Level 3 Principles of ICT Systems and Data Security

(7540-040/7630-345)

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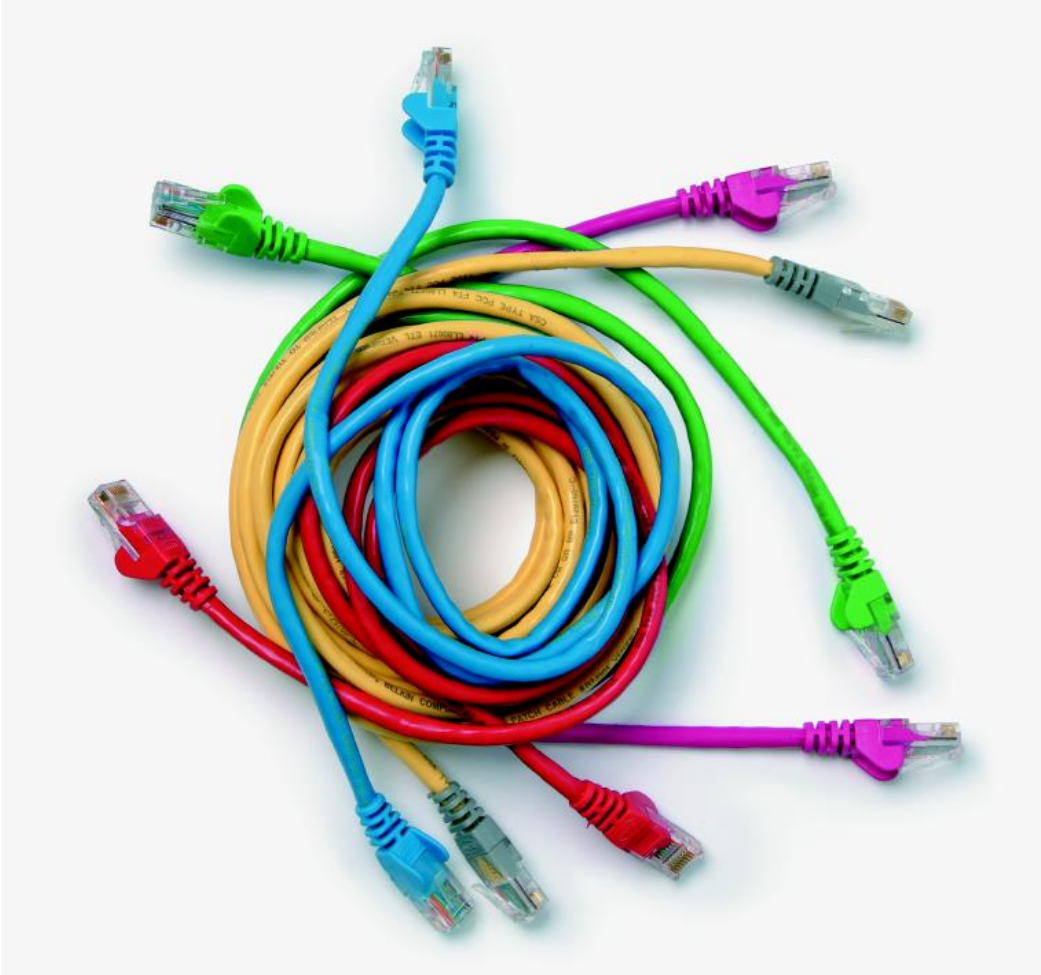
Systems and Principles
Assignment guide for Candidates
Assignment A



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Level 3 Principles of ICT Systems and Data Security (7540-040/7630-345)

Introduction – Information for Candidates

About this document

This assignment comprises all of the assessment for Level 3 Principles of ICT System and Data Security (7540-040/7630-345)

Health and safety

You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance

The recommended time allowance for this assignment is **4 hours**.

Level 3 Principles of ICT Systems and Data Security (7540-040/7630-345)

Candidate Instructions

Time allowance: 4 hours

Assignment set up:

This assignment is made up of **three** tasks

- **Task A** – Common types of threat to IT Systems and Data
- **Task B** – Protection of IT Systems and Data
- **Task C** – The application of Cryptography to ICT Systems and Data.

Scenario

You are a final year technical Apprentice in a company that supports Business and Industry in their IT Systems and Data requirements. You have been tasked with providing accurate and up-to-date information for a project designed to inform Business and Industry of current threats to IT Systems and Data.

Your part of the project brief is to provide accurate and up-to-date information in the following areas:

- Common types of threat to IT Systems and Data
- Protection of IT Systems and Data
- The application of Cryptography to ICT Systems and Data.

In order to ensure that the project output will be suitable for non-technical business managers, you are reminded that, wherever possible, you should use non-technical language in your writing.

You may provide the required information in a format of your choice however you should ensure that your descriptions of the specified topics are concise.

Task A – Describe common threats to IT Systems and Data

Please use the answer sheet provided to complete Task A

1	Identify and describe the consequences of **ten** common physical threats to ICT systems and data including hardware damage, loss and theft eg • deliberate damage to hardware or equipment • inadequate physical security • loss or theft due to size or portability of devices • accidental damage to hardware or equipment.
2	Identify and describe the consequences of the following types of malicious code: • Virus • Malware • Spyware • Adware • Trojan • Logic bomb • Worm • Rootkits • Keylogger.
3	Identify and describe the consequences of **seven** other common types of electronic threats to ICT systems and data.
4	Explain **five** security vulnerabilities associated with remote access technologies, including wireless.

Task B – Describe methods of protecting ICT Systems and Data

Please use the answer sheet provided to complete Task B

1	Describe the methods of providing physical access control and security for ICT systems including: • locks (hardware locks and entry locks) • biometric controls (fingerprint, voice and retina recognition) • CCTV • fire control systems • shielding (cable screening) • Faraday Cage • Motion detector.
2	Describe methods of providing electronic protection and security controls for any **six** of the following: • firewalls • virtual networks • secure connection/transfer protocols • wireless connection security • login and password protection • access rights and permissions (including limiting data access) • virus, malware and spyware protection • secure remote access • backup and restore systems • monitoring systems (activity logging, access logs and audit logs).
3	Differentiate the following access control methods: • mandatory • discretionary • role based.
4	Describe the characteristics of strong passwords and the methods of attacking password protected systems relating to any **six** of the following: • complexity • length • duration (mandatory changing) • password history • storing (electronic/non-electronic) • dictionary attack • brute force attack • social engineering attack • keyboard attack • 'man in the middle' attack.

Task C – Identify and explain the application of Cryptography to ICT Systems and Data

Please use the answer sheet provided to complete Task C

1	Describe the following cryptographic algorithms: • hashing • symmetric • asymmetric.
2	Describe how cryptography can be applied to ICT systems and data security in terms of: • confidentiality • integrity • authentication • non-repudiation • access control.
3	Explain the operation of Public Key Infrastructure (PKI).
4	Explain the concepts of Key Management and Certificate lifecycles.

When you have finished working:

- Sign each document above your name and label all removable storage media with your name.
- Hand all paperwork and removable storage media to your assessor.

If the assignment is taken over more than one period, all paperwork and removable media must be returned to the test supervisor at the end of each sitting.

End of assignment

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