2002 HSC Notes from the Marking Centre Industrial Technology

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2002 HSC NOTES FROM THE MARKING CENTRE INDUSTRIAL TECHNOLOGY

Introduction

This document has been produced for the teachers and candidates of the Stage 6 course in Industrial 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 Industrial Technology.

General Comments

In 2002, approximately 3565 candidates attempted the Industrial Technology examination. This candidature represented an increase of approximately 80 candidates compared to the 2001 candidature. The total candidature for the 2002 examination were divided amongst the syllabus focus areas as follows:

Focus area	Candidature
Automotive Industries	98
Building and Construction Industries	0
Electronics Industries	182
Graphics Industries	213
Metals and Engineering Industries	186
Multimedia Industries	166
Plastics Industries	0
Timber and Furniture Products Industries	2720

Teachers and candidates should be aware that examiners may ask questions that address the syllabus outcomes in a manner that requires candidates to respond by integrating knowledge, understanding and skills developed through studying the course. Knowledge, understanding and skills developed through the study of discrete sections should accumulate to a more comprehensive understanding than may be described in each section separately.

In the written examination, many candidates experienced difficulty due to their inadequate responses and lack of depth of knowledge of syllabus requirements. The literacy demands of the written examination have increased as a result of the changes to the New Higher School Certificate, and many candidates struggled with the concepts and terminology that were used in the examination. It would appear that many candidates are placing too little regard on and inadequately preparing for the written examination. Candidates need to learn how to interpret examination questions and to determine the intention of the question. This can be achieved by practising more examination-style questions and developing a greater understanding of the glossary of key words in preparation for the examination.

Section I

General Comments

While Questions 1 and 3 were generally well answered, Question 2 was poorly answered. Candidates generally did not refer to the sequence of scenarios set out in the question. Candidates answered in general terms rather than specific to the question.

Specific Comments

Question 1

(a) (i) The majority of candidates answered this question well, identifying two appropriate forms of pollution.

(ii) This question was generally well answered, with the majority of candidates linking their responses to (a) (i). Better responses demonstrated an understanding of the effects on the local community.

(b) (i) The majority of candidates demonstrated an understanding of the term 'recycling'. Better responses identified more than one advantage and more than one disadvantage, appropriate to the focus industry studied.

(ii) This question asked for an outline of a 'suitable recycling program'. The majority of candidates identified recycling procedures, however many candidates failed to arrange these procedures into an appropriate recycling program. Many candidates demonstrated a poor understanding of the resources used in the production of manufactured boards.

(c) This question required candidates to discuss issues; however many candidates simply identified a number of issues in point form with little or no discussion. Better responses to this question gave a logical well-structured response indicating a number of appropriate issues within an Environmental Impact Statement (EIS). Many candidates confused an EIS with an OHS report.

Question 2

(a) This part was an entry-level question, enabling most candidates to answer well. However, a significant number still responded incorrectly with:

(i) training or equipment (PPE) needed to avoid accidents
OR
(ii) workplace injuries follow up (eg Workcover, compensation etc).

(b) This part was poorly answered. Candidates varied in the interpretation of 'what strategies' and failed to clearly outline effective measures. Many candidates also failed to recognise the need to suggest more than one strategy. The term 'induction' was poorly understood.

(c) Again, this part was poorly answered, with many candidates defining Equal Employment Opportunity (EEO) principles, rather than outlining effective strategies for ensuring that EEO principles are followed.

Ways of complying with the legislation were what was required here, rather than a description of the legislation.

(d) The specific section of the question relating to the concept of 'changes' was not well addressed by most candidates. Most answers related to the role of unions in general instead of how they might monitor and intervene when appropriate during the changes.

(e) This question was difficult for candidates because it required them not only to discuss (points for and/or against) four different concepts but to cross reference these concepts. Candidates generally identified implications of improved materials and technologies but did not fully discuss the issues related to both the environment and OHS.

Question 3

(a) A number of candidates did not focus on the main requirement of the question 'outline the procedures … to obtain information' about the accident. Candidates often identified a source of information but failed to mention the procedure used to obtain the information. Many candidates failed to notice the '*s'* on procedures and used the same procedure for obtaining all the information required. There seemed to be a good understanding of the term 'Outline' and candidates generally had a reasonable understanding of OHS procedures that would be involved in a review. A significant number of candidates indicated proactive procedures that would be undertaken to improve the safety of workers on the site, rather than the gathering of information for the review/report.

(b) Most candidates demonstrated a reasonable knowledge of computer software, Microsoft Word and word-processing being the most common. Few candidates were able to relate their knowledge of the software/techniques to the 'preparation and presentation' required by the question. Consequently the question was often poorly answered. A number of candidates discussed what the report should include rather than the use of software in the preparation and presentation of the report.

(c) Candidates generally understood that a procedure was required but failed in many cases to incorporate graphics in their answer. Very few candidates provided reasonable graphic representation. Graphics did not have to be highly detailed; however symbolic graphics were not commonly used. A number of candidates designed safety signs rather than a procedural wall chart. Many candidates interpreted the question in the past tense and wrote about the reporting procedure rather than designing a procedure for employees to follow if an accident were to occur. Candidates often responded with text only answers and often wrote long descriptions of the procedure, forgetting they were designing a wall chart of concise steps. Better responses used arrows and numbers properly to give their procedures a 'direction'. Very few candidates used the working space productively, and often did not use the whole of the wall chart 'frame' to complete their design. Not all candidates related the wall chart to the focus area.

(d) The majority of candidates answered this question well, recognising the need to supply more than one method of communication.

(e) The majority of candidates completed the table correctly; however, a large number of candidates confused the number of items with the number of accidents when completing their calculation of the average cost.

Section II

Focus Area – Automotive Industries

General Comments

Generally Section II of the Automotive Industries paper was well done. Some candidates had difficulty with their responses to the extended response questions although many candidates appeared to be better prepared than in previous years. Candidates need to read the question more carefully and to be able to determine the intent of the question.

Specific Comments

Question 4

(a) (i) (ii) and (iii) Generally well answered.

(b) Generally well answered. Many candidates recognised the advantage of forced induction into engines to boost power output but did not differentiate between small-capacity engines and large-capacity engines. Candidates also recognised other methods of improving power output. Most candidates recognised that the carburettor mixes fuel and air but were unable to describe the correct ratio.

(c) Poorly answered as few candidates fully appreciated how the engine management system (EMS) operated and which components were controlled by the EMS. Candidates knew many of the components but did not fully understand their function.

(d) Candidates who had obviously read up on the latest hybrid technology were fully aware that these cars employ two engines and the vehicle swaps between power sources depending upon driving conditions. However, many candidates wrongly assumed that hybrid meant using alternative power to fossil fuel. ie solar, fuel-cell technology, etc. Few candidates recognised the huge weight disadvantage and general lack of space in these cars. No candidate recognised that when such cars require battery recharging, pollution is changed from the operating source to the thermal power station.

Question 5

(a) Those candidates who interpreted the intent of the question were able to answer well.

(b) (i) Most candidates were unable to determine aerodynamic features and instead described automotive. Candidates had a poor understanding of how aerodynamics affects a vehicle.

(ii) Generally well answered, but candidates limited their answers to the use of polymers on bumper bars and spoilers. Only a few candidates extended their responses to lightweight metal components.

(c) The structure of the question allowed candidates to respond easily. Better responses were able to outline the progressive nature of the damage caused in an accident.

(d) Generally well answered. Most candidates scored good marks as they were able to list a large number of safety devices and give a reasonable discussion of their function.

Focus Area – Electronics Industries

General Comments

The lower-mark questions were generally well answered by the majority of candidates. A significant number of candidates did not attempt, or poorly attempted, the higher-mark questions that involved calculations.

Specific Comments

Question 4

(a) (i) This part of the question was generally well done. However some candidates did not grasp the concept of a 'remote' site.

(ii) Most candidates were aware of the advantages and disadvantages of power sources and had little difficulty in answering the question.

(iii) Very few candidates answered this part of the question fully. The majority of candidates were not able to adequately explain the full sequence of stages in the power supply.

(b) Many candidates were able to list basic safety precautions; however they did not explain why each of the safety precautions was necessary.

(c) Very few candidates produced a comprehensive response to this part of the question. Many candidates partially completed the necessary calculations by using the formulae that were supplied; however they lacked the mathematical ability to determine the final solution. Also, few candidates used the correct units in presenting their solutions.

Question 5

(a) (i) This part of the question was generally well answered by the majority of candidates showing they had some knowledge of meters.

(ii) The majority of candidates answered this part of the question poorly. Few candidates were able to elaborate on the reasons why the test would be conducted.

(iii) Most candidates knew the function of the part in question, however few candidates clearly indicated the precautions that needed to be taken to protect the component.

(b) Few candidates answered this part of the question well. Better candidates used a graphical representation of switches to assist their explanation.

(d) This part of the question was generally well done. Most candidates had an understanding of the issues involved. A small number of candidates responded to the words 'analogue' and 'digital' with reference to signals, rather than in relation to meters.

Focus Area – Graphics Industries

General Comments

It was evident from the responses that candidates had a general knowledge of most areas that were examined in the paper. Many candidates seemed to lack depth of knowledge and thus did not answer the higher-mark questions to the level required to gain the maximum marks. A number of candidates did not read the questions thoroughly and as a consequence failed to provide a concise response to the questions.

Specific Comments

Question 4

(a) This question was poorly answered. The majority of candidates could not identify the angle of projection from the diagram.

(b) Most candidates could relate scale to the concept of 'fitting it on the page'. However candidates had difficulty in calculating the scale correctly and explaining the importance of scale in drawing.

(c) Candidate descriptions of rendering lacked sufficient detail to gain maximum marks. The majority of candidates could not give an explanation as to why drawings needed to be rendered.

(d) Most candidates could describe two benefits of using a model. However, few candidates gave more than one example of using a model.

(e) Candidates confused presentation methods with drawing types. Few candidates made the relationship between the presentation method and the client.

Question 5

(a) Most candidates understood the concept of sectioning; however they were unable to sketch the sectional view correctly.

(b) The majority of the candidates could identify AS1100 as the Australian drawing standards, however they could not fully explain their importance.

(c) A large proportion of the candidates could recognise the advantages of drawing with CAD. Few compared the methods of CAD drawing to Mechanical Drawing or could make the link between CAD and CAM.

(d) Candidates found it difficult to describe why freehand drawing would be used in preference to other drawing methods.

(e) This question was poorly answered by majority of candidates. Few candidates made the link between the role of the consultant and how they relate to the architect. Better responses made the link between consultant and architect and generally gained high marks.

Focus Area – Metals and Engineering Industries

General Comments

Question 4 was better answered than Question 5. Many candidates found question 5 difficult or ran out of time to complete successfully. In several instances where candidates were required to 'name' or 'describe', they followed a correct name with a poor description.

Supporting sketches were often of poor quality and did not include appropriate labels.

Again this year (as in 2001) the higher-mark parts of both question 4 and question 5 were poorly answered. Candidates need to read these questions carefully to ensure that they address all aspects required.

Specific Comments

Question 4

(a) Candidates were generally successful in answering this part.

(b) Most candidates were able to identify two suitable finishing methods. However, many candidates failed to give an adequate description.

(c) This part was generally well answered. Most candidates were able to name a suitable cladding material but their description of a fixing method was often poor.

(d) Generally the sketches given did not support candidates' descriptions. References to the design of joints were often lacking.

(e) Generally this part was poorly answered because many candidates failed to address the four aspects of the description. Candidates had a poor knowledge of manufacturing processes relevant to industry and gave school workshop-based responses.

Question 5

(a) Generally well answered.

(b) Many candidates were unable to describe the process of turning a taper on a lathe. Reference needed to be made to the use of the compound slide. Supporting sketches were also poor.

(c) This part was poorly answered. Candidates rarely identified a suitable method of holding the screw and even fewer could suggest an appropriate machining process.

(d) Many candidates found it difficult to distinguish between various hardening processes. While candidates often recognised the fact that a heat treatment process was necessary, many did not follow a description of hardening with a description of tempering.

(e) Generally this part was poorly answered. Candidates often compared time and accuracy but did not have a detailed knowledge of shaping and surface grinding. Surface grinding was often confused with angle grinding.

Focus Area – Multimedia Industries

General Comments

Most candidates were able to respond to all sections of the questions. However a number of the candidates demonstrated that they were unfamiliar with the glossary of terms used to develop examination questions.

Specific Comments

Question 4

(a) The majority of candidates were able to identify the correct storyboard layout. However some candidates were confused by the focus of the part, and responded by labelling the boxes in the storyboard.

(b) Many candidates experienced some confusion with this part. Some candidates failed to focus on the reduction of file size and answered the question in general terms.

(c) This part was generally well answered. Most candidates were able to identify a number of editing operations, and the better candidates were able to indicate their main features.

(d) (i) Many candidates were able to provide a quality response to this part.

(ii) The candidates provided a full range of responses to this part. Most candidates were able to identify factors that affected quality and file size, however few candidates were able to present legitimate reasons in their discussion.

(e) This part was answered reasonably well by the majority of candidates, however many concentrated their response in relation to hardware issues. Few candidates were able to give an equally good response to both hardware and software issues.

Question 5

(a) Although the majority of candidates provided the correct response of tweening, some candidates confused the technique with ‘morphing’ and ‘animation’.

(b) Many candidates gave an elementary explanation as to how images are stored. Some candidates described the process of saving a file rather than how it was stored.

(c) This part was generally well answered by the candidates.

(d) (i) This part was generally answered at an elementary level. Few candidates recognised the issues of ethics and intellectual property.

(ii) Most candidates provided a satisfactory response to this part.

(e) Candidates who failed to achieve higher marks for this part commonly failed to refer to design or maintenance issues of the website. Some candidates also experienced difficulty with or were unfamiliar with the term 'in-house'.

Focus Area – Timber Products and Furniture Industries

General Comments

The responses of many candidates indicated that the syllabus was not fully taught to all candidates. It is apparent that many teachers concentrated on the completion of the Major Project and therefore most candidates could only relate to those processes involved in the construction of their own project and little else.

Specific Comments

Question 4

(a) Candidates performed extremely well in this part.

(b) Most candidates could recall an Australian hardwood and gave reasons for its use. Some candidates used general names, for example, oak or cedar of which there are imported species.

(c) Candidates could sketch and label a method of attaching the top without providing a reason, just a description of what they did. The better responses mentioned a method to allow for movement and disassembly, eg buttons.

(d) Candidates had difficulty in interpreting this question. The words 'shape of the.....' caused confusion with over 20% responding as 'marking out' rather than producing the component.

(e) Even the better performing candidates answered this question poorly. Words such as 'discuss' were not clearly understood by many candidates. Most candidates did not discuss quality and tended to list or describe steps. Some candidate confusion occurred over 'gate leg frame' and 'gate leg table'.

Question 5

(a) This part was answered poorly. The term 'industrial process' was consistently misinterpreted as 'hand tools'. Whole centres either responded almost correctly or incorrectly.

(b) Many candidates did not know a correct name of a finish. Most candidates however, received some marks for their responses. A number of responses indicated 'stain' was a suitable finish on its own without sealing.

(c) Sketching was of a poor standard indicating that many candidates would benefit from practice. Many candidates answered using either a template to mark out solid timber, steam bending, soaking timber in water, or not referring to the gluing of veneers, rather than describing the complete laminating process.

(d) Many candidates did not describe 'properties of the upholstery materials'. Poor responses included availability, cost, and aesthetic considerations such as colour, pattern, and comfort. A better response included durability, water and stain resistance and the ability to be cleaned.

(e) This part was poorly attempted. Candidates with poor writing skills struggled. A number of candidates responded by outlining the procedures to make/construct the components/chair, rather than discussing 'appropriate work practices'. Most candidates could identify issues relating to appropriate work practices but failed to give relevant reasons for and/or against the practices identified, which resulted in little or no discussion.

Major Project

There was a general improvement in the overall standard of projects presented by candidates with, as the numbers of candidates increases, a wide variety of projects presented. The new syllabus presents teachers and candidates with an opportunity to expand upon more traditional projects and involve new and different materials and processes.

Design and Management

It is essential that the candidates provide a statement of intent that reflects a sound reason for the development of the major work and that this is explained. In many cases candidates were unable to derive a positive direction for their project with only a simple statement of what they were making.

In general, the research that candidates undertook was related to the project being undertaken, although the relevance of this research was not necessarily clearly stated and justified. There was a general lack of understanding of appropriate research and the consequence of that research. In many cases the research was unrelated to the specifics of the project. A collection of pamphlets and other unexplained research is still prevalent. It is expected that the research should be multifaceted and clearly related to the project that is defined in the statement of intent.

Development of ideas was poorly done. The continuing problem of candidates not understanding the process of design development was again highlighted. Candidates should understand and demonstrate a process that incorporates a progression from their initial ideas through research, critical analysis, modification and evaluation, leading to the development of the practical project. Some candidates accomplished the process through a sketching medium, but whichever method is employed the development of ideas is imperative. A collection of sketches should show progression, with explanation of a movement of thought towards development of the final project.

The selection and the justification of components, processes and other resources must be related to the project and related to the areas of investigation that have been undertaken. In many cases candidates presented a table with choice justification headings and others were able to diffuse the process throughout the folio document. The statement 'I have chosen because' must be related to

the evidence that is supplied within the research section of the project in order to maximize the candidate understanding of this section.

The Timeline and the Finance Plan were generally well done with many candidates showing a sound knowledge of task-specific software. Candidates were able to show evidence of future planning. Most candidates related the research component of the folio to the development of the proposed Time and Finance Plan. While these should provide the basis for the actual timeline and finance plan it is more than probable that the real time and finance plans will differ from the original estimate.

The majority of candidates understood and applied industrial processes to their major project. While it is not expected that the candidates apply industrial processes in all aspects of the construction of their project, some candidates were able to use appropriate industrial alternatives in some part of the analysis of the most suitable method of construction/production or manufacture.

Most candidates provided evidence of OHS knowledge in the development of their project. In some cases candidates presented a table with a list of machine tools and their specific safety requirements while others presented photographic evidence throughout their folio. While photographic evidence should not be ignored it is essential that the candidate consider 'risk management' as part of the production process.

Communication

In general the criterion of record of project activities was well attempted. This section of the folio gives the markers the greatest insight into the production of the project. The use of photographs, videos and labelled displays also assisted in this criterion.

Most candidates were able to show evidence of evaluation throughout their folios. Candidates demonstrated changes in design, construction methodology or problem-solving methods as evidence of ongoing evaluation. In many cases appropriate design modifications were integrated with evaluative processes throughout the folio.

Evaluation of the major project was generally well done although many candidates did not address this component. Candidates either formally addressed the concept by asserting that the parameters of the project were successful, as defined by the statement of intent. Most candidates attempted an evaluation of the major project at the end of the folio; however in the better folios there was also evidence of ongoing evaluation. This often took the form of problem-solving techniques and methods of construction that varied from the original plan.

Communication techniques varied and this was to be expected. In general the better candidates were able to present a variety of methods that were found in various parts of the folio and ranged from written evidence and sketches through to more formal techniques including technical drawings, CAD, video or multimedia techniques.

Computer application was generally well addressed with most candidates using a range of software that included word processing, spreadsheets and drawing software such as CAD or a graphics program. In some instances candidates demonstrated proficiency in the use of digital equipment while most were able to import files from a variety of applications.

Production

Production was generally of a better standard than in previous years. There were fewer low quality projects; candidates and range of projects increased. There were still a significant number whose projects were too 'basic' and who therefore limited themselves in the marks they could obtain. Those who followed a systematic approach to project selection and development generally received enhanced results.

Candidates need to be made aware that the all the work required to make the project needs to be displayed at the time of marking. Jigs, models, prototypes, preliminary sketches, working rods and all other material that is used during construction needs to be exhibited when the markers are present.

The better candidates demonstrated a broader range of skills, from traditional hand skills, machine skills to the use of CAD/CAM. Many candidates demonstrated a sound knowledge of a range of materials and were able to apply this knowledge to appropriate construction processes. Poorer candidates were unable to delineate the range of skills required in the syllabus and presented repetitive manufacturing processes that in many cases were unsuitable or used hardware and fittings that were inappropriate.

Metal candidates still demonstrate their inability to design for a specific purpose and many projects were overdesigned, resulting in size, shape or weight problems. Better candidates were able to demonstrate complexity within the project and the range of skills that were evident reflected the degree of difficulty. The majority of candidates were able to show that the skills and techniques they displayed were appropriate to the finished product.

Most candidates were able to confirm that the selection of material and processes that were detailed in the folio reflect the research and the planning that was evident in the practical work. In general, candidates were able to show the use of the most appropriate industrial process, materials and tools to complete at least part of their project. These were usually documented through word-processing and photographs.

Industrial Technology—Section 1

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
1(a)(i)	2	Environmental and sociological factors – pollution	H1.1, H7.1
1(a)(ii)	2	Environmental and sociological factors – pollution	H1.1, H7.1
1(b)(i)	4	Environmental and sociological factors – recycling	H1.1, H1.2, H7.1
1(b)(ii)	4	Environmental and sociological factors – recycling	H1.1, H1.2
1(c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First Aid, Safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – Equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – calculations	H5.2

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NEW SOUTH WALES

2002 HSC Industrial Technology
Marking Guidelines

Section I

Question 1 (a) (i)

Outcomes assessed: H1.1, H7.1

MARKING GUIDELINES

Criteria	Marks
• More than one form of pollution identified	2
• One form of pollution identified	1

Question 1 (a) (ii)

Outcomes assessed: H1.1, H7.1

MARKING GUIDELINES

Criteria	Marks
• Linking pollution named in (a) (i) with effects on community.	2
• Outlines effect pollution has on the community, generally OR • Linking pollution named in (a) (i) with an effect on the community	1

Question 1 (b) (i)

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

MARKING GUIDELINES

Criteria	Marks
• Identifies and discusses more than one appropriate advantage and more than one appropriate disadvantage of recycling	4
• Identifies and discusses one appropriate advantage and more than one appropriate disadvantage of recycling OR • Identifies and discusses more than one appropriate advantage and one appropriate disadvantage of recycling	3
• Identifies and discusses an advantage and/or disadvantage of recycling OR • Identifies 2 advantages OR • Identifies 2 disadvantages OR • Identifies 1 advantage and 1 disadvantage	2
• Shows understanding of the word 'recycling'	1

Question 1 (b) (ii)

Outcomes assessed: H1.1, H1.2

MARKING GUIDELINES

Criteria	Marks
• A well-structured response that outlines stages/processes involved in an effective recycling program	4
• Outlines a suitable program, with a brief explanation of the stages and processes	3
• A list of stages/processes OR • A limited statement of stages/processes in a recycling program OR • A simple flowchart	2
• A basic statement that indicates that recycling is a solution to waste	1

Question 1 (c)

Outcomes assessed: H1.1, H7.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured and detailed response that indicates a clear understanding and provides a logical statement relating to the issues and implications	8
• A well-written response outlining a number of issues with suitable explanation	6-7
• A basic outline of two issues giving reasons why they should be included in the EIS	4-5
• A list of more than one issue or the explanation of one issue that should be included	2-3
• A single word or sentence that indicates an understanding of what an issue is	1

Question 2 (a)

Outcomes assessed: H1.1, H2.1

MARKING GUIDELINES

Criteria	Marks
• Names or recognises more than one essential resource relating to the treatment of workplace injuries	2
• Names or recognises one essential resource relating to the treatment of workplace injuries	1

Question 2 (b)

Outcomes assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Names two or more strategies, outlining why they would ensure effective induction of new staff	2
• Names either one strategy outlining why it would ensure effective induction of new staff OR • Two strategies inadequately explained	1

Question 2 (c)

Outcomes assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Names and outlines a range of EEO principles that could be followed by the company	4
• Names and outlines in basic terms more than one EEO principle that could be followed by the company	3
• Names and identifies one EEO principle that could be followed by the company	2
• Names a principle that could be followed by the company	1

Question 2 (d)

Outcomes assessed: H1.1

MARKING GUIDELINES

Criteria	Marks
• Names and describes two or more roles well	4
• Names two roles but only describes one well OR • Names more than two roles with inadequate descriptions	3
• Names and describes one role well OR • Names two roles with inadequate descriptions	2
• Names one role only - no description or inadequate description	1

Question 2 (e)

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

MARKING GUIDELINES

Criteria	Marks
• Names and discusses more than one implication of improved materials and technologies on environmental issues and OHS issues	8
• Names and discusses an implication of improved materials and technologies on environmental issues and OHS issues	6–7
• Identifies implications of improved materials and technologies on environmental issues and OHS issues	4–5
• Identifies an implication of improved materials and/or technologies on environmental issues and/or OHS issues	2–3
• Names an improved material or technology that relates to the organisation's operation	1

Question 3 (a)

Outcomes assessed: H1.1, H5.1

MARKING GUIDELINES

Criteria	Marks
• Outlines a range of procedures that can be used to gain information. The procedure has to relate to a source of information	4
• Outlines procedures that can be used to gain information. The procedure has to relate to the source of information	3
• Outlines a procedure that can be used to gain information. The procedure has to relate to a source of information	2
• Lists the source(s) of information or lists a procedure	1

Question 3 (b)

Outcomes assessed: H5.1, H5.2

MARKING GUIDELINES

Criteria	Marks
• Outlines a range of techniques and/or packages linking preparation and presentation in a detailed manner	4
• Outlines a range of techniques and/or packages linking preparation and presentation in a limited manner	3
• Outlines a technique and/or package for preparation or presentation	2
• Names a technique/package for preparation or presentation	1

Question 3 (c)

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

MARKING GUIDELINES

Criteria	Marks
• Clearly identifies the procedure to be followed. Includes text • Provides clear logical direction • Graphics clear, neat and legible	8
• Good identification of procedures to be followed and a range of graphics linked to the procedure	6–7
• Lists steps in the procedure but limited graphics linked to procedure	4–5
• General idea of procedure OR • Some graphics linked to procedure	2–3
• Limited graphical representation relating to procedure OR • Limited idea of procedure	1

Question 3 (d)

Outcomes assessed: H5.1

MARKING GUIDELINES

Criteria	Marks
• Names two or more suitable strategies	2
• Names one suitable strategy	1

Question 3 (e)

Outcomes assessed: H5.2

MARKING GUIDELINES

Criteria	Marks
• All of table correct and average cost is correct	2
• All of table correct but average cost incorrect OR • Table incorrect, but average cost calculated using incorrect values is consistent with these values	1

Industrial Technology
Automotive Industries

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I			
1 (a) (i)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1 (a) (ii)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1 (b) (i)	4	Environmental and sociological factors – Recycling	H1.1, H1.2, H7.1
1 (b) (ii)	4	Environmental and sociological factors – Recycling	H1.1, H1.2
1 (c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First aid, safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – Calculations	H5.2
Section II			
4 (a) (i)	1	Industry – specific content – Power sources	H3.1, H4.3
4 (a) (ii)	1	Industry – specific content – Power sources	H3.1, H4.3
4 (a) (iii)	3	Industry – specific content – Power sources	H4.3
4 (b)	3	Industry – specific content – Power sources, Engine and related systems	H4.3, H6.1
4 (c)	4	Industry – specific content – Electrical	H4.3, H6.1
4 (d)	8	Industry – specific content – Power sources, Automotive design	H1.1, H4.3, H6.1
5 (a)	2	Industry – specific content – Body, Automotive design	H1.2, H6.1
5 (b) (i)	3	Industry – specific content – Automotive design	H1.2, H6.1
5 (b) (ii)	3	Industry – specific content – Automotive design	H1.2, H6.1
5 (c)	4	Industry – specific content – Body	H6.1
5 (d)	8	Industry – specific content – Automotive design	H2.1

Section II

Question 4 (a) (i)

Outcomes assessed: H3.1, H4.3

MARKING GUIDELINES

Criteria	Marks
• Correct answer	1

Question 4 (a) (ii)

Outcomes assessed: H3.1, H4.3

MARKING GUIDELINES

Criteria	Marks
• Correct answer	1

Question 4 (a) (iii)

Outcomes assessed: H4.3

MARKING GUIDELINES

Criteria	Marks
• Correct engine and correct reasoning for answer	3
• Correct engine with response of either high torque OR • Low revs without the linkage to higher torque	2
• Correct engine, no reason OR • Incorrect engine with explanation of gearing changes	1

Question 4 (b)

Outcomes assessed: H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured, balanced response that possesses detail and is related to engine capacity	3
• An answer biased toward one part only that is generally correct	2
• One or two relevant points in list form, without explanation	1

Question 4 (c)

Outcomes assessed: H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured response that identifies and explains the purpose, components and function of an engine management system	4
• A well-structured response that covers only two parts of the question	3
• A generally correct response that covers only two parts of the question	2
• One or two relevant points in list form, without detail	1

Question 4 (d)

Outcomes assessed: H1.1, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured answer that provides a comprehensive description with comprehensive discussion of the advantages and limitations of hybrid powered vehicles	7–8
• A limited description accompanied with a detailed discussion of limitations/advantages OR • A detailed answer biased towards either advantages or limitations	5–6
• An answer that provides only a description OR • Only advantages/disadvantages OR • An inadequately structured, not very comprehensive answer	3–4
• An answer based on a few relevant points OR • A list in point form of some advantages/limitations	1–2

Question 5 (a)

Outcomes assessed: H1.2, H6.1

MARKING GUIDELINES

Criteria	Marks
• An answer that refers to use of anti-corrosive coatings, and the process used OR • Alternative material (non-corrosive)	2
• One or two points in list form OR • The name of an anti-corrosive coating OR • One or two relevant points in list form, without explanation	1

Question 5 (b) (i)

Outcomes assessed: H1.2, H6.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured answer that includes identification and correct description of a number of features	3
• A brief answer that identifies some relevant features, with inadequate descriptions or a list of features	2
• A list of some features, no description	1

Question 5 (b) (ii)

Outcomes assessed: H1.2, H6.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured answer that includes identification and correct description of a number of features	3
• A brief answer that identifies some relevant features, with inadequate descriptions or a list of features	2
• A list of some features, no description	1

Question 5 (c)

Outcomes assessed: H6.1

MARKING GUIDELINES

Criteria	Marks
• An answer that identifies the damaged components and predicts the extent of damage correctly – particularly picking up on progressive damage to 'internal' parts	4
• A list of possible damaged parts without any predication of progressive damage	2–3
• A list of some obviously damaged components, but lacking an understanding that surface damage will lead to internal structural damage	1

Question 5 (d)

Outcomes assessed: H2.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured, comprehensive answer that clearly identifies, and critically assesses a range of passive safety devices in terms of their value in reducing personal damage	8
• A well-structured answer, not comprehensive, that identifies and critically assesses a limited range of devices	6–7
• A correct answer that is not well-structured, or that provides an assessment that lacks a depth of understanding	4–5
• A list of some devices with some assessment of their value but lacking insight OR • An assessment that is more a comment on function of the item	2–3
• A list of some passive safety devices with no assessment	1

Industrial Technology
Electronics Industries

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I			
1 (a) (i)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1 (a) (ii)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1 (b) (i)	4	Environmental and sociological factors – Recycling	H1.1, H1.2, H7.1
1 (b) (ii)	4	Environmental and sociological factors – Recycling	H1.1, H1.2
1 (c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First aid, safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – Equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – Calculations	H5.2
Section II			
4 (a) (i)	1	Electrical principles – Supply and safety	H1.2
4 (a) (ii)	2	Electrical principles – Supply and safety	H1.2
4 (a) (iii)	3	Electrical principles – Fundamentals, Supply and safety	H1.2, H2.1
4 (b)	6	Electrical principles – Supply and safety	H1.2, H2.1
4 (c)	8	Electrical principles – Circuitry, Graphics	H3.1, H4.3
5 (a) (i)	1	Instruments and test equipment	H1.2
5 (a) (ii)	2	Instruments and test equipment	H1.2
5 (a) (iii)	3	Electrical principles – Components, Peripherals	H1.2, H2.1
5 (b)	6	Electrical principles – Components, Digital electronics	H1.2
5 (c)	8	Instruments and test equipment	H1.2, H6.1, H6.2

Section II

Question 4 (a) (i)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Names an appropriate power source	1

Question 4 (a) (ii)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Two correct answers	2
• One correct answer	1

Question 4 (a) (iii)

Outcomes assessed: H1.2, H2.1

MARKING GUIDELINES

Criteria	Marks
• A well-written response explaining the process	3
• A basic outline of the process	2
• A single word or sentence indicating some understanding of the process	1

Question 4 (b)

Outcomes assessed: H1.2, H2.1

MARKING GUIDELINES

Criteria	Marks
• A well-written response outlining a number of issues and providing suitable explanations	6
• A well-written response outlining two issues with suitable explanations	5
• An adequate response outlining two issues with suitable explanations	4
• A basic outline of two issues with a suitable explanation	3
• A list of two issues or an explanation of one relevant issue	2
• A single word or sentence indicating some understanding of the issue	1

Question 4 (c)

Outcomes assessed: H3.1, H4.3

MARKING GUIDELINES

Criteria	Marks
• Determines correct value for the current showing calculations	7–8
• Performs most appropriate calculations with one/several errors	5–6
• Makes some progress towards the answer using formulae appropriately	3–4
• Shows a basic understanding of electrical calculations with one or two appropriate formulae used	1–2

Question 5 (a) (i)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Correct answer	1

Question 5 (a) (ii)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Two correct responses	2
• One correct response	1

Question 5 (a) (iii)

Outcomes assessed: H1.2, H2.1

MARKING GUIDELINES

Criteria	Marks
• A well-written response describing both function and protection	3
• A basic outline of either the function or protection	2
• A single word or sentence indicating some understanding of the process	1

Question 5 (b)

Outcomes assessed: H1.2

TRUTH TABLE

MARKING GUIDELINES

Criteria	Marks
• Four correct entries	2
• Two or three correct entries	1

DESCRIPTION

MARKING GUIDELINES

Criteria	Marks
• A well-written response clearly describing the process	4
• A basic response describing the process	3
• A list or more than one issue with a description	2
• A single word or sentence indicating some understanding of the process	1

Question 5 (c)

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

MARKING GUIDELINES

Criteria	Marks
• A well-structured and detailed response that indicates clear/balanced understanding of the issues	8
• A well-written response that outlines a number of issues	6–7
• A basic outline of the issues, or a concentration of one meter type	4–5
• A list of issues	2–3
• A single word or sentence indicating some understanding of the issues	1

Industrial Technology
Graphics Industries

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I			
1(a)(i)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(a)(ii)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(b)(i)	4	Environmental and sociological factors – Recycling	H1.1, H1.2, H7.1
1(b)(ii)	4	Environmental and sociological factors – Recycling	H1.1, H1.2
1(c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First Aid, Safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – Equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – Calculations	H5.2
Section II			
4 (a)	1	Uses orthogonal and a range of pictorial types to communicate design ideas and solutions	H3.1
4 (b)	3	Select and use relevant drawing standards	H3.1, H4.3
4 (c)	4	Produce working and presentation drawings in accordance with appropriate standards. Presentation techniques – Rendering	H1.2, H4.3, H6.1
4 (d)	4	Presentation techniques – Modelling. Construct models of intended design solutions	H4.3, H6.1
4 (e)	8	Presentation techniques	H1.2, H4.3, H6.1
5 (a)	1	Uses orthogonal and a range of pictorial drawing types to communicate design ideas and solutions	H3.1
5 (b)	3	Produces drawings according to appropriate standards	H1.2, H6.2
5 (c)	3	Equipment – computer software, use computer generated graphics	H1.2, H2.1, H6.1, H6.2
5 (d)	5	Use freehand orthogonal and appropriate sketching to communicate design ideas	H1.2, H6.2
5 (e)	8	Need to outsource expertise quality – standards and principles presentation	H1.2, H2.1, H4.2, H6.1, H6.2

Section II

Question 4 (a)

Outcomes assessed: H3.1

MARKING GUIDELINES

Criteria	Marks
• Correct answer	1

Question 4 (b)

Outcomes assessed: H3.1, H4.3

MARKING GUIDELINES

Criteria	Marks
• Scale correct AND • A clear explanation of what the importance of scale is to relating measurement on paper to the real world	3
• Scale correct and brief explanation of what the importance of scale is OR • Scale incorrect but clear explanation of what the importance of scale is	2
• Scale correct and no explanation/incorrect explanation of what the importance of scale is OR • Scale incorrect and shows some understanding of the importance of scale	1

Question 4 (c)

Outcomes assessed: H1.2, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Detailed explanation of what rendering is and why a drawing is rendered	4
• An explanation of what rendering is and why a drawing is rendered	3
• An explanation of what rendering is OR why it is used	2
• Briefly describes what rendering is OR why it is used	1

Question 4 (d)

Outcomes assessed: H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Well written description of the benefits of using models with good use of examples	4
• Two brief descriptions with supporting examples	3
• One description with one example OR • Two descriptions with no examples	2
• Two examples but no description OR • Poor description only	1

Question 4 (e)

Outcomes assessed: H1.2, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Discussion of three or four different presentation methods clearly explained • Good reasons for the use of different drawing techniques for different clients eg owners, council, and tradesperson – specifying the needs of the client	7–8
• Discussion of three or four different presentation methods, and includes some reasons and uses for clients	5–6
• Discussion of two different presentation methods and includes some reasons for use for clients	3–4
• Identification of two different methods but with no reasons for use for clients	2
• Poor response for either part of the question	1

Question 5 (a)

Outcomes assessed: H3.1

MARKING GUIDELINES

Criteria	Marks
• Correct sketch	1

Question 5 (b)

Outcomes assessed: H1.2, H6.2

MARKING GUIDELINES

Criteria	Marks
• Correct standard identified • Good explanation of why AS 1100 is important	3
• Correct standard identified and brief explanation of why AS 1100 is important OR • No standard identified and clear explanation of why AS 1100 is important	2
• Correct standard only OR • Brief explanation only	1

Question 5 (c)

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

MARKING GUIDELINES

Criteria	Marks
• Two or more clear advantages of CAD compared to mechanical drawing	3
• Clear description of the advantages of CAD without comparing to mechanical drawing OR • Brief description of advantages of CAD compared to mechanical drawing	2
• Poor description of CAD without comparing to mechanical drawing	1

Question 5 (d)

Outcomes assessed: H1.2, H6.2

MARKING GUIDELINES

Criteria	Marks
• Good discussion with at least two clear examples and mention of any other drawing method	5
• Good discussion with at least two clear examples but no mention of any other drawing method	4
• Good discussion with poor or limited examples OR • Poor discussion but with excellent examples	2–3
• Limited discussion with one benefit or one example	1

Question 5 (e)

Outcomes assessed: H1.2, H2.1, H4.2, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
• Response identifies four or more consultants and explains the significance of their role as it relates to architects	8
• Response identifies three or more consultants and explains their role in some detail and relates their work to the architects	6–7
• Response identifies three or more consultants and explains their role in some detail and shows some link to architects	4–5
• Response identifies two or more consultants and explains their role with no reference to the architects	2–3
• Identifies one or two consultants	1

Industrial Technology
Metals and Engineering Industries

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I			
1(a)(i)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(a)(ii)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(b)(i)	4	Environmental and sociological factors – Recycling	H1.1, H1.2, H7.1
1(b)(ii)	4	Environmental and sociological factors – Recycling	H1.1, H1.2
1(c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First Aid, Safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – Equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – Calculations	H5.2
Section II			
4 (a)	1	Industry – specific content – Materials	H1.2, H3.1
4 (b)	3	Industry – specific content – Materials, processes, tools, machinery	H1.2, H4.3
4 (c)	3	Industry – specific content – Materials, processes, tools, machinery	H1.2
4 (d)	5	Industry – specific content – Materials, processes, tools, machinery	H1.2, H3.1, H4.3
4 (e)	8	Industry – specific content – Processes, tools, machinery	H1.2, H3.1
5 (a)	1	Industry – specific content – Processes, tools, machinery	H1.2
5 (b)	4	Industry – specific content – Processes, tools, machinery	H1.2, H2.1, H3.1, H6.1
5 (c)	3	Industry – specific content – Processes, tools, machinery	H1.2, H2.1, H6.1
5 (d)	4	Industry – specific content – Processes, tools, machinery	H1.2, H2.1, H6.1
5 (e)	8	Industry – specific content – Processes, tools, machinery	H1.2, H2.1, H6.1

Section II

Question 4 (a)

Outcomes assessed: H1.2, H3.1

MARKING GUIDELINES

Criteria	Marks
• Correct answer, correct terminology	1

Question 4 (b)

Outcomes assessed: H1.2, H4.3

MARKING GUIDELINES

Criteria	Marks
• The name of two suitable methods, with a good description of each	3
• The name and description of one suitable method OR • The names of two suitable methods OR • The descriptions of two suitable methods	2
• The name or description of one suitable method	1

Question 4 (c)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Clear statement of a correct suitable metal sheet, together with a correct and detailed method of fixing	3
• Correct suitable metal sheet, together with a brief statement on method of fixing	2
• Name of a suitable metal sheet only OR • A suitable comment on the method of fixing	1

Question 4 (d)

Outcomes assessed: H1.2, H3.1, H4.3

MARKING GUIDELINES

Criteria	Marks
• A well-structured answer, with a detailed sketch of the design and process	5
• A brief answer, with a detailed sketch of the design and process OR • A well-structured answer, with a poor sketch of the design and process	3–4
• A brief answer without much detail	2
• Reference only to the fastening system – nuts and bolts	1

Question 4 (e)

Outcomes assessed: H1.2, H3.1

MARKING GUIDELINES

Criteria	Marks
• A well-structured detailed answer covering all aspects of each step	8
• A good answer, not fully detailed but covering most of the relevant aspects relating to each of the steps	6–7
• Brief adequate coverage of each of the steps. Lacking detail or in point form	4–5
• Brief, unstructured reference to one or two points relating to two of the steps	2–3
• Brief unstructured reference to one or two points relating to any one of the steps	1

Question 5 (a)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Correct answer	1

Question 5 (b)

Outcomes assessed: H1.2, H2.1, H3.1, H6.1

MARKING GUIDELINES

Criteria	Marks
• Well-structured, detailed answer covering holding work, preparing tool, and cutting taper. Detailed sketch included	4
• A brief answer covering some points relevant to each of holding work preparing tool and cutting. Detailed sketch included OR • A detailed comment on any one of the three stages. Basic sketch included	2–3
• Some points relevant to the process, but not logically presented, no sketch OR • A good, neat, correct sketch of the set-up	1

Question 5 (c)

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

MARKING GUIDELINES

Criteria	Marks
• Well-structured, detailed answer describing holding the screw and machining the slot	3
• Adequately detailed answer describing holding the screw and machining the slot OR • Detailed answer describing holding the screw with minor mention of cutting the slot OR • Detailed answer describing cutting the slot with minor mention of holding the screw	2
• List of points relevant to holding and cutting OR • Poorly structured paragraph relating to holding and cutting	1

Question 5 (d)

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

MARKING GUIDELINES

Criteria	Marks
• Correct name and detailed description of the process	4
• Correct name and description lacking detail OR • Adequate description points relevant to the process	3
• Correct name with poor description of hardening and tempering	2
• Correct name OR • Poor description of either hardening or tempering	1

Question 5 (e)

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

MARKING GUIDELINES

Criteria	Marks
• Describes all three processes and compares them in terms of time taken and accuracy of surface produced	8
• Describes all three processes and mentions time taken and accuracy of surface produced	6–7
• Describes all three processes and mentions time taken OR accuracy of surface produced	4–5
• Describes all three processes OR • Describes at least two processes with mention of time taken or accuracy of finish	2–3
• Describes one process	1

Industrial Technology
Multimedia Industries

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I			
1(a)(i)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(a)(ii)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(b)(i)	4	Environmental and sociological factors – Recycling	H1.1, H1.2, H7.1
1(b)(ii)	4	Environmental and sociological factors – Recycling	H1.1, H1.2
1(c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First Aid, Safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – Equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – Calculations	H5.2
Section II			
4 (a)	1	Processes – Storyboard	H1.2, H3.1
4 (b)	3	Processes – Imaging – Creation and editing	H1.2, H4.3, H6.1
4 (c)	3	Processes – Editing	H1.2, H4.3, H6.1
4 (d) (i)	2	Processes, tools and machines	H1.2, H4.3
4 (d) (ii)	3	Processes, tools and machines, Materials and resources	H4.3
4 (e)	8	Processes, tools and machines, Materials and resources	H1.2, H4.3, H6.1
5 (a)	1	Processes – Image creation	H1.2
5 (b)	3	Processes – Image creation	H1.2
5 (c)	3	Processes, Materials and resources	H6.1, H6.2
5 (d) (i)	2	Processes – Copyright	H2.1, H4.2
5 (d) (ii)	3	Materials and resources – file formats, internet	H1.2
5 (e)	8	Processes – Outsourcing, Materials and resources, World Wide Web resources	H1.2, H4.2, H6.1, H6.2

Section II

Question 4 (a)

Outcomes assessed: H1.2, H3.1

MARKING GUIDELINES

Criteria	Marks
• Names the correct storyboard layout	1

Question 4 (b)

Outcomes assessed: H1.2, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Clearly indicates the main features of more than one method	3
• Clearly indicates the main feature of one method	2
• Names any method	1

Question 4 (c)

Outcomes assessed: H1.2, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Sketch in general terms two or more operations	3
• Sketch in general terms one operation	2
• Understanding of the term editing	1

Question 4 (d) (i)

Outcomes assessed: H1.2, H4.3

MARKING GUIDELINES

Criteria	Marks
• Names and provides characteristics and features of a suitable external storage device	2
• Names a suitable external storage device	1

Question 4 (d) (ii)

Outcomes assessed: H4.3

MARKING GUIDELINES

Criteria	Marks
• Identifies and provides points on more than one factor	3
• Identifies and provides points or one factor	2
• Identifies one factor	1

Question 4 (e)

Outcomes assessed: H1.2, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Well-written response for more than one hardware solution and more than one software solution	8
• Well-written response for one hardware solution and one software solution	6–7
• Identifies and provide points for one hardware solution or one software solution	4–5
• Identifies one hardware solution and one software solution	2–3
• Identifies any solution	1

Question 5 (a)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Names the correct technique to create the intermediate images	1

Question 5 (b)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Detailed relationship between bits and pixels	3
• Elementary relationship between bits and pixels	2
• Mention of bits and pixels	1

Question 5 (c)

Outcomes assessed: H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
• Identifies two factors, providing points for and/or against	3
• Identifies one factor, providing points for and/or against	2
• Identifies one or more factors	1

Question 5 (d) (i)

Outcomes assessed: H2.1, H4.2

MARKING GUIDELINES

Criteria	Marks
• Statement providing detailed reasons why copyright is an important issue	2
• Statement providing a reason why copyright is an important issue	1

Question 5 (d) (ii)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Names a suitable file format that utilises compression and provides the method of how the compression is achieved	3
• Correct description and incorrect name OR • Names a suitable file format that utilises compression but incorrect description of how compression is achieved	2
• Names an audio file format that utilises compression	1

Question 5 (e)

Outcomes assessed: H1.2, H4.2, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
• Identifies and relates advantages and disadvantages to both outsourcing and in-house. Mention must be made of BOTH design and maintenance	8
• Identifies and relates advantages and disadvantages to both outsourcing and in-house. Mention made of design OR maintenance	6–7
• Identifies and relates one advantage AND disadvantage to either outsourcing or in-house	4–5
• Identifies and relates one advantage OR disadvantage to either outsourcing or in-house	2–3
• Any one advantage or disadvantage OR • Basic understanding of what a website is	1

Industrial Technology
Timber Products and Furniture Industries

2002 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I			
1(a)(i)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(a)(ii)	2	Environmental and sociological factors – Pollution	H1.1, H7.1
1(b)(i)	4	Environmental and sociological factors – Recycling	H1.1, H1.2, H7.1
1(b)(ii)	4	Environmental and sociological factors – Recycling	H1.1, H1.2
1(c)	8	Environmental and sociological factors – EIS	H1.1, H7.1
2 (a)	2	OH&S – First Aid, Safety training	H1.1, H2.1
2 (b)	2	OH&S – Workplace communication, Personnel issues	H1.1
2 (c)	4	Personnel issues – Equity/EEO	H1.1
2 (d)	4	Personnel issues – Unions	H1.1
2 (e)	8	OH&S – Industry requirements (standards), Structural factors, Environmental and Social factors	H1.1, H1.2, H2.1, H7.1
3 (a)	4	Workplace communication – Literacy, OH&S	H1.1, H5.1
3 (b)	4	Workplace communication – Literacy	H5.1, H5.2
3 (c)	8	Workplace communication – Literacy, graphics	H3.1, H5.1, H5.2
3 (d)	2	Workplace communication – Literacy, graphics	H5.1
3 (e)	2	Workplace communication – Calculations	H5.2
Section II			
4 (a)	1	Materials – Fittings and allied materials	H1.2, H3.1
4 (b)	3	Materials – Timber and timber products	H1.2, H4.3
4 (c)	4	Processes, tools and machinery	H1.2, H3.1
4 (d)	4	Processes, tools and machinery	H1.2, H3.1
4 (e)	8	Materials, Processes, tools and machinery	H1.2, H4.3, H6.1
5 (a)	1	Processes, tools and machinery	H1.2
5 (b)	3	Processes, tools and machinery, Materials	H1.2, H2.1
5 (c)	5	Processes, tools and machinery, Materials	H1.2, H2.1
5 (d)	3	Processes, tools and machinery – Outsource expertise	H1.2, H4.2, H6.1, H6.2
5 (e)	8	Materials, Processes, tools and machinery	H1.2, H6.2

Section II

Question 4 (a)

Outcomes assessed: H1.2, H3.1

MARKING GUIDELINES

Criteria	Marks
• Identifiable sketch which is a suitable hinge	1

Question 4 (b)

Outcomes assessed: H1.2, H4.3

MARKING GUIDELINES

Criteria	Marks
• Names one suitable Australian hardwood and describes two or more suitable criteria for its selection	3
• Names one suitable Australian hardwood and identifies one suitable criterion for its selection OR • Identifies two or more suitable criteria for selecting timber for a table	2
• Names one suitable Australian hardwood OR • Identifies one suitable criterion for selecting timber for a table	1

Question 4 (c)

Outcomes assessed: H1.2, H3.1

MARKING GUIDELINES

Criteria	Marks
• Labelled correct sketch with two or more correct reasons for choice	4
• Labelled correct sketch with one correct reason OR • Labelled sketch (inappropriate method) with two or more correct reasons OR • Unlabelled sketch with two or more correct reasons	3
• Labelled correct sketch with no reasons OR • Labelled sketch (inappropriate method) with one correct reason OR • Two or more reasons with no sketch OR • One correct reason with correct unlabelled sketch	2
• Unlabelled sketch which is correct but no reason OR • One correct reason with no sketch OR • Labelled sketch (inappropriate method) but no reasons	1

Question 4 (d)

Outcomes assessed: H1.2, H3.1

MARKING GUIDELINES

Criteria	Marks
• A suitable correctly labelled sketch plus a clear description of how to produce accurately the shape of the drop-leaf	4
• Labelled suitable sketch with an incomplete suitable description OR • Unlabelled suitable sketch with a clear description	3
• Unlabelled suitable sketch with an incomplete suitable description OR • Labelled suitable sketch with no explanation OR • Clear suitable description with no sketch	2
• Unlabelled sketch with no explanation OR • No sketch with an incomplete but suitable description	1

Question 4 (e)

Outcomes assessed: H1.2, H4.3, H6.1

MARKING GUIDELINES

Criteria	Marks
• Discusses both manufacturing AND assembly in relation to quality production	7–8
• Discusses manufacturing OR assembly in relation to quality production OR • Discusses both manufacturing AND assembly but does not relate to quality production OR • Describes manufacturing AND assembly in relation to quality production	5–6
• Describes manufacturing OR assembly in relation to quality production OR • Describes manufacturing AND assembly but does not relate to quality production	3–4
• Lists manufacturing AND assembly processes and relates to quality production	1–2

Question 5 (a)

Outcomes assessed: H1.2

MARKING GUIDELINES

Criteria	Marks
• Names suitable process to produce the mortises in the legs of the chair	1

Question 5 (b)

Outcomes assessed: H1.2, H2.1

MARKING GUIDELINES

Criteria	Marks
• Names suitable finish and outlines two or more characteristics that makes it suitable for the task	3
• Names suitable finish plus one characteristic that makes it suitable OR • Two suitable characteristics with incorrect or unrelated finish named	2
• Names suitable finish for the chair OR • One suitable characteristic with incorrect or unrelated finish named	1

Question 5 (c)

Outcomes assessed: H1.2, H2.1

MARKING GUIDELINES

Criteria	Marks
• Answer should describe all of the following – Sketch – Labelling of sketch (must be relevant) – Gluing – Moulds (2 part mould under pressure) – Layering of timber/laminating	5
• Answer should describe four of the following – Sketch – Labelling of sketch (must be relevant) – Gluing – Moulds (2 part mould under pressure) – Layering of timber/laminating	4
• Answer should describe three of the following – Sketch – Labelling of sketch (must be relevant) – Gluing – Moulds (2 part mould under pressure) – Layering of timber/laminating	3
• Answer should describe two of the following – Sketch – Labelling of sketch (must be relevant) – Gluing – Moulds (2 part mould under pressure) – Layering of timber/laminating	2
• Answer should describe one of the following – Sketch – Labelling of sketch(must be relevant) – Gluing – Moulds (2 part mould under pressure) – Layering of timber/laminating	1

Question 5 (d)

Outcomes assessed: H1.2, H4.2, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
• Three or more properties of upholstered materials	3
• Two properties of an upholstered material	2
• One property of an upholstered material	1

Question 5 (e)

Outcomes assessed: H1.2, H6.2

MARKING GUIDELINES

Criteria	Marks
• Discusses a range of relevant work practices the company would employ when manufacturing and assembling the side component of the chair giving details with quality discussion	8
• Discusses more than one relevant work practice with average discussion	7
• Discusses one relevant work practice with a quality response and describes other practices but lacking detail OR • Discusses more than one relevant work practice giving some detail	6
• Discusses one relevant work practice giving details with quality discussion OR • Describes multiple and relevant work practices with some detail	5
• Describes more than one relevant work practice with some detail OR • Discusses ONE relevant work practice giving details, poor discussion	4
• Describes more than one relevant work practice with minimal detail OR • Describes one relevant work practice with some detail	3
• Describes one relevant work practice with minimal detail	2
• Describes a relevant work practice with no detail	1

BOARD OF STUDIES
NEW SOUTH WALES

2002 HSC Industrial Technology
Marking Guidelines — Major Project

Major Project

HSC examination overview

The HSC examination for Industrial Technology consists of a written paper worth 40 marks and a major project worth 60 marks.

Component: Management Folio (20 marks)

This component of the major project should be a 'documentary' of the development of the project, including the original intent, research, planning, decisions, problems and their solution, and ongoing evaluation of their major project in the light of their original intent.

Assessment criteria

Design and management

- statement of intent
- research
- development of ideas
- selection and justification of materials, components, processes and other resources
- timeline plan – projected order of production and estimate of time allocation
- finance plan – projected cost of materials and services (if applicable)
- use of appropriate industrial processes and equipment
- evidence of safe working practices and OH&S issues

Workplace communication

Documentation of the major project from conception to completion including:

- evidence of ongoing evaluation
- appropriateness of design and/or design modification
- student's evaluation of the major project and its relationship to the statement of intent
- evidence of a range of communication techniques
- evidence of a range of computer applications, eg word processing, spreadsheets, CAD, multimedia

Outcomes assessed: H1.2, H2.1, H3.1, H3.2, H3.3, H4.2, H4.3, H5.1, H5.2, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
Design and Management • Clarifies the intent of the major project by explaining clearly what is to be achieved and why • Describes a wide range of research conducted, which is relevant to the intent of the major project • Analyses and evaluates the development and modification of the major project design ideas • Justifies the selection of appropriate materials, components, processes, including industrial processes and equipment, and other resources in the development of the major project • Formulates a comprehensive and appropriate timeline and finance plan • Demonstrates the use of a wide range of appropriate safe working practices through photographic or written evidence **Workplace Communication** • Critically evaluates the major project, in relation to the statement of intent, during the planning and construction phases • Assesses the relationship between the design, and modifications if applicable, materials, components and processes in the development of the major project • Demonstrates a wide range of communication techniques, including computer applications appropriate to the development of the major project	17–20

Criteria	Marks
Design and Management • Clarifies the intent of the major project by explaining what is to be achieved and why • Describes research conducted, most of which is relevant to the intent of the major project • Describes the development and modification of the major project design ideas • Describes the selection and use of appropriate materials, components, processes, including industrial processes and equipment, and other resources in the development of the major project • Formulates an appropriate timeline and finance plan • Demonstrates the use of some appropriate safe working practices through photographic or written evidence **Workplace Communication** • Documents the major project during the planning and construction phases, and relates the major project to the statement of intent • Includes details of the design, and modifications if applicable, materials, components and processes in the development of the major project • Demonstrates a range of communication techniques, including some computer applications, most of which are appropriate to the development of the major project Candidates may achieve 13–16 marks as indicated above OR by satisfying a combination of the criteria for other mark ranges.	13–16

Criteria	Marks
Design and Management • Gives a brief description of what is to be achieved and why • Describes research conducted, some of which is relevant to the intent of the major project • Describes some aspects of the development and modification of the major project design ideas • Lists materials, components, processes, including simple industrial processes and equipment, and other resources in the development of the major project • Proposes a basic timeline and finance plan for aspects of project production • Demonstrates the use of one or two safe working practices through photographic or written evidence **Workplace Communication** • Basic documentation of the major project during the planning and/or construction phases, with references to the statement of intent • Includes details of the design, and modifications if applicable, materials, components and processes in the development of the major project • Demonstrates some communication techniques, including limited computer applications, appropriate to the development of the major project Candidates may achieve 9–12 marks as indicated above OR by satisfying a combination of the criteria for other mark ranges.	9–12
Design and Management • Gives a brief or incomplete description of what is to be achieved • Minimal reference to appropriate research conducted • Briefly describes some aspect of the development and modification of the major project design ideas • Lists some of the materials, components, processes and other resources in the development of the major project • Timelines and finance plans are without sufficient detail • Refers to the use of a safe working practice **Workplace Communication** • Minimal documentation of the major project during the planning and/or construction phases • Lists some details of the design, materials, components and processes in the development of the major project • Demonstrates few communication techniques, including a computer application, which are appropriate to the development of the major project Candidates may achieve 5–8 marks as indicated above OR by satisfying a combination of the criteria for other mark ranges.	5–8

Criteria	Marks
Design and Management • Gives an incomplete description of what is to be achieved • Appropriate research not evident • Minimal description of the development and modification of the major project design ideas • Lists some of the materials, components, simple processes and other resources in the development of the major project • Timelines and finance plans are either not appropriate or not evident • No reference to the use of safe working practices **Workplace Communication** • Minimal documentation of the major project during the planning and/or construction phases • Details of the design, materials, components and processes in the development of the major project not evident • Minimal evidence of communication techniques, including computer applications, appropriate to the development of the major project Candidates may achieve 1–4 marks as indicated above OR by satisfying a subset of the criteria for other mark ranges.	1–4

Component: Production (40 marks)

The major project product provides practical evidence of the student's level of achievement in their chosen focus area. Of particular relevance will be the range and depth of skills and knowledge evident in choosing materials and technologies, executing processes and solving problems.

Assessment criteria

- quality of the product
- evidence of a range of skills
- degree of difficulty
- links between planning and production
- evidence of industrial processes
- use of appropriate materials
- use of industrial technologies
- evidence of solutions to problems in production

Outcomes assessed: H1.2, H2.1, H3.1, H3.2, H3.3, H4.1, H4.2, H4.3, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
• Demonstrates very high quality in all aspects of the major project production • A highly demanding project, with evidence of high quality in the application of a wide range of skills and techniques in the planning and production of the major project • Completed project relates closely to what was intended. Close links between actual construction processes, management and thorough research and planning are evident and clearly articulated • Demonstrates and describes the use of a wide range of appropriate industrial processes and materials in the production of the major project • Uses and documents a range of appropriate industrial technologies in the production of the major project • Demonstrates and critically evaluates how solutions to problems in major project production were addressed	33–40

Criteria	Marks
• Demonstrates high quality in most aspects of the major project production • A project of substantial difficulty, with evidence of high quality in the application of most skills and techniques in the planning and production of the major project • Completed project relates to what was intended. Some links between actual construction processes, management and thorough research and planning are evident • Demonstrates and describes the use of appropriate industrial processes and materials in the production of the major project • Uses and documents some appropriate industrial technologies in the production of the major project • Demonstrates and explains how solutions to some problems in major project production were addressed Candidates may achieve 25–32 marks as indicated above OR by satisfying a combination of the criteria for other mark ranges.	25–32
• Demonstrates substantial quality in most aspects of the major project production • A project of moderate difficulty, with evidence of high but inconsistent quality in the application of skills and techniques in the planning and production of the major project • Completed project relates loosely to what was intended. Minimal links between actual construction processes, management and thorough research and planning are evident • Demonstrates and describes the use of some industrial processes and a limited range of materials in the production of the major project • Uses and documents some basic industrial technologies in the production of the major project • Demonstrates solutions to some problems in major project production Candidates may achieve 17–24 marks as indicated above OR by satisfying a combination of the criteria for other mark ranges.	17–24
• Demonstrates basic quality in most aspects of the major project production • A project of minimal difficulty, with evidence of basic quality in the application of skills and techniques in the planning and production of the major project • Links between planning and production are not clear • Demonstrates and describes the use of a limited range of common industrial processes and materials in the production of the major project • Uses and documents some basic industrial technologies in the production of the major project • Demonstrates partial solutions to some simple problems in major project production Candidates may achieve 9–16 marks as indicated above OR by satisfying a combination of the criteria for other mark ranges.	9–16

Criteria	Marks
• Demonstrates poor quality in all aspects of the major project production • An undemanding project, with minimal or no evidence of quality in the application of skills and techniques in the planning and development of the major project • No links between planning and production are evident • Demonstrates the use of one or two basic processes and inappropriate use of materials in the production of the major project • Uses a very limited range of basic industrial technologies in the production of the major project • Demonstrates inappropriate solutions to some simple problems in major project production Candidates may achieve 1–8 marks as indicated above OR by satisfying a subset of the criteria for other mark ranges.	1–8