

# Level 2 Digital Home Technology Integrator (7575-002)



## Assignment guide for Candidates

### Assignment A

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# Contents

## Unit 002 – Level 2 Digital Home Technology Integrator

Assignment A

Introduction – Information for Candidates	2
Candidate Instructions	3

# Level 2 Digital Home Technology Integrator (7575-002)

## Assignment A

### Introduction – Information for Candidates

#### About this document

This assignment comprises all of the assessment for Level 2 Digital Home Technology Integrator (7575-002)

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#### 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 **six hours**.

# Level 2 Digital Home Technology Integrator (7575-002)

## Candidate Instructions

**Time allowance: 6 hours**

### Assignment set up:

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

### Scenario

Qin Network Ltd is a small company that specialises in planning and installing digital home solutions. As part of the process, the company offers customers a free site visit to allow a technician to discuss their requirements.

Following the site visit, your role is to prepare a plan and documentation detailing the layout of the connecting transmission media and the specifications of the devices that will be installed.

When the customer has agreed the design and specifications that have been identified, you will install and troubleshoot the digital devices and associated transmission media.

Read all of the instructions carefully and complete the tasks in the order given.

You have been asked to visit a customer at their home to identify their requirements. At present the customer has a laptop and PC. The PC is connected to the Internet via a cable connection. The customer also has a HDTV and a DVR which should be integrated into the solution. (See attached floor plan for the locations of the PCs and other devices).

During the initial discussion with the customer the following requirements were identified:

- As the building is very old and the customer does not want a wireless network, the devices are to be networked using a cabled solution.
- A router is to be installed and configured with internet access.
- Films that have been downloaded on to the PC can be accessed by the HDTV and laptop.
- The customer requires anti-virus and firewall software to be installed and configured on to the laptop.
- Install and configure hardware and software required to allow VoIP to be utilised.
- That a home cinema system be installed in the lounge to provide a surround sound environment.
- A facility to remotely control the lighting in all the rooms using software installed on the PC, PDA, smartphone or remote handset.
- A wired or wireless security system with the ability to record and store at least 24 hours worth of images.

## Task A

Complete **Task A** using the technical specifications, Answer Sheet and room diagram provided by the Assessor.

- 1
  - Specify **all** the devices to meet the customer's requirements.
  - List the main technical specifications of the devices that you are going to install.
  - Identify the transmission media to be used and the associated characteristics, including approximate cable lengths.
  - The anti-virus, firewall **and** VoIP software to be used.
  - List the proposed IP address and subnet mask for **each** device in the network
  - List the resources used for information.

- 2 Update the room diagram which shows the existing layout, to include the location of the new devices to be installed.

*Assume an adequate power source is available wherever you choose to site the customer's equipment.*

- 3 Update the room diagram to include the intended layout/location of the transmission media that you are going to use.

- 4 **Please use the Answer Sheet provided to complete Tasks A4-A9.**

Briefly explain **two** reasons why it is important to plan and document customer installations.

- 5 What is the frequency range and maximum network speed of the following IEEE 802.11 standards?

- 11a
- 11g
- 11n




- 6 State **two** devices which can cause interference with a 2.4GHz wireless network.

- 7 Briefly explain why WPA encryption provides better wireless security than WEP.

- 8 Briefly explain why an SSID is essential when securely configuring a wireless network.

- 9 Explain the role of the DHCP and DNS server on a network.

10 Identify the following connector types associated with the sockets shown below.

socket A	socket B	socket C
		

## Task B

**All work must be conducted in a safe manner that complies with Health and Safety Regulations**

- 1 Install and configure the router to access the internet and connect the PC, laptop and HDTV to the router. Ensure the hardware firewall is enabled on the router
- 2 Manually configure the IP address, subnet mask and DNS server for **each** device.
- 3 Test the connectivity of **each** device in the network using command line/terminal utilities.

**Produce a screenshot for each device and save them as screenshot 1, 2 and 3.**

- 4 Install anti-virus software on the laptop.  
Update the anti-virus software with the latest virus definitions.

**Produce a screenshot which shows the anti-virus software is installed and up-to-date. Save it as screenshot 4.**

- 5 Install a software firewall on the laptop.  
Update the firewall software to the latest version.

**Produce a screenshot which shows the firewall software is installed and up-to-date. Save it as screenshot 5.**

- 6 Configure the default web browser on the laptop to:
  - block website pop-ups
  - disable all browser add-ons
  - delete temporary internet files on shutdown.

**Produce a screenshot which shows the default web browser is configured to block website pop-ups, disable all browser add-ons and temporary internet files are deleted on shutdown. Save it as screenshot 6.**

- 7 **Please use the Answer Sheet provided to complete Task B7**  
Briefly explain the dangers of using a PC when the following are present:
- malware
  - spyware
  - trojan.
- 8 Install and configure software required to allow videos to be streamed from the PC to the HDTV and laptop.
- 9 Access the video files stored on the PC using the HDTV and laptop.
- At this point demonstrate to the assessor that the HDTV/laptop is showing a film stored on the PC.**
- 10 **Please use the Answer Sheet provided to complete Task B10**  
Identify **two** additional devices which could be used to store content which can be accessed when the PC is switched off.
- 11 You notice the HDTV has problems playing the video and suspect there could be a problem with the network cable.
- Visually inspect the network cable for damage and test the connectivity of the cable using a diagnostic tool.
- 12 Replace the faulty RJ-45 connector and re-test the connectivity of the cable.
- At this point ask your assessor to verify the RJ-45 connector has been correctly replaced.**
- 13 **Please use the Answer Sheet provided to complete Task B13**  
State the aspect ratio of a widescreen TV.
- 14 **Please use the Answer Sheet provided to complete Task B14**  
Identify the type of transmission media associated with
- ADSL
  - External cable network
- 15 Install and configure the hardware and software required to conduct VoIP communication.
- 16 Demonstrate to the assessor that the system is functioning correctly.
- 17 Install the home cinema system to provide a surround sound environment.  
Once installed test the system to ensure it's working correctly.
- At this point demonstrate to the assessor that the system is installed and functioning correctly.**
- 18 **Please use the Answer Sheet provided to complete Task B18**  
Explain how MP3 players can be integrated in to an AV system and give **two** additional codecs commonly used with music files.



- 19 **Please use the Answer Sheet provided to complete Task B19**  
Briefly explain the difference between local amplification and centralised amplification.
- 20 **Please use the Answer Sheet provided to complete Task B20**  
State **three** methods of controlling AV systems remotely.

### Task C

- 1 Install a lighting system to be remotely controlled.  
Test the devices to ensure they are working.
- 2 Install and configure the remote control software supplied by the assessor.
- 3 Set a routine that turns the lighting system on and off at the given times. (Ask the assessor for the required on/off times to set for this task)

**Demonstrate to the Assessor that the system is working to the correct time delay.**

- 4 **Please use the Answer Sheet provided to complete Task C4**  
State **three** types of X10 devices that can be used to allow the lighting environment in a home to be controlled by a remote handset or PC.
- 5 Install a wired or wireless security system.
- 6 Configure the system to record only when movement is detected. Arm the system and test that it works correctly.

**Demonstrate to the Assessor that the system works correctly.**

- 7 Ensure you have worked in a safe manner throughout the practical tasks
- 8 **Please use the Answer Sheet provided to complete Task C8**  
You have installed a number of sensors on doors and windows in a home. When you test them a sensor that is monitoring a door does not function when the door is opened.

Give **two** examples of things that could cause this malfunction.

- 9 **Please use the Answer Sheet provided to complete Task C9**  
Name **two** other types of sensor apart from motion sensors that can be used with security systems.

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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