2001 HSC
Notes from
the Examination 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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2001 NOTES FROM THE EXAMINATION 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 2001 Higher School Certificate Examination, indicating the quality of student 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 2001 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 is based around information-based systems. The course covers the tools for information processes, as well as the technologies that support them. It provides the background needed for candidates to adapt to new technologies as they emerge.

The Mechanics of Marking

The Supervisor of Marking (SOM), appointed by the Board of Studies, chooses 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 operate 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 attend briefing sessions at the marking centre prior to the commencement of the actual marking program. During this time they finalise administrative structures and are 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 select suitable student scripts to use as examples during their briefing sessions with Markers.

Markers attend the marking centre to be briefed on the procedures and to complete administrative details, and are then introduced to the marking guidelines. As a group, all of the Markers and Senior Markers involved with each question familiarise themselves with the marking guidelines, using the sample scripts identified by the Senior Markers.

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

Once final marking commences, Senior Markers arrange for a number of control scripts to be individually marked by all Markers of a question and then compare the way in which the marking guidelines are being applied. Senior Markers also monitor the statistics, which are processed each session for each marker, each group and each question. Senior Markers check-mark papers from every centre. These procedures ensure that the marking guidelines are consistently applied by all Markers, at all times, throughout the entire marking operation.

The HSC Examination

In 2001, 10620 candidates presented for the Information Processes and Technology Higher School Certificate Examination.

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 adapt 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-learnt 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. However, alarmingly few candidates were able to apply their understanding to the context of a particular question.

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 level of depth an answer requires to fully address the question.

It is recommended that candidates be given ample opportunity to practice the application of the key concepts to various scenarios.

Section I — Multiple Choice

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

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

Section II

General Comments

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, explain, discuss, describe, outline and analyse. Scenarios, diagrams and screen shots 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.

Specific Comments

Question 21

In this question candidates needed to select discerningly from the information given and apply their own knowledge and understanding in order to think laterally about the scenario given.

Candidates answered this question as if it was a comprehension question, repeating the stimulus material, and failing to provide any additional knowledge in their answers. Alternatively, candidates provided as much information about communications as they could without relating any of their answer to the scenario given.

(a) This part related to the data collection process and candidates were required to refer to the stimulus material and identify only the participants from the list that were relevant to the collection process described, for example, customers are not participants in the package-tracking data collection process.

Candidates had to realise the need for portability of the scanning device, and needed to understand the collection process and that the barcode was the data being collected, not the package. They needed to identify and describe the device, and detail the storage of the data that is temporary in the device and permanent in the central computer.

(b) Candidates had to understand the benefits to the customer, not the company CWC, of being able to specifically track the 'package'. Candidates gave valid improvements without explanation/justification or assumed that the justification was in fact the second improvement. Lack of understanding of the term 'explain' was obvious.

(c) Many candidates did not read 'transmitting and receiving data' in the question, drawing a data flow diagram, often without media or direction, or a diagram that carefully traced the movement of the 'package,' repeating the sequence and direction from the scenario. The description had to indicate the components, transmission media and direction of transmissions. The diagram needed to be carefully labelled often as a way of clarifying the candidate's written response. Some candidates used question 6 from the multiple choice as the basis for their diagram. Candidates often indicated that phone lines or the Internet were the transmission media.

It was important for candidates to understand the relationship between the components and the media, which was most easily shown in a diagram, and give additional information about the website and the customer's ISP to complete their answer.

Question 22

Candidates, in general, made some attempt at all parts of this question. However, a better understanding of terms in the glossary of key words would have enabled them to demonstrate a more comprehensive response.

Candidates commonly made reference to the process of 'changing' from paper-based system to computer-based system, ignoring the fact that the electronic system was already operational.

Some candidates tended to place too much emphasis on discussing the scenario given, forgetting what the question was asking. Responses were often general in their discussion of databases without touching on the technological issues. Candidates tended to offer similar answers to more than one part of Question 22.

(a) A majority of candidates were able to offer a suitable advantage and disadvantage. However, many did not provide an explanation of the advantage and disadvantage, which was specified by the question.

Candidates misunderstood the reference to the word 'online' in the question. It was not a reference to the Internet but to the availability of records on a computerised form, rather than a manual one.

(b) Overall this part was done very poorly, as candidates tended to give answers that related to databases rather than to the introduction of images to the existing database. A small number of candidates were able to recognise technological issues regarding storage/retrieval and display of images and provide an informed discussion of these issues. Many responses addressed the issues of security, privacy and ethics in relation to databases in general rather than the technological issues, which were required by the question.

(c) Poorer responses to this question included details that concentrated on the content of the screen shots rather than the reasons why the views were different. Better responses included reasons for the different screen shots with a clear explanation of each reason.

Question 23

This question provided candidates with an opportunity to show their understanding of a number of concepts including knowledge of feasibility studies, issues surrounding the implementation of an information system, technical knowledge of web page design and the Internet. Sufficient background information was provided to enable candidates to fully detail both social and ethical issues arising from this scenario.

Responses to this question were in the form of paragraph answers, extended responses and bullet points. Any one of these styles was acceptable. Many candidates did not relate their answers to the context of the question or give much consideration to the key terms 'identify and describe' and 'analyse'. Some candidates did not realise that a feasibility study takes place before a system is implemented and addressed economic considerations as if the system was already in place.

(a) Most candidates were able to outline at least three of the criteria in a feasibility study. Many did not relate these descriptions to the context of the scenario and were unable to attract full marks. Most commonly, candidates targeted economic, scheduling and technical criteria on which to elaborate, but neglected organisational and personnel constraints.

(b) Most candidates were able to identify a range of ethical issues and could relate them to the context of the question. Many responses provided extended exposition on ethical issues but did not include any identifiable social issues.

Question 24

This question examined a good range of concepts, including error detection, new trends and social/ethical issues. The open-ended style of the question encouraged candidates to demonstrate their knowledge and draw on relevant examples to illustrate their understanding of the key concepts. The questions elicited a wide range of responses from the candidature. Candidates were required to apply their knowledge, analyse and discuss relevant issues.

(a) Good responses to this part included clear descriptions of two error detection methods such as parity checking, checksum or cyclic redundancy checking (CRC). The responses which were awarded full marks clearly illustrated the error checking processes with an example related to the context of the question. Parity checking and checksum were done particularly well. Average marks were gained for adequate descriptions of any of these three error checking methods, while minimum marks were gained for simply identifying two error checking methods.

(b) Responses that received full marks clearly identified and described new trends such as data mining and data warehousing, with relevant examples that were related to the context of the question. An average response consisted of an adequate description or relevant examples such as data mining and data warehousing. A description of one relevant example was awarded minimum marks.

(c) Good responses were able to identify a number of relevant messaging issues such as equity, misinterpretation, power relationships, inappropriate use of the messaging system, privacy and security. These issues needed to include implications relevant to the question. An average response identified and adequately described some issues, while identifying one messaging issue was awarded minimal marks.

Section III

General Comments

Candidates were required to answer two questions only from this section. A number of candidates 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 for markers 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, propose, describe, compare, identify, outline, evaluate, justify and critically analyse. Each question encouraged candidates to apply their knowledge and understanding of information-based systems to a given scenario.

Specific Comments

Question 25

58% of the candidature attempted this question.

This question provided candidates with the opportunity to use core knowledge along with Transaction Process System details and apply it to a number of scenarios. An understanding of relevant issues was required.

Most candidates attempted the question, often displaying a lack of understanding of terms related to Transaction Processing Systems. Good responses related the appropriate terms to the question with elaboration.

(a) (i) Most candidates were able to identify the backup method but had difficulty in describing more than one advantage.

(ii) Candidates were able to explain the value of testing alternative procedures but were unable to recognise the need to test these procedures regularly. Better responses indicated the need for these procedures to evolve as the situation changes over time. Alternative procedures need to be able to cater to any system change, hence the need for periodical testing.

(b) (i) Many candidates provided good quality answers to this part. These answers clearly established how e-commerce and online processing operated and described how the website could be linked to the existing Transaction Processing System (Sales System).

(ii) Many candidates were able to identify the issues related to the website modifications and discussed them at length. Poorer quality responses merely interpreted the issues as consequences, some referring to those mentioned in part (c).

(c) Candidates found this question difficult. Some candidates merely provided definitions of the issues while the question required them to critically analyse the issues in terms of banks allowing customers to transfer funds to other banks.

Candidates will benefit from practicing the skills of critical analysis in more depth.

Question 26

36% of the total candidature attempted this question.

The question provided candidates with an opportunity to demonstrate their understanding of basic spreadsheet concepts, expert systems, databases and GDSS. To answer the question well, candidates needed to respond in the context of the given scenarios, not just quote definitions or general descriptions.

Many responses were superficial, indicating a limited understanding of the concepts involved.

(a) (i) This was a straightforward question and it was disappointing that some candidates were not able to distinguish clearly the difference between absolute and relative referencing. Some candidates used an example to assist with their explanation.

(ii) Candidates were mostly familiar with the concept of a macro and were able to communicate an advantage but were limited in their identification and discussion of a disadvantage. More elaboration was required in answers than writing 'saves time' as an advantage or 'users may not know what it does' as a disadvantage.

(b) (i) Many candidates were able to show that they understood the concept of a 'knowledge base' but were not as successful in demonstrating their understanding of 'database of facts'. Some candidates incorrectly discussed 'WHAT – IF ' in the context of 'knowledge base' instead of 'IF – THEN'.

(ii) Candidates showed either a good understanding of using 'expert systems' or 'databases', but didn't discuss both to an appropriate level. Candidates often provided a limited comparison between the two for the given scenario. Good answers were written in the context of the scenario.

(c) Candidates did not understand the meaning of 'critically analyse', with the majority 'identifying' rather than 'critically analysing'. Responses didn't relate how a GDSS would assist in the planning and decision-making and thus improve the meeting process.

Many candidates answered this question from a Project Management or Human Resources viewpoint, but they didn't seem to consider that technology should be a focal point to the answer. Many candidates gave 'common-sense' answers to creating a more productive and harmonious working environment at Big Corp without any reference to GDSS or technology.

Candidates needed to realise that the bullet points were stimulus material not question parts to be answered.

Many candidates had very high and unrealistic expectations of a GDSS and its capabilities to solve Big Corp's problems.

Question 27

21% of the total candidature attempted this question.

(a) (i) Most candidates knew the differences between the three types of automated manufacturing systems. However, many candidates experienced difficulty with providing adequate examples which were required for this question.

(ii) Most candidates could identify what the acronyms for CAD and CAM meant but many candidates found it difficult to explain the relationship between them. A significant number of candidates could not relate CAD and CAM back to an automated manufacturing system that they had studied.

(b) (i) Most candidates were able to name appropriate sensors and actuators, with quite a few candidates giving more detailed descriptions of how these devices worked. Some named a timer as a sensor, or mentioned thermostats as sensors but could not describe how they could send data to a controller. Candidates needed to be able to both identify and describe the operation of sensors and actuators in the context of ice cream manufacture.

(ii) Relatively few candidates were able to redraw the diagram in an acceptable manner. Candidates needed to change the relative positions of the Heater and Controller, and understand the need for a sensor and for a feedback loop. Candidates scored marks where they realised that the controller sent signals to the heater and reversed their positions on the diagram, added a temperature sensor and a feedback loop to send signals back to the controller. It was important that candidates could indicate the direction of flow of the data with arrows.

(c) In this section many candidates confused mass customisation with mass production. Good responses understood the difference between the two.

Many candidates were able to describe how an automated manufacturing system could be altered to provide for customisation, with a wealth of examples being described to support their case. Examples included the customisation of motor vehicles, manufacture of jeans, and of personal computers. Most candidates who were able to score high marks did so by addressing the information technology processes in the context of an automated manufacturing system that they had studied.

Question 28

88% of the total candidature attempted this question.

This question demanded knowledge of various concepts of multimedia including audio and video compression, animation and the roles of participants in multimedia design. It also involved candidates being aware of future and emerging technologies relevant to the use of multimedia on the World Wide Web.

Candidates generally attempted all questions but their responses were lacking in detail. Many candidates were unable to give answers to the depth required as indicated by the key words such as describe, outline, evaluate and critically analyse.

(a) (i) Candidates understood the broad concept of compression but were unable to provide characteristics pertinent to audio compression. Candidates generally gave examples of compressed file types (eg MP3) rather than describing how the audio compression was actually achieved.

(ii) Many candidates understood the broad concept of compression but were not able to provide characteristics pertinent to video compression. Often examples of compressed file types (eg MPEG) were stated rather than describing how the video compression was actually achieved.

(b) (i) Many candidates described the information processes involved in the design of a multimedia product (eg collecting, organising, analysing, etc) rather than the key roles of people involved in the design. Other responses included detailing the characteristics of a well-designed multimedia product, stating layout, navigation and readability as key points.

Good responses named four key roles and gave detailed descriptions of each role, often including technical aspects and the interaction between personnel in the team.

(ii) Candidates generally described animation in broad terms and made some attempt to differentiate between path-based and cel-based animation. Many candidates were able to give reasonable explanations of cel-based animation, but most did not have a clear understanding of path-based.

The vast majority of candidates, due to their lack of knowledge about the specifics of each type of animation, could not make an evaluation regarding the appropriateness of each animation in this situation. Many candidates did not relate their answers to the context of the question about a falling object. They failed to recognise that each type of animation has different storage requirements.

(c) Candidates generally described the features of multimedia with detailed examples. Many candidates could give examples of current use of multimedia on the World Wide Web such as streaming audio/video and Internet radio stations. Fewer candidates were able to detail the technology that allows this to occur.

Good responses not only gave technical details about a variety of technologies relevant to multimedia on the Internet, but could also anticipate changes and improvements to this technology in the future. Some candidates could also project the impact of emerging technologies on future uses of multimedia on the World Wide Web. This was then related to specific examples such as datacasting, streaming DVD movies, etc.

Information Processes and Technology

2001 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
1	1	Information Systems and Databases	H1.1
2	1	Communication	H1.1
3	1	Project Work	H5.1, H6.2
4	1	Information Systems and Databases	H1.1
5	1	Project Work	H5.2
6	1	Communication Systems	H1.1
7	1	Communication Systems	H1.1
8	1	Project Work	H5.1, H6.2, H7.2
9	1	Communication Systems	H1.1
10	1	Information Systems and Databases	H1.1
11	1	Communication Systems	H3.1, H4.1
12	1	Project Work	H5.1, H6.2, H7.1, H7.2
13	1	Communication Systems	H1.1
14	1	Project Work	H2.1, H6.2
15	1	Project Work	H2.1, H5.1
16	1	Information Systems and Databases	H2.2
17	1	Information Systems and Databases	H1.1, H2.2
18	1	Project Work	H5.1, H6.2
19	1	Project Work	H2.1
20	1	Communication Systems	H2.1, H4.1
21(a)	3	Information Systems and Databases	H1.1
21(b)	3	Information Systems and Databases	H1.1, H1.2
21(c)	4	Information Systems and Databases	H1.1, H1.2, H2.1
22(a)	2	Information Systems and Databases	H1.1
22(b)	4	Information Systems and Databases	H1.1, H1.2, H2.1
22(c)	3	Information Systems and Databases	H1.1, H3.1
23(a)	4	Project Work	H1.1, H1.2, H2.1, H5.1, H6.1
23(b)	5	Project Work	H1.1, H3.1, H5.2
24(a)	3	Communications	H1.1
24(b)	4	Information Systems and Databases	H1.1, H1.2, H2.2, H4.1
24(c)	5	Communication Systems	H1.1, H3.1, H3.2, H5.2
25(a)(i)	2	Transaction Processing Systems	H1.1, H1.2
25(a)(ii)	2	Transaction Processing Systems	H1.1
25(b)(i)	3	Transaction Processing Systems	H2.2, H4.1
25(b)(ii)	5	Transaction Processing Systems	H1.1, H2.2, H4.1
25(c)	8	Transaction Processing Systems	H3.1, H4.1
26(a)(i)	3	Decision Support Systems	H1.1
26(a)(ii)	3	Decision Support Systems	H1.2
26(b)(i)	2	Decision Support Systems	H1.1, H1.2, H2.1
26(b)(ii)	4	Decision Support Systems	H1.1, H1.2, H2.1
26(c)	8	Decision Support Systems	H1.1, H1.2, H2.1, H2.2, H3.1, H4.1

Question	Marks	Content	Syllabus outcomes
27(a)(i)	3	Automated Manufacturing Systems	H1.1, H2.1
27(a)(ii)	3	Automated Manufacturing Systems	H1.1, H1.2, H2.1
27(b)(i)	3	Automated Manufacturing Systems	H1.1, H1.2, H2.1
27(b)(ii)	3	Automated Manufacturing Systems	H1.1, H2.1
27(c)	8	Automated Manufacturing Systems	H1.1, H1.2, H2.1, H3.1, H4.1
28(a)(i)	2	Multimedia Systems	H1.1, H2.1
28(a)(ii)	2	Multimedia Systems	H1.1, H2.1
28(b)(i)	4	Multimedia Systems	H1.1, H1.2, H2.2
28(b)(ii)	4	Multimedia Systems	H1.1, H1.2, H2.2
28(c)	8	Multimedia Systems	H1.1, H2.1, H4.1

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NEW SOUTH WALES

2001 HSC Information Processes and Technology Marking Guidelines

Question 21 (a) (3 marks)

Outcome assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
Correctly identifies: • the correct participants in the package-tracking data collection process, AND • how data would be collected, AND • where data would be stored Note: Customers of the courier company are not involved in data collection.	3
• Correctly identifies two of the three required responses	2
• Correctly identifies one of the three required responses	1

Question 21 (b) (3 marks)

Outcomes assessed: H1.1, H1.2

MARKING GUIDELINES

Criteria	Marks
• Provides TWO clearly explained, valid improvements from the package-tracking system	3
• Provides one clearly explained, valid improvement, OR two adequate explanations	2
• Identifies two valid improvements with no explanation	1

Question 21 (c) (4 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Diagram/description identifies the main links and includes correct detail regarding transmission media and the direction of transmissions	4
• A less detailed diagram/description that does not include all of the main links, transmission media and direction of transmissions	2–3
• A very sketchy/poor diagram/description/shows some aspects	1

Question 22 (a) (2 marks)

Outcome assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Clearly explains one advantage AND one disadvantage of the computerised information system at UMC compared to paper-based records	2
• Clearly explains EITHER an advantage OR a disadvantage of the computerised system OR • Identifies one advantage AND one disadvantage	1

Question 22 (b) (4 marks)

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

MARKING GUIDELINES

Criteria	Marks
• A comprehensive answer that identifies issues relating to both storage/retrieval AND display of images, AND includes a discussion of the implications/impacts of the issues	4
• An answer that identifies a number of issues, but may not address both storage/retrieval AND display issues. Quality of the discussion of these issues at a diminishing level for fewer marks, with less attention paid to implications/impacts	2–3
• A sketchy answer that provides identification of a small number of issues. Quality of discussion poor	1

Question 22 (c) (3 marks)

Outcomes assessed: H1.1, H3.1

MARKING GUIDELINES

Criteria	Marks
• Clear explanation that includes at least two reasons for the use of views, and a discussion of the effects/benefits	3
• An adequate explanation of at least one reason for the use of views	2
• An identification of one or more relevant reasons for the use of views	1

Question 23 (a) (4 marks)

Outcomes assessed: H1.1, H1.2, H2.1, H5.1, H6.1

MARKING GUIDELINES

Criteria	Marks
• A high quality response identifying a range of distinct criteria, providing characteristics and features, and relating them to the context of the question. The requirement on the depth of the descriptions may be lessened if more criteria are included	4
• An adequate response identifying some criteria with description	2–3
• A limited response that only identifies some criteria	1

Question 23 (b) (5 marks)

Outcomes assessed: H1.1, H3.1, H5.2

MARKING GUIDELINES

Criteria	Marks
• A high quality response reflecting a sound understanding of the variety of social and ethical issues in this context. Responses should come from different perspectives and should include issues from both social and ethical perspectives	4–5
• An adequate response reflecting sufficient knowledge of social and/or ethical issues	2–3
• A limited response that should include more than one issue without any further discussion	1

Question 24 (a) (3 marks)

Outcomes assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Clear descriptions of the operation of any two of parity bit check, check sum, cycle redundancy check	3
• Adequate descriptions of operation of two methods or clear description of one	2
• Adequate description of operation of just one of three methods or naming two	1

Question 24 (b) (4 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Clear descriptions of new trends like data warehousing and data mining with an example of how each could be used by Madison	4
• Adequate descriptions or adequate description with relevant example	2–3
• Identifies data warehousing and data mining or description of a relevant example	1

Question 24 (c) (5 marks)

Outcomes assessed: H1.1, H3.1, H3.2, H5.2

MARKING GUIDELINES

Criteria	Marks
• A response that reflects a sound understanding of a range of messaging issues relevant to the situation • Students should identify and clearly describe the relevant issues and draw out implications of the issues raised	4-5
• A response in which students identify some of the messaging issues relevant to the situation and elaborate in a way that shows some understanding of the issues • A reasonable attempt is made to discuss the implications of the issues raised	2-3
• A response that identifies a relevant messaging issue	1

Question 25 (a) (i) (2 marks)

Outcome assessed: H1.1, H1.2

MARKING GUIDELINES

Criteria	Marks
• Clearly identifies at least two advantages of the backup procedure and discusses how they are achieved	2
• Clearly identifies one advantage and discusses how it is achieved OR • Correctly identifies at least two advantages of the backup procedure without discussion	1

Question 25 (a) (ii) (2 marks)

Outcome assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Clearly makes the relationship between testing alternative (backup) procedures and their benefits/consequence(s) clear	2
• Provides and describes one reason for testing alternative procedures or identifies two reasons	1

Question 25 (b) (i) (3 marks)

Outcomes assessed: H2.2, H4.1

MARKING GUIDELINES

Criteria	Marks
• Proposes a detailed modification or extension to the website system • Includes a justification that addresses all of the problems set out in the question	3
• Proposes a modification or extension to the website system that addresses at least two of the problems	2
• Identifies a number of simplistic mechanisms with poor relation to existing problems	1

Question 25 (b) (ii) (5 marks)

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

MARKING GUIDELINES

Criteria	Marks
• An in-depth answer that identifies a range of key issues. The issues are specifically related to the proposal put forward in part (i) • Provides quality argument for how the issues arise, why they are important and how they might be solved	5
• An in-depth answer that identifies some key issues. The issues are related to the proposal put forward in part (i) • Provides some argument as to how these issues arise	3–4
• A brief answer that identifies a few issues related to the proposal put forward in part (i)	1–2

Note: A valid answer relating to 'incorrect' proposals in part (i) can attract marks (max 4).

Question 25 (c) (8 marks)

Outcomes assessed: H3.1, H4.1

MARKING GUIDELINES

Criteria	Marks
• Identifies issues in all three areas (data accuracy, security and integrity) and elaborates in a way that illustrates a depth of understanding of the issues and how they relate to each of the areas. An answer should also show an understanding of the relationships between the areas of data accuracy, security and integrity, including the positive and negative aspects of the relationship	7–8
• Identifies issues in some or all three areas, elaborates in a way that shows some understanding of the issues and attempts to relate the issues to the areas. Some attempt may be made to discuss the relationships between the areas	4–6
• Identifies some issues in the three areas of data accuracy, security and integrity, and makes an attempt to elaborate	1–3

Question 26 (a) (i) (3 marks)

Outcome assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Makes the relationships between absolute and relative cell references evident (providing why and how)	3
• Describes briefly, both references OR • One reference in detail (why and how)	2
• Describes briefly one of the references only (not providing details as to why it is used)	1

Question 26 (a) (ii) (3 marks)

Outcome assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• An answer providing a clear discussion of at least one advantage and at least one disadvantage, with justification. For example, just mentioning "saves time" is not sufficient. Need to include a description of macros or explain why they save time	2–3
• Identifies one advantage AND one disadvantage with limited or no discussion	1

Question 26 (b) (i) (2 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Shows an understanding of a knowledge base by description or writing an if-then-rule for the student described AND shows an understanding of the database of facts using description or giving examples of facts for the student described	2
• Either knowledge base or database of facts is properly answered (see above) • Or limited response to both provided	1

Question 26 (b) (ii) (4 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Demonstrates a depth of understanding of the way expert systems and databases each work in the given context • Includes a strong comparison between the expert system's ability to make automatic decisions and the database's reliance on expert users	4
• Shows an understanding of expert systems and databases, that may not be related to the context. Responses with low level comparisons would attract lower marks	2–3
• Provides a limited response, such as stating that expert system can make decisions while a database can only store facts	1

Question 26 (c) (8 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Identifies ways that GDSS would assist the organisation's planning, decision making and meeting process, and elaborates in a way that illustrates a depth of understanding of the strategies and how they relate to the current problems. The answer should show understanding of the implications that arise from the use of GDSS	7–8
• Identifies ways that GDSS would assist the organisation's planning, decision making and meeting process, and elaborates in a way that illustrates some understanding of the strategies and attempts to relate them to at least some of the problems. Some attempts may be made to show understanding of the implications that arise from the use of GDSS	4–6
• Identifies some ways that GDSS would assist the organisation's planning, decision making and meeting process, and makes an attempt to elaborate	1–3

Question 27 (a) (i) (3 marks)

Outcomes assessed: H1.1, H2.1

MARKING GUIDELINES

Criteria	Marks
• An answer that clearly illustrates an understanding of the differences between discrete, continuous and batch production • Examples are used for each that make the differences clear	3
• An answer that clearly describes the three types of production and makes some use of examples, or describes how they differ	2
• Describes the discrete, continuous and batch production with no attempt to distinguish between them or provide examples	1

Question 27 (a) (ii) (3 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Identifies the essential qualities of CAD and CAM and explains the relationship between them in a specific automated manufacturing system	3
• Identifies the essential qualities of CAD and CAM and describes their purpose in a specific automated manufacturing system. The relationship between CAD and CAM is not clearly expressed	2
• Identifies some essential characteristics of CAD and CAM and may identify them as components in a specific automated manufacturing system	1

Question 27 (b) (i) (3 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Identifies and clearly describes the use of ONE sensor AND identifies and describes the use of ONE actuator appropriate to the basic steps in the manufacture of ice cream	3
• Identifies and clearly describes the use of ONE relevant sensor OR actuator	2
• Identifies a sensor and actuator appropriate to the example	1

Question 27 (b) (ii) (3 marks)

Outcomes assessed: H1.1, H2.1

MARKING GUIDELINES

Criteria	Marks
The block diagram corrects the THREE errors • includes a heat sensor • has arrows going in a feed-back loop • controller precedes the heater in the loop	3
• Corrects TWO of the errors	2
• Corrects ONE of the errors	1

Question 27 (c) (8 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Names a product suitable for mass customisation • Identifies a range of technologies and information processes relevant to the production and delivery of the product • Elaborates in a way that illustrates a depth of understanding about the technologies and information processes in the context identified • Shows an appreciation of the relationship between the technologies and information processes used in the production and delivery of the product named	7–8
• Names a product suitable for mass customisation • Identifies technologies and information processes relevant to the production and delivery of the product • Elaborates in a way that shows some understanding of the technologies and information processes in the context identified • Some attempt is made to discuss the relationship between the technologies and information processes used in the production and delivery of the product named	4–6
• Names a product suitable for mass customisation • Identifies technologies and information processes relevant to the production and delivery of the product • Some attempt is made to elaborate on the technologies and information processes	1–3

Question 28 (a) (i) (2 marks)

Outcomes assessed: H1.1, H2.1

MARKING GUIDELINES

Criteria	Marks
• Identifies the characteristics and features of audio compression and elaborates in a way that demonstrates good understanding	2
• Identifies some characteristics and features of audio compression. The response may include one of sample size, sampling rate and mono/stereo sound OR • Provide an example and description of a compression method (eg. MP3 – perceptual noise shaping) OR • A general description of compression without specifically relating to audio compression	1

Note: In their answer students may describe 'compression' and then relate to 'audio' and 'video'. If compression is described in isolation with no reference to audio and video it should be awarded 1 mark maximum (out of 4).

Question 28 (a) (ii) (2 marks)

Outcomes assessed: H1.1, H2.1

MARKING GUIDELINES

Criteria	Marks
• Identifies the characteristics and features of video compression and elaborates in a way that demonstrates good understanding • Answer could include both hardware and software compression techniques	2
• Identifies some characteristics and features of video compression. The response may include one of software or hardware compression techniques OR • Provides an example and description of a compression method (eg. MPEG) OR • If not included in (a)(i), a general description of compression without specifically relating to video compression	1

Question 28 (b) (i) (4 marks)

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

MARKING GUIDELINES

Criteria	Marks
• Clearly outlines four key roles of distinct people involved in the design of the CD-ROM encyclopedia • The key features of each person's role should be provided and possibly the potential for overlap of roles	4
• Demonstrates an adequate understanding of distinct key roles of people involved in the design of the CD-ROM encyclopedia	2–3
• Demonstrates limited understanding of the roles. At least two distinct roles should be identified	1

Question 28 (b) (ii) (4 marks)

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

MARKING GUIDELINES

Criteria	Marks
• A response demonstrating sound understanding of cel-based and path-based animation in this context, and the ability to make a judgement /recommendation based on criteria	4
• A response describing cel-based and/or path-based animation in this context. May not include any judgement/recommendation	2–3
• A limited description of cel-based and path-based animation	1

Question 28 (c) (8 marks)

Outcomes assessed: H1.1, H2.1, H4.1

MARKING GUIDELINES

Criteria	Marks
• Identifies a range of current and emerging technologies relevant to the use of multimedia on the WWW and elaborates in a way that illustrates a depth of understanding of the technologies and their relevance • An answer should also show an understanding of the relationship between the technologies and the implications they have for growth of multimedia on the WWW	7–8
• Identifies a range of current and emerging technologies relevant to the use of multimedia on the WWW and elaborates in a way that shows some understanding of the technologies and their relevance • Some attempt is made to discuss the implications the technologies have for the growth of multimedia on the WWW and how the technologies are related	4–6
• Identifies some current and emerging technologies relevant to the use of multimedia on the WWW and makes an attempt to elaborate	1–3