

**2003 HSC Notes from  
the Marking Centre  
Information Processes and Technology**

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GPO Box 5300  
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Tel: (02) 9367 8111  
Fax: (02) 9367 8484  
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# **2003 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 2003 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 2003 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 become active and informed participants in the development of these systems.

## **The HSC Examination**

In 2003, 8557 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: 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.

In both Section II and Section III candidates were presented with scenarios and were required to apply their knowledge and understanding to the particular situations described in those scenarios.

Candidates should be reminded that the mark value allocated for each question part, along with the 'key word' used in each question part, indicates the type of response required and the depth of that response.

## Section I

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

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

## Section II

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

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, describe, design, construct, outline, draw, recommend and justify. Scenarios and tables were used in order to encourage candidates to apply their knowledge and understanding of information-based systems to practical situations. While many candidates were able to identify and describe, fewer students were able to apply their knowledge to the given situations.

### Question 21

This question allowed candidates to demonstrate their knowledge and understanding of setting up a website in a context to which they could relate. In general, candidates' responses reflected a reasonable understanding of what was required of them and hence most candidates could gain some marks from their responses.

- (a) This part required candidates to identify the hardware, software and communications technology required to implement the website. Candidates who had a good knowledge of the three technologies answered this question well. Most candidates could identify the appropriate hardware and software required but many failed to address the communications technology involved. Weaker responses simply suggested that 'the internet' and 'the phone' was all that was needed from a communications perspective.
- (b) This part required candidates to identify and describe security measures which could be implemented to prevent unauthorised access to data stored on the website. Better responses described appropriate methods in detail and how they would be implemented in this situation. Many candidates could not describe their functionality sufficiently in this scenario and the weakest responses gave poor generic descriptions of sometimes inappropriate security measures and displayed a poor understanding of their practical implementation.

- (c) This part required candidates to describe four aspects regarding the feasibility of the proposed website. The majority of candidates related their responses to the constraints reported upon in the feasibility study in the system development cycle. Better responses demonstrated a more complete understanding of the feasibility of a project by including descriptions of social and ethical issues and whether or not the objectives of the project had been met. Weaker responses involved simple definitions of the constraints without describing the characteristics and features in any depth or relating them to this situation.

## Question 22

The question was designed to have candidates read a data dictionary, design an input screen from it, creating a working SQL from this data dictionary, and finally consider the various issues arising from the emailing of this database to other friends.

The candidates responses overall were considered and well constructed. There was evidence of more than adequate preparation by candidates for this area of the syllabus when compared to previous years.

- (a) A large majority of candidates were able to design and draw a suitable layout for an input screen. However, some candidates designed screens which did not meet the requirements of the question, for example ‘search screens’ or a rewrite of the data dictionary. Better responses highlighted and named relevant features while average responses did not identify relevant features or identified no features at all. Poor responses gave a list view layout of the database or included a minimum number of fields.
- (b) The aim of this part was to construct an SQL query. The majority of candidates showed an understanding of SQL. The better responses demonstrated a good understanding of the keywords and relevant data required for each. Poor responses only showed a selection of the required fields and in some instances the criteria required, while others could only show the keywords of SELECT, FROM, WHERE, ORDER BY, without being able to apply this syntax to the given data.
- (c) This part required the candidates to outline the ethical and technical problems when emailing a large personal database. Most candidates were able to identify and provide features of an ethical and technical issue. Better responses outlined relevant features associated with each ethical and technical issue. The average response only outlined features of either an ethical or a technical issue. Poor responses named the issue without indicating any features.

## Question 23

This question was aiming to elicit from students an understanding of some technical requirements of communication systems and their role in supporting relationships between clients and fellow workers.

- (a) Candidates were asked to identify and describe two transmission error checking methods. Generally the candidates’ answers described checksum and cyclic redundancy check correctly and concisely. However candidates found describing parity checking more difficult. Better responses clearly described error checking methods including

before transmission and the receiving component of the transmission. Weaker responses only identified the methods of error checking or added a description that was not clear.

- (b) Candidates were asked to discuss the issues associated with interpersonal relationships and the use of a list of technologies. Some candidates referred to the two error checking methods as technologies rather than use the list given in the scenario.

Many students misinterpreted interpersonal relationships as ‘personal’ rather than ‘person to person’. Candidates often referred to the negative issues of the technologies and ignored the positive aspects. Better responses demonstrated understanding of the term and related it specifically to the professional relationship between the client and the company. Many candidates were able to discuss the advantages and disadvantages of each of the technologies, however most struggled to relate this to how it would impact on the client/employee relationship. In the poorer responses the issue was identified with limited discussion and very little reference to interpersonal relationships.

- (c) Candidates were asked to describe how the technologies listed were used to support group work. Most candidates described the benefits of the use of the technologies but found it difficult to explain ‘how’ the technology would support the work of the project team. Better responses linked the benefits of the technology to the support of the project team. In the better descriptions, candidates often included the use of the technologies by the client, as a participant in a prototyping approach, to support the work of the project team. The better responses indicated a knowledge of, or participation in project work and team work. Poorer responses showed a limited understanding of how the technology was able to support the work of the project team, describing the technology without any relationship to the scenario.

## Question 24

This question allowed candidates to demonstrate their understanding of a number of aspects of the core component of the course by addressing issues related to a given scenario.

Generally there was a good standard of responses to this question. Better responses exhibited appropriate terminology covered in the course and a relationship to the scenario, by providing examples to justify conclusions. Responses that avoided generalisations scored higher marks.

- (a) Most candidates were able to identify two advantages; however, better responses clearly demonstrated an understanding of the differences between the manual and electronic systems described in the scenario. Better responses used appropriate terminology covered in the syllabus and did not simply describe advantages in general terms.
- (b) Most candidates were able to interpret the requirements of this question and construct an appropriate Gantt chart. Better responses illustrated the duration of each stage and the minimum time required for the described system implementation.
- (c) Most candidates displayed a good understanding of the four conversion methods. Better responses included an appropriate recommendation and justification suitable for the described scenario. Poorer responses often confused conversion methods and were not able to provide an appropriate recommendation.



### Section III

Candidates were required to answer TWO questions only from this section. Two percent (2%) of the total candidature attempted more than two questions. Although this was substantially less than in previous years, candidates should still 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.

This section required candidates to define, describe, discuss, distinguish, outline and analyse. Each question had a part which tested candidates' understanding of key concepts within the given option, and two parts which encouraged candidates to apply their knowledge and understanding of information-based systems to a given scenario. Part (b) of each question was based on a key aspect of the syllabus: system components, information processes and the relationships between them. Many candidates were able to identify and describe these components and processes in general terms but few responses included a description of the relationships between the components.

#### Question 25

62% of the total candidature attempted this question.

The general intent of the question was to allow candidates to apply knowledge and facts to a given scenario. It should be noted that the stimulus material provided is directly from the syllabus. Better responses were from candidates who were able to construct answers based on their understanding of the glossary of key terms.

- (a) (i) Better responses clearly stated a meaning with an essential quality of real time processing. Their understanding was supported by an appropriate example.

Weaker responses may have only stated a meaning or outlined an example without indicating the key features of the example.

- (a) (ii) Better responses described bias in data collection and demonstrated their understanding with a relevant example.

Weaker responses may not have addressed bias in data collection or they may not have provided a relevant example.

Many candidates only defined or described bias without referring to data collection

- (b) Better responses provided several characteristics and features of the components in context to Quality Fish Farm information system. Candidates who provided comprehensive detail and demonstrated the relationship between components were rewarded.

Mid-range responses were able to identify and provide characteristics and features of a majority of components, without describing their relationship.

- (c) (i) Better responses demonstrated characteristics and features of at least two appropriate measures and elaborated on how these assisted accurate data entry.

Weaker responses may have only identified one measure or may have only had a limited understanding of what measures could be used to assist data entry.

- (c) (ii) Better responses demonstrated a comprehensive understanding of the positive and negative impacts on employees from QFF and also from the restaurant.

Mid-range responses did not sufficiently develop both positive and negative impacts on the employees or may have treated both sets of employees as only one group.

Weaker responses identified at least one impact on the employees or may have answered emphasising the impact on the businesses without referring to the employees.

## Question 26

31% of the total candidature attempted this question.

- (a) (i) Candidates were able to access a full range of marks on this question. Some of the candidates provided much more detail than was required to obtain full marks on this part of the question. There was a tremendous range of responses demonstrated by candidates when they attempted to identify an area that neural networks could be used.
- (a) (ii) Candidates were able to access a full range of marks on this question. Many candidates found it difficult to clearly define ‘forward chaining’, but their examples assisted them to demonstrate that they had an understanding of the concept. Many of the examples of forward chaining were quite good.
- (b) This was one of the more challenging parts of the question. Some candidates did not relate their responses to the given scenario making it difficult for them to gain marks. Nevertheless, most candidates were able to access some marks by simply identifying the components of the information system described in the scenario. Better responses were able to identify and describe a majority of the components. Whilst there were not many, there were some candidates that were able to describe all of the components and demonstrate a comprehensive understanding of the information system, as well as discuss the way in which the components were related to each other. The best responses dealt with the relationships between components in a comprehensive manner.
- (c) (i) Candidates found it difficult to name and identify issues involved with the use of pre-determined criteria for the given scenario, although there were a number that were able to describe issues relating to efficiency and fairness without necessarily naming the issues involved. These candidates were still able to gain some marks. A number of candidates were able to describe the issue of data bias without necessarily naming that issue.
- (c) (ii) Many candidates were able to identify issues relating to PMR’s responsibility in handling private data and keeping that data secure. Better responses linked their answers to the issues specifically mentioned in the question, namely the collection and use, access and use of data and issues relating to data mining. Better responses dealt with issues relating to data mining such as the possibility of erroneous inferences being made when data mining. The strongest responses did this across all three issues.

### Question 27

19.5% of the total candidature attempted this question.

- (a) (i) Better responses clearly distinguished between critical damping and overdamping, using one example to illustrate how each was different. Poorer responses often had separate examples which failed to illustrate the differences.
- (a) (ii) Better responses provided a clear description of a batch system (as opposed to continuous or discrete) and to demonstrate their understanding of the concept by providing an example to show this. Poorer responses confused the description and sometimes gave examples contradictory to the description.
- (b) Better responses described how each of the components operated within the information system, and gave some relationship between the components. Poorer responses sometimes simply defined the seven terms or described how they fitted into the diagram, with no attempted description of any relationship between them.

Customers were confused with participants by many candidates.

- (c) (i) Better responses were based on how the nature of work changed, while weaker ones often concentrated on employment levels only, or simply gave a description of the work undertaken.
- (c) (ii) Better responses included a discussion of the effects on the reliability, quality and safety of the system, that is both for and against points. Weaker responses generally contained a definition of reliability, quality and safety without relating them to the scenario.

### Question 28

89.5% of the total candidature attempted this question.

This question allowed candidates to demonstrate their knowledge and understanding of multimedia systems, particularly in terms of the information processes and the information system diagram. In general, candidates' responses reflected a reasonable understanding of the many aspects of the types of media used in multimedia and the design process.

- (a) This part required candidates to define a storyboard and the tasks undertaken by technical staff.

Most candidates understood the concept of a storyboard and could describe its purpose. However, some candidates simply described the different storyboard layouts rather than giving a definition.

Candidates had difficulty describing tasks undertaken by technical staff. Most candidates were unclear of the role of technical staff in the development of a multimedia application. Many candidates instead described computer technicians or a variety of non-technical tasks associated with the development of multimedia applications. There was a considerable body of candidates who incorrectly identified the full range of creative tasks associated with authoring and design as being technical.

- (b) This part required candidates to describe the components of a multimedia system and their relationship in the context of the creation of a multimedia portfolio.

Most candidates could demonstrate some understanding of the listed components by simply identifying or describing them from the given scenario. Better candidates provided more technical descriptions of the components from the information system diagram. The best candidates were able to provide an in depth discussion of the relationships between system components with contextual reference to the scenario provided, clearly showing that they had a sound understanding of aspects relating to the development of a multimedia system. Relating these components proved a challenge for many candidates.

- (c) (i) This part required candidates to outline the reasons why copyright is relevant for the creation and distribution of a multimedia portfolio. The majority of candidates discussed the reasons why only original data could be used in the multimedia portfolio, fewer candidates expressed the need to seek permission to use non-original data such as sound or video. The question also referred to the relevance of the artist protecting their own work. A small number of candidates addressed this issue.

- (c) (ii) Candidates were expected to describe the media types used in a multimedia presentation and discuss factors that made the presentation better than a paper-based portfolio.

Most candidates were able to list the different media types; however, only a small number were able to describe the different types used in the presentation. Many candidates discussed the advantages of using a multimedia presentation in general terms such as ‘looking better’, ‘more professional’, ‘demonstrating competence in technology’. Better responses included a discussion of factors that directly related to the choice of using specific media types that wouldn’t be suitable or available in a paper-based portfolio.

# Information Processes and Technology

## 2003 HSC Examination Mapping Grid

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

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

## 2003 HSC Information Processes and Technology Marking Guidelines

### Question 21(a)

*Outcomes assessed: HI.1*

#### MARKING GUIDELINES

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies at least two different and relevant technologies from each of the three categories (minimum of 6)</li> </ul>	3
<ul style="list-style-type: none"> <li>Identifies at least four different and relevant technologies from at least two of the categories</li> </ul>	2
<ul style="list-style-type: none"> <li>Identifies at least two different and relevant technologies from any categories</li> </ul>	1

### Question 21(b)

*Outcomes assessed: HI.1*

#### MARKING GUIDELINES

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies two appropriate security measures and clearly describes how at least one of them would be implemented in this context</li> </ul>	3
<ul style="list-style-type: none"> <li>Identifies two security measures and describes them</li> </ul> OR	2
<ul style="list-style-type: none"> <li>Identifies one security measure and provides a clear description in context</li> </ul>	
<ul style="list-style-type: none"> <li>Identifies at least two security measures</li> </ul> OR	1
<ul style="list-style-type: none"> <li>Identifies one security measure and gives a brief description</li> </ul>	

**Question 21(c)***Outcomes assessed: H6.2, H7.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Provides characteristics and features of four different aspects of feasibilities that relates to the case. Answer should demonstrate a good understanding of feasibility concerns</li></ul>	5
<ul style="list-style-type: none"><li>A response that shows an understanding of feasibility considerations by providing clear descriptions of at least two different aspects</li></ul>	3–4
<ul style="list-style-type: none"><li>A limited response that identifies or provides some characteristics/features of at least one aspect of feasibility</li></ul>	1–2

**Question 22(a)***Outcomes assessed: H1.1, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>A data entry screen that contains the essential fields described in the data dictionary, demonstrating good understanding of screen design principles and indicating at least two relevant screen design features</li></ul>	3
<ul style="list-style-type: none"><li>A data entry screen that contains some of the fields described but demonstrates a limited understanding of screen design. Higher marks should be awarded to answers demonstrating a higher level of understanding</li></ul>	1–2

**Question 22(b)***Outcomes assessed: H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>A correct SQL query that contains the required fields, table name, selection criteria and sort order as outlined in the question. Correct SQL keywords must be used (Full marks may be awarded to a solution with minor syntax errors)</li></ul>	3
<ul style="list-style-type: none"><li>An incomplete query that displays some understanding of SQL. At a minimum students must undertake some selection of fields</li></ul>	1–2



**Question 22(c)***Outcomes assessed: H3.1, H3.2, H1.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Sketch in general terms and indicate the main features of at least one relevant ethical issue and one relevant technical issue</li></ul>	3
<ul style="list-style-type: none"><li>• Sketch in general terms at least one ethical and/or technical issue relating to the question</li></ul>	1–2

**Question 23(a)***Outcomes assessed: H1.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• A response that shows clear understanding of two transmission error-checking methods and provides an adequate description of the error-checking methods</li></ul>	3
<ul style="list-style-type: none"><li>• A response that shows limited understanding of transmission error-checking. It identifies transmission error-checking method(s) and/or provides some elaboration on the characteristic(s) or feature(s) of the transmission error-checking. Identification of one single transmission error-checking method can attract a maximum of 1 mark</li></ul>	1–2

**Question 23(b)***Outcomes assessed: H1.1, H3.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies relevant issue(s) associated with two of the technologies and elaborates to provide points for and/or against. A clear understanding of the issues is demonstrated</li></ul>	3
<ul style="list-style-type: none"><li>• Describe at least one relevant issue OR identify at least one relevant issue for each of the two technologies</li></ul>	2
<ul style="list-style-type: none"><li>• Identify at least one relevant issue</li></ul>	1

**Question 23(c)***Outcomes assessed: H1.1, H4.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>The uses provided should be associated with two of the technologies and should have been elaborated in a way that demonstrates clear understanding</li></ul>	3
<ul style="list-style-type: none"><li>A response that shows limited understanding of the use of technologies to support the work of the project team. At least one description must be provided</li></ul>	1–2

**Question 24(a)***Outcomes assessed: H1.1, H3.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Identifies using descriptions, two advantages of this computerised record keeping system over the existing manual systems. Answer should elaborate in a way that demonstrates clear understanding of the differences</li></ul>	3
<ul style="list-style-type: none"><li>Identifies, using description(s), at least one advantage of computerised record keeping over manual systems. Higher marks should be awarded to answers that elaborate in a way that demonstrates understanding of the differences</li></ul>	1–2

**Question 24(b)***Outcomes assessed: H6.1, H7.1, H7.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>A Gantt chart that shows the tasks to be completed, with each task identified, the measurement of time and the duration of each of the tasks as outlined in the question. A complete response must also show the dependence of the tasks for achieving the minimum time frame</li></ul>	3
<ul style="list-style-type: none"><li>A diagram that indicates some tasks to be completed or a time frame. A better response should demonstrate some understanding of the layout of a Gantt chart</li></ul>	1–2

**Question 24(c)***Outcomes assessed: H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>A response that shows sound understanding of conversion methods. Answer should include adequate description of four conversion methods, an appropriate recommendation and relevant justification of the recommendation</li></ul>	5
<ul style="list-style-type: none"><li>A response that shows clear understanding of at least two conversion methods. A better response should include a recommendation and some relevant justification of the recommendation</li></ul>	3–4
<ul style="list-style-type: none"><li>A response that shows limited understanding of conversion method(s). At least one conversion method is named and/or briefly described and/or a recommendation proposed and/or justified. Simply naming conversion method(s) will attract a maximum of 1 mark</li></ul>	1–2

**Question 25(a)(i)***Outcomes assessed: H1.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Clearly states the meaning and identifies the essential quality of real time 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 real time processing and/or briefly outlines an appropriate situation</li></ul>	1–2

**Question 25(a)(ii)***Outcomes assessed: H1.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Clearly describes what bias is in relation to data collection and provides a relevant example</li><li>Answers should demonstrate a sound understanding of the concept of bias</li></ul>	3
<ul style="list-style-type: none"><li>Provides a limited understanding of the characteristics and features of bias and/or provides a relevant example</li></ul>	1–2

**Question 25(b)***Outcomes assessed: H1.2, H1.1, H2.5***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Demonstrates a comprehensive understanding of the TPS system being used by QFF by providing the characteristics and features of the components identified in the question. Better answers should show an understanding of the relationship between some of the key components in the TPS</li></ul>	5–6
<ul style="list-style-type: none"><li>• Demonstrates a clear understanding of the TPS system used by providing characteristics and features of the majority of the components identified in the question. Some attempt may be made to relate the components of the TPS</li></ul>	3–4
<ul style="list-style-type: none"><li>• Demonstrates a limited understanding of the TPS system by identifying the characteristics and features of some of the components in the system</li></ul>	1–2

**Question 25(c)(i)***Outcomes assessed: H1.1, H2.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides characteristics and features of at least two appropriate measures and indicates clearly how they can assist accurate data entry by the restaurant employees. Response should demonstrate a sound understanding</li></ul>	3
<ul style="list-style-type: none"><li>• A response that shows limited understanding of measures to assist accurate data entry. The response identifies measure(s) and/or provide some elaboration of the characteristics and features. Simply identifying one measure will only attract a maximum of 1 mark</li></ul>	1–2

**Question 25(c)(ii)***Outcomes assessed: H3.1, 5.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Demonstrates a comprehensive understanding of the impacts on a range of employees from both QFF and the restaurant in terms of work practices or personal issues. The answer should draw from the question and impacts may be positive and/or negative</li></ul>	5
<ul style="list-style-type: none"><li>• Demonstrates a good understanding of the impacts on both QFF and/or restaurant employees. Answers may address positive and/or negative impacts. Better answers must include impacts on both QFF and restaurant employees</li></ul>	3–4
<ul style="list-style-type: none"><li>• Identifies at least one issue relevant to the employees and/or provides some elaboration as to its positive and/or negative impacts. Identification of one simple issue will only attract a maximum of 1 mark</li></ul>	1–2

**Question 26(a)(i)***Outcomes assessed: H.1.1, H1.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides characteristics and features of a neural network as well as clearly recognising a situation where one would be used</li></ul>	3
<ul style="list-style-type: none"><li>• States the meaning or provides a limited description of a neural network and/or recognises a situation where one could be used</li></ul>	1–2

**Question 26(a)(ii)***Outcomes assessed: H1.1, H1.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Clearly states the meaning of forward chaining and briefly provide characteristics and features of a situation where forward chaining would be used</li></ul>	3
<ul style="list-style-type: none"><li>• States an adequate meaning of forward chaining and/or recognises a situation where forward chaining could be used</li></ul>	1–2

**Question 26(b)***Outcomes assessed: H1.1, H1.2, H2.1***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>• Demonstrates a comprehensive understanding of the decision support system to be developed by providing characteristics and features of the components identified in the question. Better answers should show an understanding of the relationship between some of the key components in the decision support system</li></ul>	5–6
<ul style="list-style-type: none"><li>• Demonstrates a clear understanding of the decision support system to be developed by providing the characteristics and features of the majority of the components identified in the question. Some attempt may be made to relate the components in the decision support system</li></ul>	3–4
<ul style="list-style-type: none"><li>• Demonstrates a limited understanding of the decision support system by identifying the characteristics and features of some of the components identified in the question</li></ul>	1–2

**Question 26(c)(i)***Outcomes assessed: H3.1, H3.2, H4.1, H5.2***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>• Provides a comprehensive understanding of issue(s) and provides points for and/or against the use of pre-determined criteria on automated decision-making</li></ul>	3
<ul style="list-style-type: none"><li>• Identifies at least one issue and/or provides an adequate elaboration. Identification of one simple issue will attract a maximum of 1 mark</li></ul>	1–2

**Question 26(c)(ii)***Outcomes assessed: H3.1, H3.2, H4.1, H5.2***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>• Demonstrates a comprehensive understanding by identifying the issues and providing points for and/or against the responsibilities of PMR in relation to ALL THREE areas: the collection and use of survey data, access and use of administration files, and data mining</li></ul>	5
<ul style="list-style-type: none"><li>• Demonstrates a clear understanding by identifying issue(s) and providing points for and/or against the responsibilities of PMR in relation to at least TWO of the areas: collection and use of survey data, access and use of administration files, and data mining</li></ul>	3–4
<ul style="list-style-type: none"><li>• Demonstrates a limited understanding by identifying at least ONE issue and/or providing some elaboration. Identification of one simple issue will attract a maximum of one mark</li></ul>	1–2

**Question 27(a)(i)***Outcomes assessed: H1.1***MARKING GUIDELINES**

Criteria	Marks
• Use an appropriate example to demonstrate clear understanding of the difference(s) between the two	3
• State the meaning of critical damping and/or overdamping and/or provide some characteristics/features of critical damping and/or overdamping	1–2

**Question 27(a)(ii)***Outcomes assessed: H1.1, H1.2***MARKING GUIDELINES**

Criteria	Marks
• Shows a clear understanding of batch systems by providing a clear description of the characteristics and features of a batch system and providing an example in the context of automated manufacturing	3
• Provides characteristic(s) and feature(s) of a batch system, and/or gives a brief outline of an appropriate example	1–2

**Question 27(b)***Outcomes assessed: H1.1, H1.2, H2.1***MARKING GUIDELINES**

Criteria	Marks
• Demonstrates a comprehensive understanding of the automated manufacturing system by providing the characteristics and features of the components identified in the question. Better answers should show an understanding of the relationship between some of the key components in the automated manufacturing system	5–6
• Demonstrates a clear understanding of the automated manufacturing system by providing the characteristics and features of the majority of the components identified in the question. Some attempt may be made to relate the components in the automated manufacturing system	3–4
• Demonstrates a limited understanding of the automated manufacturing system by identifying the characteristics and features of some of the components in the question	1–2

**Question 27(c)(i)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Demonstrates a clear understanding of the impact of AMS on the nature of work for MT employees by clearly describing relevant issues</li> </ul>	3
<ul style="list-style-type: none"> <li>Demonstrates a limited understanding of the impact of AMS on the nature of work. Identifies at least two issues and/or provides some relevant elaboration on at least one issue</li> </ul>	1–2

**Question 27(c)(ii)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Demonstrates a comprehensive understanding by identifying a range of issues and providing points for and/or against the ways AMS affects reliability, quality and safety in the production of tables</li> </ul>	5
<ul style="list-style-type: none"> <li>Demonstrates a clear understanding by identifying issues and providing points for and/or against the ways AMS affect TWO of : reliability, quality and safety in the production of tables</li> </ul>	3-4
<ul style="list-style-type: none"> <li>Demonstrates a limited understanding by identifying at least one issue and/or providing some elaboration. Identification of one simple issue will attract a maximum of 1 mark</li> </ul>	1–2

**Question 28(a)(i)**

*Outcomes assessed: H5.1*

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>A definition which demonstrates a good understanding of a storyboard, and clearly describes its purpose</li> </ul>	3
<ul style="list-style-type: none"> <li>A definition which demonstrates some understanding of a storyboard and/or describes its purpose</li> </ul>	1–2

Note: a diagram may be used



**Question 28(a)(ii)***Outcomes assessed: H6.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides a quality description of at least two key tasks undertaken by technical staff in the development of multimedia applications	3
• Describes two tasks adequately OR one task clearly	2
• Describes one task adequately OR identifies two tasks	1

**Question 28(b)***H1.1, H1.2, H2.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Demonstrates a comprehensive understanding of the multi-media system to be developed by providing the characteristics and features of the components identified in the question. Better answers should show an understanding of the relationship between some of the key components in the multimedia system	5–6
• Demonstrates a clear understanding of the multimedia system to be developed by providing the characteristics and features of the majority of the components identified in the question. Some attempt may be made to relate the components in the multimedia system	3–4
• Demonstrates a limited understanding of the multimedia system by identifying the characteristics and features of some of the components identified in the question	1–2

**Question 28(c)(i)***Outcomes assessed: H3.1, H3.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Sketch in general terms at least TWO reasons to demonstrate the importance of copyright in this context	3
• Sketch in general terms at least ONE reason why copyright is important. Better answers should include some relevance to the context	1–2

**Question 28(c)(ii)***Outcomes assessed: H1.1, H1.2, H3.1, H5.1, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Demonstrates a comprehensive understanding of the media that can be utilised and its benefits over paper-based portfolio. The characteristics and features of a range of media are given and a broad range of at least three factors affecting her choice discussed</li></ul>	5
<ul style="list-style-type: none"><li>• Demonstrates a clear understanding by describing at least two of the different media used in the portfolio and/or discussing some factors affecting Anna's choice</li></ul>	3–4
<ul style="list-style-type: none"><li>• Demonstrates a limited understanding by identifying at least two media and/or providing some elaboration of factor(s) affecting Anna's choice</li></ul>	1–2