Standard Module - IT Security

This quick reference guide is for Microsoft Internet Explorer 9.0 and Word 2010

Quick Reference

Certification Test Goals

This module sets out essential concepts and skills relating to the ability to understand the main concepts underlying the secure use of ICT in daily life and to use relevant techniques and applications to maintain a secure network connection, use the Internet safely and securely, and manage data and information appropriately.

Successful candidates will be able to:

- Understand the key concepts relating to the importance of secure information and data, physical security, privacy and identity theft.
- Protect a computer, device or network from malware and unauthorised access.
- Understand the types of networks, connection types and network specific issues including firewalls.
- Browse the World Wide Web and communicate on the Internet securely.
- Understand security issues related to communications including e-mail and instant messaging.
- Back up and restore data appropriately and safely, and securely dispose of data and devices.

1 Security Concepts

1.1 Data Threats

1.1.1 Distinguish between data and information.

- Data is unprocessed information for data processing. Data may be a collection of unprocessed numbers, text, or images.
- Information is the processed output of data making it meaningful to the person who receives it.

1.1.2 Understand the term cybercrime.

- Cybercrime is an illegal activity that uses the Internet or a computer. Examples include identity theft and social engineering.

1.1.3 Understand the difference between:

- Hacking involves using computer expertise to gain access to a computer system without authorisation. The hacker may wish to tamper with programs and data on the computer, use the computer's resources, or just prove they can access the computer.
- Password cracking involves recovering passwords from data that has been stored in or transmitted by a computer system. This can be attempted manually by guessing the password, or by using software.
- Software cracking involves disabling or removing certain features in software that are deemed undesirable by the software cracker, for example, copy protection, serial numbers, hardware keys, date checks.
- Ethical hacking involves attacking a computer security system with permission from its owners to find vulnerabilities that a malicious hacker could exploit.

1.1.4 Recognise threats to data from force majeure.

- Force majeure is a 'superior force' or an unforeseen event that can threaten data like:
  - Fire
  - Floods
  - War
  - Earthquake

1.1.5 Recognise threats to data from:

- Employees – Could steal company data such as new product information
- Service providers – Could lose, destroy, or steal valuable company data
- External individuals – Could gain access to a computer system and steal/delete data

1.2 Value of Information

1.2.1 Understand the reasons for protecting personal information like:

- Avoiding identity theft
- Avoiding fraud

1.2.2 Understand the reasons for protecting commercially sensitive information like:

- Preventing theft or misuse of client details
- Preventing theft or misuse of financial information

1.2.3 Identify measures for preventing unauthorised access to data like:

- Encryption is the process of encoding data to make it unintelligible to any unauthorised person who tries to read the data.
- Passwords are a string of characters used for authentication, to prove identity or gain access to a resource.

1.2.4 Understand basic characteristics of information security like:

- Confidentiality - Ensures information is protected against unauthorised access or disclosure
- Integrity - Refers to the trustworthiness of information resources
- Availability - Refers to the availability of information resources

1.2.5 Identify the main data/privacy protection, retention and control requirements in your country.

- In EU countries the 1995 European Data Protection Directive applies.

1.2.6 Understand the importance of creating and adhering to guidelines and policies for ICT use.

- They provide a standard for users to follow and ensure that there is a clear position on how ICT should be used to ensure the protection of the organisation's data.

1.3 Personal Security

1.3.1 Understand the term social engineering

- Social engineering involves manipulating people into performing actions or divulging confidential information, rather than by hacking to obtain the information.

1.3.1 Understand its implications like:

- Information gathering – Gathering information that may be confidential or valuable
- Fraud – Using gathered information to commit an act of fraud
- Data access - It facilitates unauthorised computer system access - potentially revealing confidential information

1.3.2 Identify methods of social engineering like:

- Phone calls - Misleading someone about your identity in a phone call to gain valuable information
- Phishing - Misleading someone about your identity online to gain valuable information
- Shoulder surfing - Using direct observation to get information

1.3.3 Understand the term identity theft.

- Identity theft involves assuming another person's identity for personal gain. This can lead to the theft or misuse of personal, business or legal information.

1.3.4 Identify methods of identity theft like:

- Information diving - The practice of recovering information from discarded material
- Skimming – Using a scanner device to skim information, often from a credit/debit card
- Pretexting - Gaining personal information through deception

1.4 File Security

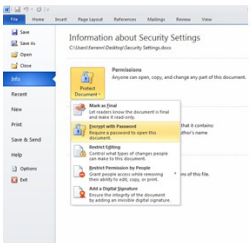
1.4.1 Understand the effect of enabling/disabling macro security settings.

- Enabling a macro will ensure that the macro will run but may harm your computer if the source of the file is unknown.
- Disabling a macro will ensure the macro will not run but may prevent you from using all the features in a file.

1.4.2 **Set a password for files like:**

Documents:

- Click File.
- Click Info.
- Click Protect Document.
- Click Encrypt with Password.



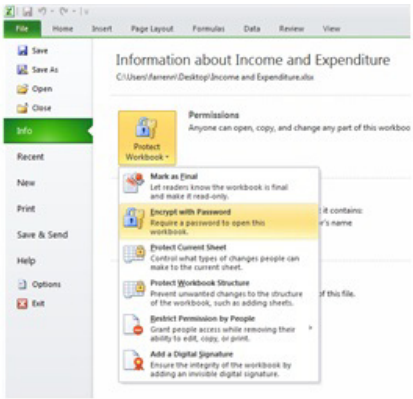
- Choose a password and click OK.
- Reenter the password and click OK.

Compressed files:

- On the Home tab, select Encrypt.
- Select the files, folders to zip.
- Click Zip.
- Choose a password and reenter the password.
- Click OK.

Spreadsheets:

- Click File.
- Click Info.
- Click Protect Workbook.
- Click Encrypt with Password.



- Choose a password and click OK.
- Reenter the password and click OK.

1.4.3 **Understand the advantages and limitations of encryption.**

Advantages:

- Encrypted data cannot be read without a key
- Only an authorised receiver can read the message

Limitations:

- If the encrypted key is lost it leaves the data unusable

2 Malware

2.1 Definition and Function

2.1.1 **Understand the term malware.**

- Malware is malicious software that is designed to install itself on a computer without the owner's consent.

2.1.2 **Recognise different ways that malware can be concealed like:**

- Trojan - Destructive program that masquerades as an application
- Rootkit – Used to enable continued access to a computer while actively hiding its presence
- Back door – Used to bypass system security

2.2 Types

2.2.1 **Recognise types of infectious malware and understand how they work like:**

- Viruses - Computer programs that can replicate themselves and cause damage to a computer
- Worms - Self-replicating malware that uses a computer network to send copies of itself to other computers

2.2.2 **Recognise types of data theft, profit generating/ extortion malware and understand how they work like:**

- Adware - Software package that automatically plays, displays, or downloads advertisements to a computer
- Spyware - Malware that collects information on user browser habits without their consent
- Botnets - Can infect and control computers without consent
- Keystroke logging - Involves the capturing of information that is typed on a keyboard
- Dialers - Malicious programs that install onto a computer and attempts to dial premium telephone lines at other locations

2.3 Protection

2.3.1 **Understand how anti-virus software works and its limitations.**

- Anti-virus software uses scans to detect and block viruses before they infect your system.
- Anti-virus software needs to be kept up to date with definition files. It cannot always stop attacks to system vulnerabilities or security flaws.

2.3.2 **Scan specific drives, folders, files using anti-virus software**

- Launch the Anti-Virus Application.
- Select the Drives, Folders, Files to scan.
- Click Scan.

2.3.2 **Schedule scans using anti-virus software.**

- Launch the Anti-Virus Application.
- Select the Schedule Scan options and select the Scan Frequency, Date/Time.
- Click on the Scan button.

2.3.3 **Understand the term quarantine and the effect of quarantining infected/suspicious files.**

- Quarantining a file moves the file to a safe location on a drive that is managed by the anti-virus software.
- The file can still be restored from quarantine if required.

2.3.4 **Understand the importance of downloading and installing software updates, anti-virus definition files.**

- Installing software updates and anti-virus definition files can fix a flaw or security risk in an application and update against new security risks.

3 Network Security

3.1.1 **Understand the term network.**

- A group of two or more computer systems linked together by communications channels to allow for sharing of resources and information.

3.1.1 **Recognise the common network types like:**

- Local Area Network (LAN) - A network that connects computers in close proximity, usually in the same building
- Wide Area Network (WAN) – A network that connects computers over a long distance, using telephone lines and satellite communications
- Virtual Private Network (VPN) - A network that allows users to privately share information between remote locations, or between a remote location and a business' home network

3.1.2 **Understand the role of the network administrator.**

- Network administrators are involved in managing the authentication, authorisation and accounting within a network.
- Tasks include maintaining staff access to required data on the network and ensuring network usage is in line with ICT policy.

3.1.3 **Understand the function of a firewall.**

- Used to protect a network from intrusions from outside sources.

3.1.3 **Understand the limitations of a firewall.**

- Does not always provide automatic notification if your network is hacked
- Cannot protect against an attack generated from within the network
- May restrict some legitimate traffic

3.2 Network Connections

3.2.1 **Recognise the options for connecting to a network like:**

- Cable - Involves connecting to a network using physical cables
- Wireless - Connections that allow you to wirelessly connect to a network without the need for a cable

3.2.2 **Understand how connecting to a network has implications for security like:**

- Computers connected to the network may be infected with malware.
- Connecting to a network may open your system up to potential for unauthorised data access.
- Connecting to a network may increase the challenge of maintaining privacy.

3.3 Wireless Security

3.3.1 **Recognise the importance of requiring a password for protecting wireless network access.**

- Requiring a password ensures that only authorised users can access the network and data.

3.3.2 **Recognise different types of wireless security like:**

- Wired Equivalent Privacy (WEP)
- Wi-Fi Protected Access (WPA)
- Media Access Control (MAC)

3.3.3 **Be aware that using an unprotected wireless network can allow wireless eavesdroppers to access your data.**

- On an unprotected wireless network other
- people may be able to access your data.

3.3.4 **Connect to a protected/unprotected wireless network.**

- Click Start.
- Click Control Panel.
- Click Network and Sharing Center.
- Click Connect to a network.
- Double click on the desired network.
- Enter the wireless network password (protected network only).
- Click Connect.

3.4 Access Control

3.4.1 **Understand the purpose of a network account and how it should be accessed through a user name and password.**

- For security reasons, a user name and password should be required for a user to access a network.

3.4.2 **Recognise good password policies, like:**

- Not sharing passwords
- Changing them regularly
- Adequate password length
- Adequate letter, number and special characters mix

3.4.3 **Identify common biometric security techniques used in access control like:**

- Fingerprint scanning

4 Secure Web Use

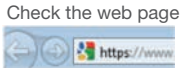
4.1 Web Browsing

4.1.1 **Be aware that certain online activity (purchasing, financial transactions) should only be undertaken on secure web pages:**

- Purchasing – e.g. Online shopping
- Financial Transactions – e.g. Online banking, fund transfers

4.1.2 **Identify a secure website:**

- Check the web page URL for "https"



- Check for the Lock Symbol in the browser window

4.1.3 **Be aware of pharming.**

- Pharming - An attack that redirects a website's traffic to a fake website

4.1.4 **Understand the term digital certificate. Validate a digital certificate.**

- A digital certificate is used to provide 3rd party verification that the sender of a message is who they claim to be. The file contains a public key and other authentication information to allow it to be validated.

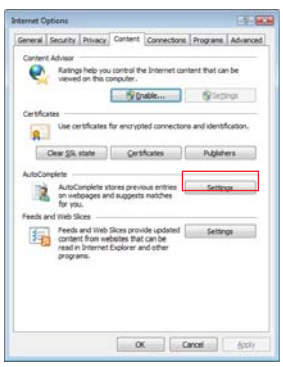
4.1.5 **Understand the term one-time password.**

- A one-time password is a password that is valid for only one login session or transaction.

4.1.6 **Select appropriate settings for enabling, disabling autocomplete, autosave when completing a form.**

Autocomplete:

- Click on the Tools button on the Command bar.
- Select Internet Options.
- Select the Content tab.



- Click the Settings button beside AutoComplete.
- Check/uncheck the AutoComplete options as required.

- Click OK

Autosave:

- Click on the Tools button on the Command bar.
- Select Internet Options.
- Select the Content tab.
- Click the Settings button beside AutoComplete.
- Check/uncheck the AutoComplete options for saving user names and passwords as required.

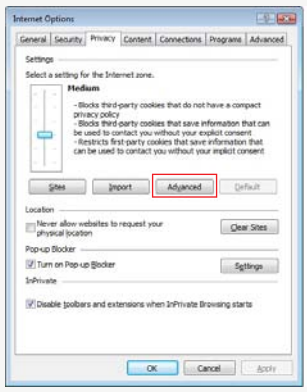
- Click OK.

4.1.7 **Understand the term cookie.**

- Cookie - A small piece of text stored by the web browser running on your computer
- The cookie can store information like pages visited on a site or information given to the site. When the user revisits, the cookie allows the website to recognise the user.

4.1.8 **Select appropriate settings for allowing, blocking cookies.**

- Click on the Tools button on the Command bar.
- Select Internet Options.
- Select the Privacy tab.
- Click the Advanced button.

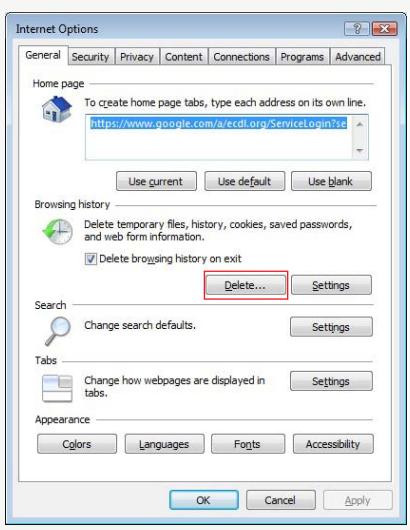


- Check/uncheck the Cookies options as required.

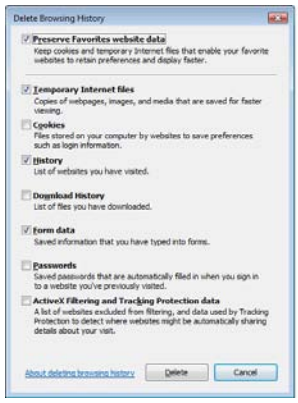
- Click OK.
- Block cookies if you are browsing on an unfamiliar website.

4.1.9 **Delete private data from a browser like: browsing history, cached internet files, passwords, cookies, autocomplete data.**

- Click on the Tools button on the Command bar.
- Select Internet Options.
- Select the General tab.
- Click the Delete button beside Browsing history.



- Check/uncheck the Browsing history options as required.



- Click Delete.

4.1.10 **Understand the purpose, function and types of content-control software like:**

- Internet filtering software - Designed to filter and monitor access to websites
- Parental control software - Used to restrict the length of time spent on the Internet and restrict access to certain content

4.2 Social Networking

4.2.1 **Understand the importance of not disclosing confidential information on social networking sites.**

- Examples of confidential information include passwords, PIN numbers, certain company information, client details.
- Disclosing such information could lead to personal information, company information, client information or finances being stolen or misused.

4.2.2 **Be aware of the need to apply appropriate social networking account privacy settings.**

- Making your account public will allow anybody to view your personal details
- Ensure that personal details are hidden

4.2.3 **Understand potential dangers when using social networking sites like:**

- Cyber bullying - Involves using the Internet and related technologies to harm other people, in a deliberate, repeated, and hostile manner
- Grooming – Involves using the Internet and related technologies to befriend a person, in the negative context of preparing them to accept inappropriate behaviour
- Misleading/ dangerous information can be posted by users
- False identities may be assumed by social network users to contact other users
- Fraudulent links or message may be sent to ellicit information from you

5 Communications

5.1 E-Mail

5.1.1 **Understand the purpose of encrypting, decrypting an e-mail.**

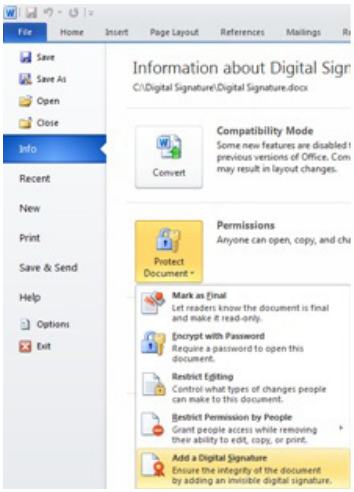
- Encryption and decryption help to ensure only the intended recipient can read an e-mail.

5.1.2 **Understand the term digital signature.**

- A digital signature is an encrypted code that demonstrates the authenticity of a message.

5.1.3 **Create and add a digital signature.**

- Click File.
- Click Info.
- Click Protect Document.
- Click Add a Digital Signature.



- Click OK.
- Select Create your own digital ID and click OK.
- Enter your Name, E-Mail Address, Organisation and Location details.
- Click Create.
- Enter a Purpose for signing this document.
- Click Sign.

5.1.4 **Be aware of the possibility of receiving fraudulent and unsolicited e-mail.**

- A fraudulent or unsolicited e-mail may contain a virus or malware, or may be trying to gain information from you and should not be opened.

5.1.5 **Understand the term phishing.**

- Phishing involves misleading someone about your identity online to gain valuable information.

5.1.5 **Identify common characteristics of phishing like:**

- Using names of legitimate companies, people, false web links.

5.1.6 **Be aware of the danger of infecting the computer with malware:**

- By opening an e-mail attachment that contains a macro
- By opening an executable file

5.2 Instant Messaging

5.2.1 **Understand the term instant messaging (IM) and its uses.**

- Instant messaging is a form of real-time text-based communication between two or more people.
- IM can be used to have short text chats with colleagues/friends, to share links or files. Some IM programs also have VoIP and web camera functions.

5.2.2 **Understand the security vulnerabilities of IM like:**

- Malware access
- Backdoor access
- Access to files

5.2.3 **Recognise methods of ensuring confidentiality while using IM like:**

- Encryption
- Non-disclosure of important information
- Restricting file sharing

6 Secure Data Management

6.1 Securing and Backing Up Data

6.1.1 **Recognise ways of ensuring physical security of devices like:**

- Log equipment location and details
- Use cable locks
- Implement access control measures such as swipe cards, biometric scans

6.1.2 **Recognise the importance of having a back-up procedure in case of loss of data, financial records, web bookmarks/history.**

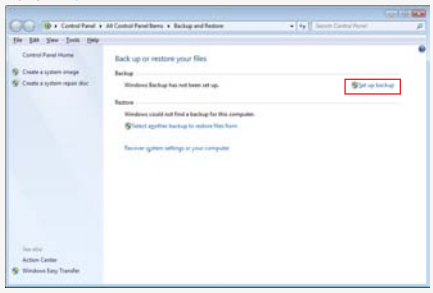
- Back-up procedures will ensure that data can be recovered in the event it is lost.
- Examples of items to back-up include:
  - Data
  - Financial records
  - Web bookmarks/history

6.1.3 **Identify the features of a back-up procedure like:**

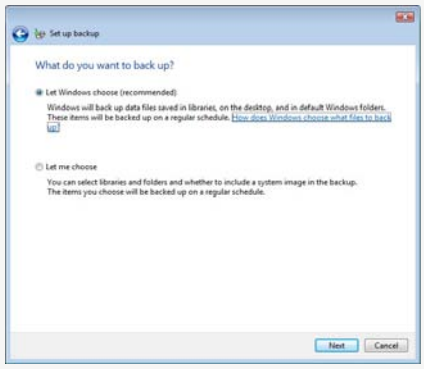
- Regularity/frequency – Set up how often you want a back-up to occur
- Schedule – Set up a back-up schedule
- Storage location – Set up a location to store your back-up to like an external hard drive

6.1.4 **Back up data.**

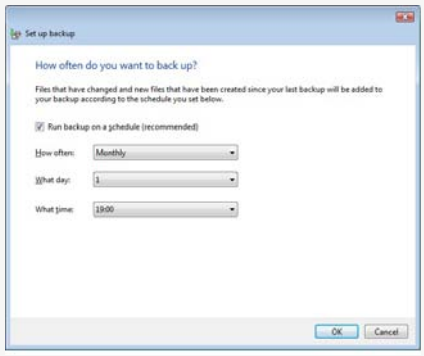
- Click Start.
- Click Backup and Restore.
- Set up Backup.
- Choose a back-up location (drive/network) and click Next.



- Choose what data to back up or accept the recommended default settings.



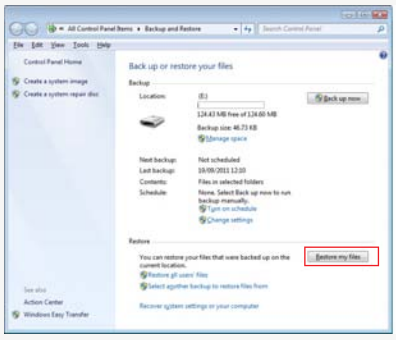
- Choose the back-up schedule.



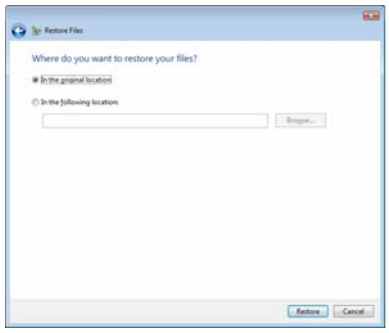
- Save Settings and Backup.

6.1.5 **Restore and validate backed up data.**

- Click Restore My Files.
- Choose what you want to restore by using Search, Browse for Files or Browse for Folders to add files/folders to restore.



- Click Restore My Files.
- Choose what you want to restore by using Search, Browse for Files or Browse for Folders to add files/folders to restore.
- Click Next.
- Choose to restore in the original location or in the following location to choose a new location.



- Click Restore.

6.2 Secure Destruction

6.2.1 **Understand the reason for permanently deleting data from drives or devices.**

- To ensure it is completely unrecoverable for security reasons

6.2.2 **Distinguish between deleting and permanently destroying data.**

- Deleting data by moving it to the recycle bin does not permanently destroy the data.
- Permanently deleting data by shredding or degaussing ensures that it cannot be recovered.

6.2.3 **Identify common methods of permanently destroying data like:**

- Shredding – Shredding disks like CD/DVD
- Drive/media destruction – Physical destruction of a drive or media
- Degaussing - Leaves the magnetic domains on a disk in random patterns rendering previous data unrecoverable
- Using data destruction utilities – Software/utility to carry out the destruction of data on a drive

For more information, visit:
www.icdl.org