

**2002 HSC Notes from  
the Marking Centre  
Information Processes and Technology**

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# **2002 HSC NOTES FROM THE MARKING CENTRE**

## **INFORMATION PROCESSES AND TECHNOLOGY**

### **Introduction**

This document has been produced for the teachers and candidates of the Stage 6 course in Information Processes and Technology. It provides comments with regard to responses to the 2002 Higher School Certificate Examination, indicating the quality of candidate responses and highlighting the relative strengths and weaknesses of the candidature in each section and each question.

It is essential for this document to be read in conjunction with the relevant syllabus, the 2002 Higher School Certificate Examination, the Marking Guidelines and other support documents which have been developed by the Board of Studies to assist in the teaching and learning of Information Processes and Technology.

The Information Processes and Technology Stage 6 course teaches students about information-based systems. The course covers information processes and the technologies that support them. It provides the background needed for students to adapt to new technologies as they emerge.

### **The Mechanics of Marking**

The Supervisor of Marking (SOM), appointed by the Board of Studies, appoints a sufficient number of qualified Markers from the pool of applicants to ensure that all papers can be marked within the time period allocated by the Board. Each marker is appointed to mark one question.

Markers operated in teams of five to eight, with a Senior Marker responsible for each team. The number of teams allocated to each question varies according to the estimated number of candidates attempting that question. Estimated numbers for each question are calculated using the school surveys that are completed in Term I.

Senior Markers attended briefing sessions at the marking centre prior to the commencement of the actual marking program. During this time they finalised administrative structures and were briefed on the marking guidelines by a Board Officer, the Chair of the Examination Committee and the Supervisor of Marking. Senior Markers read a large number of scripts in order to become familiar with the application of the marking guidelines. They recommended minor points of clarification to the marking guidelines, which were considered, and if appropriate, approved by the Chair of the Examination Committee and the Supervisor of Marking. Senior Markers selected suitable student scripts to use as benchmark scripts prior to their briefing sessions with Markers.

Markers attended the marking centre to be briefed on the procedures, complete administrative details and were then introduced to the marking guidelines. As a group, all Markers and Senior Markers involved with each question familiarised themselves with the marking guidelines, using the benchmark scripts identified by the Senior Markers. Benchmark scripts were used throughout the marking operation to assist in the consistent application of the marking guidelines. The Judge Markers also referred to these scripts during the standards setting procedure.

A large number of papers were then pilot-marked to ensure that the marking guidelines were fully understood and were being consistently applied by all Markers. Papers, that were used for pilot marking, are released into the actual marking process at a later date.

Once final marking commenced, Senior Markers arranged for a number of control scripts to be individually marked by all Markers of a question and then compared the way in which the marking guidelines were being applied. Senior Markers also monitored the Marker Reliability statistics, which are processed each session for each Marker, each group and each question. Senior Markers check mark papers from every centre. These procedures ensured that the marking guidelines are consistently applied by all Markers, at all times, throughout the entire marking operation.

## **The HSC Examination**

In 2002, 10,024 candidates presented for the Information Processes and Technology Higher School Certificate Examination.

The examination paper consisted of:

Section I – 20 multiple-choice questions examining all three core topics of Project Work; Information Systems and Databases; and Communication Systems. All questions were compulsory.

Section II – Four structured free response questions based on all three core topics. All questions were compulsory.

Section III – Four questions based on the options of Transaction Processing Systems; Decision Support Systems; Automated Manufacturing Systems; and Multimedia Systems. Candidates were required to attempt two questions.

The Higher School Certificate Examination focused on assessing how well candidates could apply and adapt the concepts they had learnt in the Stage 6 Information Processes and Technology course. It required them to apply their knowledge and understanding to a variety of situations. The examination emphasised the importance of applying the tools of information systems in a given context as opposed to regurgitating rote-learned facts. A large majority of candidates found this approach to be quite challenging. Markers observed that many candidates were able to identify a key concept and describe that key concept in detail. As in 2001, alarmingly few candidates were able to apply their understanding to the context of a particular question. In comparison to 2001 however, this year there was an improvement in the quality of responses. Some candidates were able to demonstrate an understanding of how to apply knowledge in the context of given scenarios.

Students should be reminded that the mark value allocated for each question part, along with the 'key word' used in each question part, indicates the level of depth an answer requires to fully address the question.

It is recommended that students be given ample opportunity to practice the application of the key concepts to various scenarios. It was noticed that throughout the paper that many candidates were inclined to respond to the surface features of a scenario, relating their experiences of similar situations, rather than responding to the scenario in the context of information processes and relevant technologies.

## Section I

| Question | Correct Response |
|----------|------------------|
| 1        | D                |
| 2        | A                |
| 3        | C                |
| 4        | A                |
| 5        | D                |
| 6        | D                |
| 7        | C                |
| 8        | B                |
| 9        | B                |
| 10       | A                |

| Question | Correct Response |
|----------|------------------|
| 11       | C                |
| 12       | D                |
| 13       | A                |
| 14       | D                |
| 15       | D                |
| 16       | B                |
| 17       | C                |
| 18       | A                |
| 19       | B                |
| 20       | C                |

## Section II

Candidates were required to answer all four questions in this section.

Many candidates did not start a separate writing booklet for each question. It was sometimes difficult to determine where one question ended and the next began. It is crucial that candidates ensure that they start a new writing booklet for each question and clearly label which question they are attempting. It also assists in the marking process if candidates indicate which part of the question their answer is addressing.

Candidates who were familiar with the Board of Studies' glossary of key words were more likely to understand what type of responses were expected. This section required candidates to identify, discuss, describe, outline and propose. Scenarios and diagrams were used in order to encourage candidates to apply their knowledge and understanding of information-based systems to practical situations. Many candidates found this a difficult task to undertake. Responses commonly contained the students' experiences of a situation similar to that in scenarios, rather than the 'systems' or 'computing' perspectives.

### Question 21

In this question candidates were required to discuss the roles of a file server and apply their understanding of data redundancy and normalisation to the given scenario.

A surprisingly large number of candidates experienced difficulty in attempting this question. Some candidates related the concept of data redundancy to a network rather than the database and there was generally a very limited understanding of the process of normalisation.

- (a) A significant number of candidates confused the role of a file server with a communications device rather than its primary role of storage and retrieval of files. Often the physical characteristics were discussed rather than the role that the file server plays on a network.

- (b) This part was the best attempted in question 21. Most candidates were able to correctly identify at least one redundant field. A small proportion of candidates, however, thought redundant data included all repeated data such as Computer RAM.

Most candidates were able to outline one problem, such as an unnecessary increase in storage required, but had difficulty in explaining a second problem. Many candidates gave accurate definitions of data redundancy but failed to relate it to the scenario by identifying fields that contained redundant data.

- (c) Many candidates were confused about how to answer this question. There was a range of responses including tables, schemas, data dictionaries and written responses.

Candidates had a very limited understanding of demonstrating normalisation in a database and correctly identifying the keys. Many candidates were unable to link the tables with an appropriate field. A common error was to link via a unique identifier such as a Computer Number. There were, however, candidates who were able to achieve full marks in this question as they had a clear understanding of the process of normalisation.

## Question 22

This question demanded knowledge of various concepts of communications systems including transmission mediums, the nature of mobile computing; and also some knowledge of data dictionaries. Candidates were required to link their answers to the scenario presented. The diagram provided a valuable component of the scenario.

The responses provided by the candidates were varied and reflected their level of understanding. A significant number of candidates were familiar with transmission mediums but were not able to apply this specific knowledge to the given scenario. Candidates generally attempted all sections but their responses lacked detail and many candidates were unable to give responses to the depth required as indicated by the key words, 'identify', 'outline' and 'describe'. Also, candidates frequently did not make use of the scenario. A large number of candidates appeared to have no concept of data dictionaries.

- (a) Candidates in most cases were able to identify some form of transmission medium for the given segment. Frequently the identified medium was not appropriate to the scenario and many candidates were unable to support their answers with a clear outline of why the chosen medium was appropriate.
- (b) Many candidates misunderstood the term 'mobile technology' and gave advantages for the use of the mobile phone only, and not when used in conjunction with the laptop as per the scenario. This led to many candidates giving poor responses. A significant number of candidates misunderstood the scenario and based their answer on telecommuting from home. Better responses not only referred to the use of the laptop and the mobile phone but also gave advantages in terms of some social and ethical issues.
- (c) Candidates generally were able to identify characteristics of a data dictionary but were unable to describe how a copy of the data dictionary would help compose SQL queries. Responses were often general in their description of data dictionaries without again linking it to the scenario. Some candidates constructed SQL queries to help support their responses. It was



pleasing to see that many candidates were able to correctly use SQL but this was not an important feature of the response required.

### Question 23

Candidates were required to read the scenario about an organisation called Baksiano Pizza Delivery, analyse a context diagram and apply their knowledge to the information provided in the scenario. Many candidates attempted to redesign the scenario rather than answer according to the material in the question. Part (a) provided most candidates with the opportunity to show their understanding of information technology, while part (b) was often not attempted.

Few candidates answered this question to the required depth of knowledge and understanding of key concepts.

- (a) The question required candidates to identify, (ie recognise and name) and therefore repeat the relevant background information to answer the question correctly. While many candidates were able to identify the information technology, better responses clearly distinguished the difference between hardware, software and communication technologies. Candidates often failed to analyse the scenario to identify additional information technology that was required for the new information system. Better responses used the diagram to realise that within the software components there was more than one database, which included inventory database, customer database and perhaps store database. Candidates had difficulties with the communication technologies, their ideas were not clear and were often confused. Many candidates overlooked the significance of the mainframe computer. A number attempted to add a file server, which indicated a poor understanding of mainframes or larger networking technologies.
- (b) Many candidates gave processes or application packages instead of systems. Candidates failed to recognise the information systems such as a database management system, management information systems and decision support systems, and had limited knowledge of the type of system that would carry out an analysis of the purchasing trends. Many candidates incorrectly chose transaction processing systems as a system that would carry out the analysis regarding trends without additional tools being described. It is important that teachers stress that the analysis systems take data from the transaction processing systems as input to produce tables, graphs, models, 'what-if' scenarios to enable management to monitor the status of the company and make decisions to secure its future. Candidates seemed to answer the question according to their option topic knowledge without relating to the scenario given and often analysed the whole business rather than just the purchasing trends.

### Question 24

This question required knowledge of the design stage of the system development cycle and the modelling tools used to describe the system.

Candidates generally attempted all questions but their responses were not of a high standard. Candidates should have related their answers to the scenario provided using specific computing terminology and explanations and provided relevant examples to demonstrate their understanding.

- (a) Decision tables are defined in the Software and Course Specifications for Information Processes and Technology, published by the Board of Studies. Many candidates were

obviously unaware of the structure of a decision table and possibly, therefore, were unaware of the existence of such a document. Relatively few candidates successfully completed the translation process from a decision tree to a decision table.

- (b) Few candidates answered this question to the required depth of knowledge. The term ‘user documentation’ was not understood by many candidates who misinterpreted this term to mean the details of the customers of the online store. Such responses could not then include the appropriate importance of user documentation for the online store.
- (c) Most candidates could identify social and ethical issues relevant to this situation. However, many answered the question generically instead of describing how each issue could be addressed at the design stage in this specific situation. Good responses chose distinctly different issues that allowed them to demonstrate their breadth of knowledge and their responses demonstrated a depth of understanding from a technical perspective.

### Section III

Candidates were required to answer TWO questions only from this section. 4.5% of the total candidature attempted more than two questions, thus limiting the amount of time they had available to effectively answer the number of questions required. Candidates should be discouraged from attempting more than two questions, as the time they waste on the extra question/s could be better spent fully answering the questions required.

Once again, many candidates did not start a separate writing booklet for each question. It was sometimes difficult to determine where one question ended and the next began. It is crucial that candidates read and follow the examination instructions at the beginning of each section.

This section required candidates to discuss, explain, define, describe, distinguish, identify, outline, design and analyse. Each question encouraged candidates to apply their knowledge and understanding of information-based systems to a given scenario. When answering part (c) in each option question, many candidates did not understand the meaning of the word ‘analyse’. As a result, candidate responses did not tend to include an explanation of the relationships between the processes.

### Question 25

61% of the total candidature attempted this question.

The question required candidates to more than merely recall information and definitions related to Transaction Processing Systems (TPS). In order to do well candidates needed to be able to apply their knowledge to the given scenarios as well as demonstrating an understanding of the terms from the glossary of key words like ‘describe’.

Most candidates made some attempt at each part of the question but often did little more than merely rewrite the question. Definition type questions were answered reasonably well; however diagrams and questions requiring students to elaborate were poorly answered.

- (a) (i) Most candidates were able to give a good definition of batch processing. Many candidates were also able to identify an example of batch processing, however they

were often unable to describe the situation adequately. Processing of cheques was often given as an example but candidates had no real understanding of it in terms of batch processing. Discussion of the cheques was often from the customer perspective, rather than from the system perspective.

- (ii) Many candidates confused integrity as an ethical issue and gave definitions in terms of Internet usage. The examples given by candidates to distinguish between the two terms were often quite poor or omitted.
- (b) (i) A very small number of candidates were able to give a dataflow diagram (DFD) that demonstrated a good understanding of the correct symbols as well as being able to apply DFDs to the question. Many candidates either represented the system using some other graphical means (eg system flowchart) or were able to include a correct set of DFD symbols without being able to apply them. Some candidates who were able to draw a DFD often were unable to recognise the correct data flows between the processes and data stores.
- (ii) Many candidates were able to identify a number of backup procedures without being able to demonstrate an understanding of how each would be used in the scenario. Grandfather-father-son was most commonly mentioned with candidates confusing the three generations with backing up three types of data. A few candidates answered in terms of alternative procedures that could be used if the system failed, like having a staff member on hand to allow borrowing manually. Candidates were often unaware of backup procedures stated in the syllabus.
- (c) Few candidates answered this question well and many merely rewrote parts of the question under the three headings of collecting, storage and retrieval, and processing. Some candidates answered this question based on their knowledge of what happens in video stores rather than the information given in the question. Candidates were weakest on the ‘collecting’ process and often described what input details would be rather than how this data would be collected. The majority of candidates gave a superficial discussion of issues related to the customer rather than identifying and elaborating on the system.

## Question 26

36% of the total candidature attempted this question.

The question provided candidates with an opportunity to demonstrate their understanding of a structured problem, certainty factor, designing a spreadsheet and using graphs to assist decision-making, and the key information processes of organising, analysing and processing.

The majority of the responses were reasonably good and indicated that candidates had some understanding of the concepts involved. To answer the question well candidates needed to relate their responses to the context of the given scenario.

- (a) (i) This was a straightforward question and most candidates were able to demonstrate some understanding of a structured problem and provide a credible example.
- (ii) Most candidates were familiar with the concept of ‘certainty factor’ and used good examples to elaborate and support their response.

- (b) (i) Many candidates showed that they were able to design a basic spreadsheet, showing relevant data and the use of appropriate formulae, but were not successful in demonstrating their understanding of an absolute cell reference and an IF function.
- (ii) Most candidates were able to identify one or more types of graphs and outline how graphs might be used to assist in decision making. The majority of candidates did not recognise that a pie chart was not appropriate for this scenario.
- (c) Most candidates were able to identify characteristics and features of at least one of the information process of organising, analysing and processing, but had difficulty identifying the relationships between the processes.

### Question 27

24% of the total candidature attempted this question.

To answer this question candidates were required to describe the concepts of Computer Aided Design (CAD) and actuators and relate them to real world situations. They needed to draw a block diagram of an automated letter sorting facility, explain advantages and disadvantages of bar coding and describe and analyse the information processes of an automated warehouse system.

Candidate responses ranged widely in both their clarity and depth. Full marks were achieved by a number of candidates on the question, but a large number of candidates produced poor responses.

- (a) (i) Most candidates were able to adequately describe Computer Aided Design, but some had difficulty in supplying an example to adequately illustrate their description.
- (ii) Many candidates failed to attempt this question part. Those who did attempt were either able to identify two actuators with a suitable situation for their use, or wrote responses that indicated little, or no, understanding of actuators.
- (b) (i) Relatively few candidates were able to adequately draw a block diagram using the necessary components. Of those that could produce a block diagram, most could transfer the situation into their drawing reasonably well, but sequencing the steps presented a problem to some candidates. Few were able to complete the diagram with correctly positioned controller(s), sensors and actuators.
- (ii) Almost all candidates were able to correctly respond with some advantages and/or disadvantages of barcoding letters, or in a few cases, other commercial applications.
- (c) The open-ended nature of the question should have allowed candidates to apply their overall knowledge of Automated Manufacturing Systems and respond to the three processes named. However many candidates simply restated the parts of the question without adding any devices, software, data or people used to achieve the collecting, processing and displaying.

## Question 28

88% of the total candidature attempted this question.

The question required knowledge of multimedia display technology, animation techniques and the calculation of file size for a graphic image. It also required an understanding of the design of interactive websites and an ability to describe and analyse the processes of collecting, organising and displaying for an existing website.

Candidates achieved a full range of marks. A significant shortcoming in some parts was a lack of attention to detail and a failure to address key concepts in terms of specific multimedia technologies. It was also apparent that candidates often failed to note the mark value of questions and thus gave answers that were lacking in depth and detail.

- (a) (i) Many candidates gave a description of the operation of LCD and CRT displays in considerable detail but were unable to indicate the differences between them. A proportion of candidates used simplistic relative terms such as heavier, bigger, cheaper, flatter, rounder, deeper and brighter but failed to provide significant distinctions. Better responses included direct comparisons between the two types of displays in terms of physical structure, technical operation and typical use.
- (ii) Again, many candidates gave a clear description of cell-based and path-based animations but were unable to indicate differences. Candidates often described path-based animation as synonymous with tweening and cell-based descriptions were occasionally confused with morphing and warping. Few candidates addressed the technical differences between the two techniques such as file size, processor requirements and animation production differences such as time-savings.
- (b) (i) Candidates understood the concept of a storyboard and were able to access the higher mark range. Many candidates did not note the mark allocation for this part and did not provide the detail required for each web page.

Many candidates created storyboards with one directional arrows and failed to provide a return path to the main page. There was frequently a lack of consistency between pages and an absence of each of the elements named in the question: video footage, audio interview, photos and biography.

Some candidates understood a storyboard to be a sequence of 'scenes' as might be found in a plan for an animation or slide show and others merely drew linked empty boxes and labelled the structure as 'hierarchical'.

- (ii) This part was generally well done. The question clearly required that each number in the calculation be explained. Most candidates did not explain the presence of either the 8 or the 1024 in the calculation. A number of candidates divided by 1000 to convert to kilobytes, rather than 1024 as required for a correct calculation.
- (c) Many candidates gave rote responses upon seeing the terms *collecting*, *organising* and *displaying*, failing to address the scenario or to draw relationships between processes. Better responses described the implications of the processes and the activities, which would be associated with these in this real-life situation. A typical example of this would be candidates

who outlined the necessity to collect the faxes, emails and posted advertisements but failed to analyse how these would be digitised for website publication.

This question part featured text and graphics and three of the information processes only. This clearly troubled some candidates who felt compelled to include references to video and audio content and to describe all seven processes in detail. Better responses referred to system components of participants, data/information or information technology when discussing the information processes.

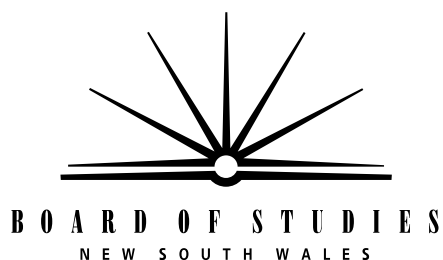
# Information Processes and Technology

## 2002 HSC Examination Mapping Grid

| Question          | Marks | Content                                                     | Syllabus outcomes |
|-------------------|-------|-------------------------------------------------------------|-------------------|
| <b>Section I</b>  |       |                                                             |                   |
| 1                 | 1     | Project Work                                                | H5.1              |
| 2                 | 1     | Communication Systems                                       | H1.1              |
| 3                 | 1     | Information Systems and Databases                           | H1.1              |
| 4                 | 1     | Information Systems and Databases                           | H1.1              |
| 5                 | 1     | Communication Systems                                       | H1.1              |
| 6                 | 1     | Project Work                                                | H5.1              |
| 7                 | 1     | Information Systems and Databases                           | H1.2              |
| 8                 | 1     | Communication Systems                                       | H1.1              |
| 9                 | 1     | Information Systems and Databases                           | H3.1              |
| 10                | 1     | Project Work                                                | H6.2              |
| 11                | 1     | Information Systems and Databases                           | H1.1              |
| 12                | 1     | Communication Systems                                       | H1.1              |
| 13                | 1     | Project Work                                                | H5.1              |
| 14                | 1     | Information Systems and Databases                           | H1.1              |
| 15                | 1     | Information Systems and Databases                           | H1.1              |
| 16                | 1     | Communication Systems                                       | H1.1              |
| 17                | 1     | Information Systems and Databases                           | H5.1              |
| 18                | 1     | Project Work                                                | H2.1              |
| 19                | 1     | Project Work                                                | H2.1              |
| 20                | 1     | Communication Systems                                       | H1.1              |
| <b>Section II</b> |       |                                                             |                   |
| 21 (a)            | 3     | Information Systems and Databases                           | H1.1, H1.2        |
| 21 (b)            | 3     | Communication Systems                                       | H1.1              |
| 21 (c)            | 4     | Information Systems and Databases                           | H6.1              |
| 22 (a)            | 4     | Communication Systems                                       | H1.1              |
| 22 (b)            | 3     | Communication Systems                                       | H3.1              |
| 22 (c)            | 3     | Information Systems and Databases                           | H5.1              |
| 23 (a)            | 4     | Information Systems and Databases,<br>Communication Systems | H1.1, H2.1        |
| 23 (b)            | 5     | Information Systems and Databases,<br>Communication Systems | H1.2, H2.1        |
| 24 (a)            | 3     | Project Work                                                | H1.1, H4.1        |
| 24 (b)            | 3     | Project Work                                                | H1.1, H4.1, H7.2  |
| 24 (c)            | 5     | Project Work                                                | H3.1, H3.2, H5.2  |

| Question           | Marks | Content                         | Syllabus outcomes                  |
|--------------------|-------|---------------------------------|------------------------------------|
| <b>Section III</b> |       |                                 |                                    |
| 25 (a) (i)         | 3     | Transaction Processing Systems  | H1.1, H1.2                         |
| 25 (a) (ii)        | 3     | Transaction Processing Systems  | H1.1, H1.2                         |
| 25 (b) (i)         | 5     | Transaction Processing Systems  | H1.1, H1.2, H2.1, H6.1, H7.2       |
| 25 (b) (ii)        | 3     | Transaction Processing Systems  | H1.1, H1.2, H2.2, H3.1             |
| 25 (c)             | 6     | Transaction Processing Systems  | H1.1, H1.2, H2.1, H3.1, H4.1       |
| 26 (a) (i)         | 3     | Decision Support Systems        | H1.1, H1.2                         |
| 26 (a) (ii)        | 3     | Decision Support Systems        | H1.1, H1.2                         |
| 26 (b) (i)         | 5     | Decision Support Systems        | H1.1, H1.2, H2.2, H6.1, H7.2       |
| 26 (b) (ii)        | 3     | Decision Support Systems        | H2.1                               |
| 26 (c)             | 6     | Decision Support Systems        | H1.1, H1.2, H2.1, H3.1, H4.1, H5.2 |
| 27 (a) (i)         | 3     | Automated Manufacturing Systems | H1.1, H1.2                         |
| 27 (a) (ii)        | 3     | Automated Manufacturing Systems | H1.1, H1.2                         |
| 27 (b) (i)         | 4     | Automated Manufacturing Systems | H1.1, H2.1, H6.1, H7.2             |
| 27 (b) (ii)        | 4     | Automated Manufacturing Systems | H1.1, H3.1                         |
| 27 (c)             | 6     | Automated Manufacturing Systems | H1.1, H1.2, H2.1, H3.1, H4.1       |
| 28 (a) (i)         | 3     | Multimedia Systems              | H1.1, H4.1                         |
| 28 (a) (ii)        | 3     | Multimedia Systems              | H1.1                               |
| 28 (b) (i)         | 5     | Multimedia Systems              | H1.1, H6.1, H7.2                   |
| 28 (b) (ii)        | 3     | Multimedia Systems              | H1.1                               |
| 28 (c)             | 6     | Multimedia Systems              | H1.1, H1.2, H2.1, H3.1, H4.1       |





## 2002 HSC Information Processes and Technology Marking Guidelines

### Section II

#### Question 21 (a)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                          | Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"><li>Shows a good understanding of the role of a file server by clearly describing at least two roles of a file server</li></ul>                                                                                                                                                 | 3     |
| <ul style="list-style-type: none"><li>Shows a basic understanding of the role of a file server by:<ul style="list-style-type: none"><li>clearly describing at least one role of a file server</li></ul>OR<ul style="list-style-type: none"><li>poorly describing the role(s) of a file server</li></ul></li></ul> | 1–2   |

### Question 21 (b)

*Outcomes assessed: H1.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                        | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Clearly identifies an example of data redundancy in this database<br/>AND<br/>Shows a clear understanding of data redundancy by providing the main features of more than one problem, possibly using examples</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>Identifies an example of data redundancy in this database and shows an understanding of data redundancy by providing the main features of at least one problem, possibly using an example</li> </ul>                     | 2     |
| <ul style="list-style-type: none"> <li>Identifies data redundancy in this database<br/>OR<br/>Provides the main features of one problem of data redundancy</li> </ul>                                                                                           | 1     |

### Question 21 (c)

*Outcomes assessed: H6.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Demonstrates a clear understanding of normalisation by showing: <ul style="list-style-type: none"> <li>two tables with appropriate fields and no data redundancy</li> <li>all necessary data in the table</li> <li>correctly identified primary and foreign keys</li> </ul> </li> </ul>                                                                                                                                                               | 4     |
| <ul style="list-style-type: none"> <li>Demonstrates limited understanding of normalisation by showing two tables with a linking field</li> <li>Tables may include some errors such as: <ul style="list-style-type: none"> <li>inappropriate grouping of fields in table</li> <li>some data redundancy remaining</li> <li>keys not properly identified</li> <li>some repeated but not redundant data may have been removed</li> <li>some necessary data may be missing</li> </ul> </li> </ul> | 2–3   |
| <ul style="list-style-type: none"> <li>Demonstrates a poor understanding of normalisation, eg two tables without a linking field</li> </ul>                                                                                                                                                                                                                                                                                                                                                  | 1     |

### Question 22 (a)

*Outcomes assessed: H1.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                               | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Demonstrates a clear understanding of transmission media by identifying an appropriate medium for each of the four segments and describes at least one feature that makes each choice appropriate</li> </ul>    | 4     |
| <ul style="list-style-type: none"> <li>Demonstrates an adequate understanding of transmission media by identifying an appropriate medium for at least two of the segments with a description of a feature that makes the choice appropriate</li> </ul> | 2–3   |
| <ul style="list-style-type: none"> <li>Demonstrates a poor level of understanding by correctly identifying less than four appropriate media, with little or no description of why each choice is appropriate</li> </ul>                                | 1     |

### Question 22 (b)

*Outcomes assessed: H3.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                       | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies a range of distinct advantages of using mobile technology that demonstrates a good understanding of the situation</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>Identifies some advantages of using mobile technology, better answers should link the advantages to the question scenario</li> </ul>    | 1–2   |

### Question 22 (c)

*Outcomes assessed: H5.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                          | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Demonstrates a clear understanding of data dictionaries by describing how a data dictionary would assist Jill in this situation</li> </ul>                 | 3     |
| <ul style="list-style-type: none"> <li>Demonstrates an understanding of data dictionaries and how they are used to compose queries, links the use of a data dictionary to the scenario</li> </ul> | 2     |
| <ul style="list-style-type: none"> <li>Demonstrates some knowledge of a data dictionary by identifying its main features. Does not relate these features to the scenario.</li> </ul>              | 1     |

### Question 23 (a)

*Outcomes assessed: H1.1, H2.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                            | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Demonstrates a good understanding of hardware, software and communications technologies used in this scenario. Responses should include a good range of different technologies, in addition to identifying a range of relevant technologies that are not specifically identified in the scenario</li> </ul>  | 4     |
| <ul style="list-style-type: none"> <li>Demonstrates some understanding of the technologies in the scenario, offering a range of relevant technologies, not necessarily identified in the question. Responses may not necessarily involve examples from all of the three categories of hardware, software and communications technologies</li> </ul> | 2–3   |
| <ul style="list-style-type: none"> <li>Demonstrates a limited understanding of hardware, software and communications technologies, providing some technologies identified in the scenario</li> </ul>                                                                                                                                                | 1     |

### Question 23 (b)

*Outcomes assessed: H1.2, H2.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                        | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Shows a thorough understanding of two information systems (IS) appropriate for the analysis of the organisation's purchasing trends, recommends an appropriate IS and justifies its choice over the other</li> </ul>                     | 5     |
| <ul style="list-style-type: none"> <li>Shows clear understanding of information system(s) appropriate for analysis, but the level of detail in the descriptions may be limited. A better answer will include some justification for the recommended IS</li> </ul>               | 3–4   |
| <ul style="list-style-type: none"> <li>Shows limited understanding of the use of these information systems to analyse the organisations purchasing levels, may not include two IS, nor make any recommendation. Methods may be just named, or have brief description</li> </ul> | 1–2   |

### Question 24 (a)

*Outcomes assessed: H1.1, H4.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                        | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>A decision table that shows the three conditions and all the rules and actions described in the decision tree</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>A decision table that shows some of the rules and some conditions described in the decision tree</li> </ul>              | 1–2   |

### Question 24 (b)

*Outcomes assessed: H1.1, H4.1, H7.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                              | Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies a reason(s) relating to the importance of user documentation and relates this to the online system</li> </ul>                                       | 3     |
| <ul style="list-style-type: none"> <li>Identifies at least one reason relating to the importance of user documentation. Some attempt may be made to relate the reason to the online system</li> </ul> | 1–2   |

### Question 24 (c)

*Outcomes assessed: H3.1, H3.2, H5.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                       | Marks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies two distinct issues and puts forward proposals as to how they could be addressed. The response should show a thorough understanding of the issues and how they could be addressed</li> </ul> | 5     |
| <ul style="list-style-type: none"> <li>Identifies a relevant issue(s) and attempts to address the issue(s). A better response should show clear understanding of the issue(s) and how it/they could be addressed</li> </ul>                    | 3–4   |
| <ul style="list-style-type: none"> <li>Identifies at least one relevant issue. The answer may attempt to address the issue(s)</li> </ul>                                                                                                       | 1–2   |

### Question 25 (a) (i)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                       | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Clearly states the meaning and identifies the essential quality of batch processing as well as providing an adequate description of an appropriate situation</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>States the meaning and/or provides at least one quality of batch processing and/or briefly outlines an appropriate situation.</li> </ul>                                | 1–2   |

### Question 25 (a) (ii)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Demonstrates a clear understanding of the difference between the two terms and provides an appropriate example to illustrate the differences between data accuracy and data integrity</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>Provides a definition for at least one of the terms and/or a brief outline of an appropriate example</li> </ul>                                                                                  | 1–2   |

### Question 25 (b) (i)

*Outcomes assessed: H1.1, H1.2, H2.1, H6.1, H7.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Demonstrates a comprehensive understanding of the proposed system. Correctly uses the standard dataflow diagram symbols to show the flow of data between the processes, the external entities and the data stores. The three processes, all the external entities, all the data stores and the essential data must be correctly implemented and clearly labelled. The response should show thorough understanding of the use of a dataflow diagram to represent systems</li> </ul> | 5     |
| <ul style="list-style-type: none"> <li>Demonstrates a clear understanding of the proposed system. Provides a diagram that shows the overall logic of the system but not necessarily including all the external entities, data stores or data. The three processes should be present. A good answer should also demonstrate the correct use of the standard dataflow diagram symbols</li> </ul>                                                                                                                            | 3–4   |
| <ul style="list-style-type: none"> <li>Demonstrates a limited understanding of the proposed system. Correctly uses some of the standard dataflow diagram symbols and/or provides a diagram that shows some of the logic of the system</li> </ul>                                                                                                                                                                                                                                                                          | 1–2   |

### Question 25 (b) (ii)

*Outcomes assessed: H1.1, H1.2, H2.2, H3.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                              | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies and demonstrates an understanding of appropriate back-up procedures</li> </ul>      | 3     |
| <ul style="list-style-type: none"> <li>Identifies and/or demonstrates an understanding of appropriate back-up procedure(s)</li> </ul> | 1–2   |

### Question 25 (c)

*Outcomes assessed: H1.1, H1.2, H2.1, H3.1, H4.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                 | Marks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies characteristics/features of all three processes (collecting, storage and retrieval and processing), elaborates in a way that illustrates good understanding of the processes and attempts to draw out or relate implications. Better answers should show an understanding of the relationships between the processes and place particular emphasis on storage and retrieval</li> </ul> | 5–6   |
| <ul style="list-style-type: none"> <li>Identifies characteristics/features of at least two of the processes, elaborates in a way that shows some understanding of the processes. Some attempt may be made to draw out or relate implications</li> </ul>                                                                                                                                                                                  | 3–4   |
| <ul style="list-style-type: none"> <li>Provide some characteristics/features of the ticketing system in terms of at least one of the information processes of collecting, storage and retrieval and processing</li> </ul>                                                                                                                                                                                                                | 1–2   |

### Question 26 (a) (i)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                    | Marks |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>A definition which demonstrates a good understanding and provides essential qualities of problem-solving characteristics, and provides a credible example</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>A definition which demonstrates some understanding of problem-solving characteristics and/or includes an example</li> </ul>                                          | 1–2   |

### Question 26 (a) (ii)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                               | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>A definition which demonstrates a clear understanding of the concept and provides a credible example</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>A definition which demonstrates some understanding of the concept and/or provides an example</li> </ul>         | 1–2   |

### Question 26 (b) (i)

*Outcomes assessed: H1.1, H1.2, H2.2, H6.1, H7.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>• Demonstrates a comprehensive understanding of the problem</li> <li>• Incorporates most desirable design elements, such as: <ul style="list-style-type: none"> <li>– shows formula/calculations</li> <li>– correct format of values (eg dollar)</li> <li>– clear separation of each plan</li> <li>– clear separation of input/calculation and output areas</li> <li>– has estimated usage only once (absolute ref.)</li> <li>– the use of an if statement to accommodate whether actual call costs exceed free calls</li> <li>– includes headings</li> <li>– is well set out</li> </ul> </li> </ul> | 5     |
| <ul style="list-style-type: none"> <li>• Demonstrates a clear understanding of the problem</li> <li>• Incorporates some of the desirable design elements listed above</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3–4   |
| <ul style="list-style-type: none"> <li>• Demonstrates a limited understanding of the problem</li> <li>• Incorporates a few of the desirable design elements above (would probably include data rather than formula)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                              | 1–2   |

### Question 26 (b) (ii)

*Outcomes assessed: H2.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                   | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>• Clearly identifies some different types of graphs and outlines how they might be used in this situation</li> </ul>                | 3     |
| <ul style="list-style-type: none"> <li>• Identifies some of the graphs available and/or makes an attempt to discuss how a graph might be used in this situation</li> </ul> | 1–2   |



### Question 26 (c)

*Outcomes assessed: H1.1, H1.2, H2.1, H3.1, H4.1, H5.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                           | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies characteristics/features in all three processes (organising, analysing, processing), elaborates in a way that illustrates good understanding of the processes and attempts to draw out or relate implications. Better answers should show an understanding of the relationships between the processes</li> </ul> | 5–6   |
| <ul style="list-style-type: none"> <li>Identifies characteristics/features in at least two of the processes, elaborates in a way that shows some understanding of the process(es). Some attempt may be made to draw out or relate implications</li> </ul>                                                                                                          | 3–4   |
| <ul style="list-style-type: none"> <li>Provides some characteristics/features of the DSS in terms of at least one of the information processes organising, analysing and processing</li> </ul>                                                                                                                                                                     | 1–2   |

### Question 27 (a) (i)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                              | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Provides characteristics and features of CAD and gives an example that shows a good understanding of the use of CAD</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>Provides characteristics/features of CAD and/or gives an example that shows limited understanding of the use of CAD</li> </ul> | 1–2   |

### Question 27 (a) (ii)

*Outcomes assessed: H1.1, H1.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                   | Marks |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Names two actuators and describes a relevant situation for use of each</li> </ul>                                                                   | 3     |
| <ul style="list-style-type: none"> <li>Names two actuators but only describes one situation</li> </ul> OR <ul style="list-style-type: none"> <li>ONE actuator in TWO situations</li> </ul> | 2     |
| <ul style="list-style-type: none"> <li>ONE actuator in a situation</li> </ul> OR <ul style="list-style-type: none"> <li>Two actuators but no situation</li> </ul>                          | 1     |

### Question 27 (b) (i)

*Outcomes assessed: H1.1, H2.1, H6.1, H7.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                     | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Correctly draws a block diagram that demonstrates a clear understanding of the situation (3 sub-systems). The diagram should include: a sensor, controller and actuator in each sub-system</li> </ul> | 4     |
| <ul style="list-style-type: none"> <li>Draws a block diagram that shows an understanding of the situation. Not all components are included or correctly sequenced</li> </ul>                                                                 | 2–3   |
| <ul style="list-style-type: none"> <li>Demonstrates a limited understanding of the situation by attempting a block diagram</li> </ul>                                                                                                        | 1     |

### Question 27 (b) (ii)

*Outcomes assessed: H1.1, H3.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                               | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Clearly explains advantage(s) and disadvantages(s) of using barcodes either in mail sorting or another commercial situation. The explanation makes the connection between the use of barcodes and advantage and disadvantage evident</li> </ul> | 4     |
| <ul style="list-style-type: none"> <li>Identify advantages and/or disadvantages of the use of barcodes. Some attempt may be made to relate the use of barcodes to commercial applications</li> </ul>                                                                                   | 2–3   |
| <ul style="list-style-type: none"> <li>Identifies one advantage or one disadvantage of the use of barcodes</li> </ul>                                                                                                                                                                  | 1     |

### Question 27 (c)

*Outcomes assessed: H1.1, H1.2, H2.1, H3.1, H4.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                   | Marks |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies characteristics/features in all three processes of collecting, processing and displaying, elaborates in a way that illustrates a thorough understanding of the processes and attempts to draw connections and implications. Better answers should show an understanding of the relationship between the processes and place particular emphasis on collecting</li> </ul> | 5–6   |
| <ul style="list-style-type: none"> <li>Identifies characteristics/features in at least two processes, elaborates in a way that shows some understanding of the processes. Some attempt may be made to draw out or relate implications</li> </ul>                                                                                                                                                                           | 3–4   |
| <ul style="list-style-type: none"> <li>Provides some characteristics/features of the automated warehouse in at least one of the processes: collecting, processing and displaying</li> </ul>                                                                                                                                                                                                                                | 1–2   |

### Question 28 (a) (i)

*Outcomes assessed: H1.1, H4.1*

#### MARKING GUIDELINES

| Criteria                                                       | Marks |
|----------------------------------------------------------------|-------|
| • Answer clearly indicates the differences between CRT and LCD | 3     |
| • Answer describes CRT and/or LCD                              | 1–2   |

### Question 28 (a) (ii)

*Outcomes assessed: H1.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------|
| • Answer clearly indicates the difference between path-based and cel-based animations, relating how each one produces the end animation | 3     |
| • Answer describes path-based and/or cel-based animation.                                                                               | 1–2   |

### Question 28 (b) (i)

*Outcomes assessed: H1.1, H6.1, H7.2*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>• Demonstrates a comprehensive understanding of the storyboard, showing a number of desirable design elements such as: <ul style="list-style-type: none"> <li>– A logical storyboard layout (a linear layout would be considered inadequate)</li> <li>– Labelled navigation tools providing appropriate links</li> <li>– Consistency of button positioning</li> <li>– Clear indication of the contents of each page incorporating all of the elements: video, audio, photos and biography</li> <li>– A central menu page that provides appropriate links to the other web pages</li> </ul> </li> </ul> | 5     |
| <ul style="list-style-type: none"> <li>• Demonstrates a clear understanding of the storyboard showing some of the desirable design elements listed above</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3–4   |
| <ul style="list-style-type: none"> <li>• Demonstrates a limited understanding of the storyboard, illustrating few of the elements listed above</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1–2   |

### Question 28 (b) (ii)

*Outcomes assessed: H1.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                        | Marks |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Correct calculation method for the file size of the picture. A clear indication of why each number is used in the calculation</li> </ul> | 3     |
| <ul style="list-style-type: none"> <li>Calculation and/or an indication of why some of the numbers are used. Correct calculation is worth 2 marks</li> </ul>                    | 1–2   |

### Question 28 (c)

*Outcomes assessed: H1.1, H1.2, H2.1, H3.1, H4.1*

#### MARKING GUIDELINES

| Criteria                                                                                                                                                                                                                                                                                                                                                                                                        | Marks |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>Identifies characteristics/features in all three processes (collecting, organising, displaying), elaborates in a way that illustrates good understanding of the processes and attempts to draw out or relate implications. Better answers should show an understanding of the relationships between the processes and place particular emphasis on displaying</li> </ul> | 5–6   |
| <ul style="list-style-type: none"> <li>Identifies characteristics/features in at least two of the processes, elaborates in a way that shows some understanding of the processes. Some attempt may be made to draw out or relate implications</li> </ul>                                                                                                                                                         | 3–4   |
| <ul style="list-style-type: none"> <li>Provides some characteristics/features of the multimedia system in terms of at least one of the information processes of collecting, organising and displaying</li> </ul>                                                                                                                                                                                                | 1–2   |