..... **Date** .....

Assessor Signature ..... **Date** .....

External Verifier Signature (if sampled) ..... **Date** .....

Centre Name ..... **Centre Number** .....

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