BOSTES | BOARD OF STUDIES TEACHING & EDUCATIONAL STANDARDS NSW

# 2014 HSC Information and Digital Technology
# Networking and Hardware
# Marking Guidelines

## Section I

### Multiple-choice Answer Key

| Question | Answer |
|---|---|
| 1 | B |
| 2 | A |
| 3 | D |
| 4 | A |
| 5 | D |
| 6 | B |
| 7 | C |
| 8 | D |
| 9 | C |
| 10 | D |
| 11 | B |
| 12 | D |
| 13 | A |
| 14 | C |
| 15 | C |
| 16 | A |
| 17 | A |
| 18 | B |
| 19 | A |
| 20 | D |

# Section II

## Question 21 (a)

| Criteria | Marks |
|---|---|
| • Provides a full explanation as to why power leads are tagged | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

To indicate that they are tested and are ready to use. Tags also record the date when it was tested.

## Question 21 (b)

| Criteria | Marks |
|---|---|
| • Shows a thorough understanding of how a workstation can be set up to minimise neck, back and wrist pain | 4 |
| • Shows a sound understanding of how a workstation can be set up to minimise neck and back pain OR neck and wrist pain OR back and wrist pain | 3 |
| • Shows some understanding of how a workstation can be set up to minimise neck and/or back and/or wrist pain | 2 |
| • Identifies an ergonomic feature of a workstation | 1 |

***Sample answer:***

The chair should be adjustable and have a back support. It should be at a height that enables the user to have their feet flat on the floor, their elbows at 90 degrees and their knees at 90 degrees. The desk should be at a height that enables the user to have their wrists straight. A wrist support should be used when not typing. The mouse should be placed as close to the keyboard as possible. The top of the monitor should be just below eye level and at about an arm's length from the user. Monitor at arm's length away.

**Question 22 (a)**

| Criteria | Marks |
|---|---|
| • Correctly identifies TWO key features that make BullsEye OS open source | 2 |
| • Correctly identifies a feature that makes BullsEye OS open source | 1 |

***Sample answer:***

The source code is available free of charge and the code is available for public use.

***Answers could include:***

The code may be modified.

**Question 22 (b)**

| Criteria | Marks |
|---|---|
| • Provides a suitable procedure | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

The specifications should be checked. The image needs to be downloaded and expanded to a bootable media. The installation can then be completed from the bootable media.

**Question 23 (a)**

| Criteria | Marks |
|---|---|
| • Provides a reason as to why it is unnecessary to run a disk defragmenting utility for a solid state drive | 1 |

***Sample answer:***

Because a solid state drive stores data differently to a hard disk drive. The files are always written contiguously.

## Question 23 (b)

| Criteria | Marks |
|---|---|
| • Identifies the most efficient procedure and provides reasons for the choice, showing thorough understanding of full, differential and incremental backups | 4 |
| • Attempts a procedure and shows a sound understanding of full backup and/or incremental backup | 3 |
| • Shows some understanding of full and/or differential and/or incremental backup | 2 |
| • Provides some relevant spreadsheet information | 1 |

***Sample answer:***

1. Restore all data from 131003–A and 131003–B from the latest full backup. Both media need to be stored in order (A first then B) as the data is written across both media starting with A.
2. Restore all data from 131008–A to the same location as the full backup. Because this is a differential backup, it has all the changes since the last full backup.
3. Restore all data from 131009–A to the same location as the full backup. Because this is an incremental backup, it has all changes since the last backup.

## Question 24 (a)

| Criteria | Marks |
|---|---|
| • Correctly identifies TWO advantages | 2 |
| • Correctly identifies ONE advantage | 1 |

***Sample answer:***

FAQs minimise Help Desk contact and provides consistency of advice for the users.

***Answers could include:***

- Ease of access
- Searchable
- Speed of response

**Question 24 (b)**

| Criteria | Marks |
|---|---|
| • Shows a thorough understanding of advantages of one-to-one training over group training<br>• Clearly shows the relationship between these advantages and training | 4 |
| • Shows a sound understanding of advantages of one-to-one training | 3 |
| • Shows some understanding of one-to-one training and/or group training | 2 |
| • Shows a basic understanding of training | 1 |

***Sample answer:***

One-to-one training is more efficient for the learner because their time is not wasted learning skills that they already have. In group training, the trainer needs to include the needs of all the learners. It is easier to schedule time for only one person rather than trying to organise a suitable time for a number of people.

***Answers could include:***

- Learners can tailor their questions
- Learners can get immediate feedback focused on their questions
- Training can be personalised
- You don't need a lot of equipment or a large room
- Can be completed on the job.

**Question 25 (a)**

| Criteria | Marks |
|---|---|
| • Outlines an appropriate example | 1 |

***Sample answer:***

Secured payments over the internet.

***Answers could include:***

Password logins
Bpay

**Question 25 (b)**

| Criteria | Marks |
|---|---|
| • Correctly identifies the purpose of the network test | 2 |
| • Provides some relevant information | 1 |

***Sample answer:***

This test is run to test the connectivity between two computers. It also tests the quality and speed of the connection.

**Question 25 (c)**

| Criteria | Marks |
|---|---|
| • Provides a range of suitable methods for securing a SOHO network<br>• Identifies issues in these methods and provides points for and/or against them<br>• Shows a comprehensive understanding of these methods | 6 |
| • Provides suitable methods for securing a SOHO network<br>• Identifies some issues and provides some discussion<br>• Shows a thorough understanding of these methods | 5 |
| • Provides suitable methods for securing a SOHO network<br>• Shows a sound understanding of these methods | 4 |
| • Provides suitable methods for securing a SOHO network<br>• Shows some understanding of these methods | 3 |
| • Identifies suitable methods for securing a SOHO network<br>OR<br>• Shows some understanding of a suitable method for securing a SOHO network | 2 |
| • Shows a basic understanding of SOHO network or network security | 1 |

***Sample answer:***

Methods could include installing antivirus and malware tools. These should be kept up-to-date to recognise the most recent virus signatures to maximise security. Files should be scanned automatically on a regular basis, either real-time or a scheduled full scan to ensure constant protection.

User ids and passwords are the most commonly used authentication technology to ensure access by authorised personnel only. An organisation should have a strict password policy that includes a rule for the length and format of a password to ensure a strong password, as well as the regularity of changing passwords.

Data encryption enables the secure transfer and storage of data. There are a number of different encryption algorithms that could be used to secure a SOHO.

***Answers could include:***

- Authentication technologies – biometrics, bio-security, smart cards
- Locking workstations – time out, password locking.

# Section III

## Question 26 (a)

| Criteria | Marks |
|---|---|
| • Provides reasons as to why a separate graphics card rather than an onboard graphics controller should be used in the scenario | 3 |
| • Shows some understanding of graphics card and onboard graphics controller<br>OR<br>• Shows a good understanding of graphics card / onboard graphics controller | 2 |
| • Shows a basic understanding of graphics card or controller | 1 |

***Sample answer:***

A separate graphics card provides its own memory, providing faster graphics. It frees up the CPU. A separate card can be upgraded, although it costs more than an onboard graphics controller.

## Question 26 (b)

| Criteria | Marks |
|---|---|
| • Identifies the most suitable display-device connector for this scenario<br>• Provides reasons to support this choice<br>• Shows a thorough understanding of display-device connector selected | 4 |
| • Shows a sound understanding of display-device connector types and conditions that maximise graphic performance | 3 |
| • Shows some understanding of display-device connector types AND/OR the conditions that maximise graphic performance | 2 |
| • Shows a basic understanding of display-device connectors OR condition(s) that maximises graphic performance | 1 |

***Sample answer:***

HDMI (Image 2) is the most recent industry standard connector. It provides a faster refresh rate than the other two connectors with a higher resolution to give crisper graphics. It also has a faster transfer rate. The HDMI connector enables a TV monitor to be used as a display device.

***Answers could include:***

- Aspect ratio 3-4 and 16-9
- Audio and video are combined when using HDMI (Image 2)

**Question 26 (c)**

| Criteria | Marks |
|---|---|
| • Identifies suitable storage, CPU and memory components<br>• Provides clear justification for these choices, linking their features to the requirements of the scenario<br>• Shows a comprehensive understanding of the relevant features of these components | 8 |
| • Identifies suitable storage, CPU and memory components<br>• Provides some justification for these choices<br>• Shows a thorough understanding of the relevant features of these components | 7 |
| • Identifies suitable storage and CPU OR CPU and memory OR memory and storage components<br>• Provides some justification for these choices<br>• Shows a sound understanding of the features of these components | 5–6 |
| • Identifies some storage/CPU/memory components<br>• Shows some understanding of the features of these components | 3–4 |
| • Identifies some storage/CPU/memory components<br>OR<br>• Outlines a storage/CPU/memory component | 2 |
| • Identifies a storage/CPU/memory component | 1 |

***Sample answer:***

Because a gaming computer has high graphics usage, it should have at least a quad core CPU with a separate graphics card. The CPU should be 64 bit to maximise the speed of data transfer and amount of memory available.

Internal memory should include RAM that has a large storage capacity and a fast speed, for example 8GB of DDR3. The graphics card should also have at least 4GB of RAM.

Internal storage should consist of both a large hard drive and a solid state disk of approximately 128GB. This will provide a considerable amount of storage on the hard drive and fast access for data stored on the solid state disk. Placing the operating system on the hard drive and the gaming software on the solid state drive will minimise access time for the gaming software. The hard drive should utilise SATA for best performance.

Having a large hard disk drive allows a large amount of virtual memory to be configured in the system.

# Section IV

## Question 27

| Criteria | Marks |
|---|---|
| • Addresses all components of the question<br>• Provides a cohesive well-reasoned response that reflects a high level of organisation, judgement, synthesis and problem-solving skills<br>• Demonstrates an in-depth understanding of ICT functions with reference to the scenario used in the question<br>• Consistently uses precise ICT terminology to a professional level | 13–15 |
| • Addresses most components of the question<br>• Provides a cohesive well-reasoned response showing significant organisational and problem-solving skills<br>• Demonstrates a detailed understanding of ICT functions with reference to the scenario used in the question<br>• Uses precise ICT terminology to a level acceptable in industry | 10–12 |
| • Addresses most components of the question<br>• Provides a response displaying sound organisational and problem-solving skills<br>• Demonstrates a sound understanding of ICT functions with limited reference to the scenario used in the question<br>• Uses relevant ICT terminology | 7–9 |
| • Addresses some components of the question<br>• Provides a response displaying some organisational and problem-solving skills<br>• Demonstrates some understanding of ICT functions | 4–6 |
| • Addresses minimal components of the question<br>• Provides a response displaying basic organisation<br>• Demonstrates a basic understanding of ICT functions | 1–3 |

***Sample answer:***

There are a number of communication methods that can be used by the university. Lessons can be produced on podcasts that includes both visual and audio information. Students can view the podcasts in their own time, but still get exactly the same information as all the other students in their class. Podcasts can be used as a reference to review information many times. Students can stop and replay important parts of the podcast as many times as they wish.

Chat sessions allow students to work in groups and have real-time communication with other students in their group. They can also have real-time individual or group access to their lecturers to obtain feedback and answers to questions. Chat sessions can be used to brainstorm ideas for group projects and a record of the session can be saved for future reference.

Videoconferencing is another method of communication for students to view lessons or work in groups. Although these conferences must be viewed in real-time it is a more personalised method of working in groups than chat because students can see each other and information can be displayed on the screen for students to view. Videoconferences can also provide a sense of community for the students and lecturer.

Emails are a method of sending the same information to a group of students at the same time. Information can be viewed by each student at different times when it is convenient for them. Emails can also contain attached documents including text documents, images and recordings. Emails are an extremely common method of communication and can be accessed wherever an internet connection is available.

Mobile phones are a common communication device that most students own. They can be used for text messages as well as phone calls. The university can automatically send text messages to groups of students depending on different criteria, for example to remind students to pay fees. Mobile phones are highly portable with wide coverage over most of Australia. They can also be used to access the internet and emails.

Blogs and Wikispaces are two communication methods that are commonly used to collaborate within a group environment. Blogs allow short messages, brainstorming, just the facts to be viewed by students and lecturers at their convenience. Wikispaces allow students and lecturers to collaborate on the same document in their own time.

Work can be submitted by attaching files to emails, uploading to a website or wiki. Work can also be in the form of a discussion forum.

All these communication methods could be used by students and lecturers at the university. Using a number of different methods would allow each student to choose the methods that best suit them and methods with which they are most comfortable.

# Information and Digital Technology
## Networking and Hardware
2014 HSC Examination Mapping Grid

**Section I**

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 1 | 1 | Operating System Software – Operating systems – page 28 | | | | | | | | X |
| 2 | 1 | Safety – WHS information – page 39 | X | | | | X | | | |
| 3 | 1 | Operating System Software – Installing an operating system – page 29 | | | X | | | | X | X |
| 4 | 1 | Working in the Industry – Communication – page 26 | X | | | X | | X | | |
| 5 | 1 | Diagnostic Testing – Troubleshooting – page 32 | | | X | | | | X | X |
| 6 | 1 | Diagnostic Testing – Destructive & malicious software protection – page 33 | X | | X | | X | | X | X |
| 7 | 1 | Safety – Risk management – page 37 | X | X | X | X | X | | X | |
| 8 | 1 | Working in the Industry – Employment – page 24 | X | X | X | X | X | X | X | X |
| 9 | 1 | Operating System Software – Installing an operating system – page 29 | X | | X | X | X | | X | X |
| 10 | 1 | Safety – Risk management – page 37 | X | X | X | X | X | | X | |
| 11 | 1 | Diagnostic Testing – Troubleshooting – page 32 | X | | X | | X | | | X |
| 12 | 1 | Network & Hardware – Documentation – page 51 | X | X | X | | X | | | X |
| 13 | 1 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | X | | | X |
| 14 | 1 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | X | | | X |
| 15 | 1 | Network & Hardware – Components, protocols & standards – page 49 | X | X | X | | X | | | X |

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 16 | 1 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | X | | | X |
| 17 | 1 | Network & Hardware – Components, protocols & standards – page 48 – Network and hardware installation – page 49 | X | X | X | | X | | | X |
| 18 | 1 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | X | | | X |
| 19 | 1 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | X | | | X |
| 20 | 1 | Network & Hardware – Components, protocols & standards – page 48 | X | X | X | | X | | | X |

**Section II**

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 21 (a) | 2 | Safety – Safe work practices – page 38 | X | X | X | X | X | | X | |
| 21 (b) | 4 | Safety – Safe work practices – page 38 | X | X | X | X | X | | X | |
| 22 (a) | 2 | Operating System Software – Operating systems – page 28 | X | | X | X | X | | X | X |
| 22 (b) | 2 | Operating System Software – Installing an operating system – page 29 | X | | X | X | X | | X | X |
| 23 (a) | 1 | Diagnostic Testing – Troubleshooting – page 32 | X | | X | | X | | | X |
| 23 (b) | 4 | Diagnostic Testing – Preventative maintenance – page 33 | X | | X | | X | | | X |
| 24 (a) | 2 | Networking & Hardware – Provision of client support services – page 51 | X | X | X | X | X | X | X | X |
| 24 (b) | 4 | Networking & Hardware – Provision of client support services – page 51 | X | X | X | X | X | X | X | X |
| 25 (a) | 1 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | | | | X |

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 25 (b) | 2 | Network & Hardware – Network and hardware testing – page 50 | X | X | X | | X | | | X |
| 25 (c) | 6 | Network & Hardware – Network security – page 49 | X | X | X | | X | | | X |

**Section III**

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 26 (a) | 3 | Network & Hardware – Components, protocols & standards – page 47 | X | X | X | | X | | | X |
| 26 (b) | 4 | Network & Hardware – Components, protocols & standards – page 47 | X | | X | | | | | X |
| 26 (c) | 8 | Network & Hardware – Components, protocols & standards – page 47 | X | | X | | | | | |

**Section IV**

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 27 | 15 | Working in the Industry – Nature of industry, communication – pages 24 & 26 | X | X | X | X | X | X | X | X |