

**2006 HSC Notes from  
the Marking Centre  
Industrial Technology**

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## Contents

Introduction .....	4
Section I .....	5
Section II.....	6
Focus Area — Automotive Industries .....	6
Focus Area — Electronics Industries.....	7
Focus Area — Graphics Industries .....	8
Focus Area — Metals and Engineering Industries .....	10
Focus Area — Multimedia Industries.....	11
Focus Area — Timber Products and Furniture Industries .....	12
Major Project.....	13

# 2006 HSC NOTES FROM THE MARKING CENTRE INDUSTRIAL TECHNOLOGY

## Introduction

This document has been produced for the teachers and candidates studying the Stage 6 course in Industrial Technology. It provides comments with regard to responses to the 2006 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.

This document should be read along with the relevant syllabus, the 2006 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 2006, 3385 candidates attempted the Industrial Technology examination. The total candidature for the 2006 examination was divided amongst the syllabus focus areas as follows:

### Focus Area Candidature

Automotive Industries	99
Electronics Industries	87
Graphics Industries	209
Metals and Engineering Industries	151
Multimedia Industries	340
Timber and Furniture Products Industries	2499

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 the knowledge, understanding and skills developed through studying all aspects of 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.

## Section I

### General Comments

Better responses were well structured and showed a sound understanding of the terms and issues involved in the questions. Most responses demonstrated a good understanding of the glossary of key words.

### Question 1

- (a) The majority of candidates could identify at least one organisational change. Most correct responses were related to either management or production processes.
- (b) Most candidates were able to indicate at least one reason why IND-TECH should retain its workforce. While candidates found it easy to identify reasons, most found it difficult to elaborate and to give a full explanation of their reasons.
- (c) Most responses identified an issue and provided a reason why IND-TECH should retrain some of its workforce in order to remain competitive. In better responses, candidates were able to identify and give reasons for more than one issue. Generally, responses focused on a more flexible, specialised workforce where the changing roles of the employees allowed positions to be covered during sick and annual leave.
- (d) Most candidates could identify at least one role of the union but it was more difficult for candidates to identify a second role or to give meaning to and add a description of the suggested role.
- (e) Many candidates responded to this question in financial terms, rather than the syllabus meaning of equity, as it relates to Equal Employment Opportunities (EEO) eg gender, racism, disadvantage or disability. The majority of candidates could only name one or two relevant equity issues and then very few candidates could go on to elaborate or explain relevant points about these issues. Very few candidates could elaborate on more than one issue as required by the question.

### Question 2

- (a) Most candidates understood the concept of recycling. A significant number of candidates only listed one method of recycling and did not relate it back to reducing costs.
- (b) Most candidates were able to name an emerging technology and were then able to relate it to improved production methods. Weaker responses gave a description of the technology only and failed to relate it to improved production. Some candidates listed technologies that were not considered to be 'emerging technologies'.
- (c) The majority of responses indicated a general understanding of the term 'mass production'. Many candidates were unable to clearly indicate how this would help IND-TECH to compete with cheaper imports. Better answers referred to production rates, material costs and manufacturing costs, and related all these to cost-cutting.

- (d) Candidates who understood the concept of safe material handling practices were able to describe several examples of actual practices and went on to relate these to improved efficiency and cost reduction. This part needed to be answered in terms of practices relating to Occupational Health and Safety (OHS).
- (e) The majority of candidates showed an awareness of the Environmental Protection Authority (EPA) and Occupational Health and Safety (OHS) regulations and their areas of authority. In better responses, candidates were able to describe examples within these areas and went on to assess the impact of their examples. In weaker responses, candidates neglected to assess the impact on planning for change and often only identified EPA and OHS rules and regulations.

### **Question 3**

- (a) Most responses listed more than one characteristic of Occupational Health and Safety signage.
- (b) Most responses detailed advantages of using the computer software graphics. Better responses clearly indicated the main features of using computer software graphics and related it to company documentation.
- (c) Most responses provided a basic discussion of the advantages of both the text and graphics in the catalogue extract. Better responses included more than one point in the discussion of text and graphics.
- (d) The majority of candidates indicated the reasons why Material Safety Data Sheets (MSDS) are produced. Better responses addressed the relevance of MSDS to IND-TECH.
- (e) Many responses discussed calculating and ordering materials and writing reports but only the better responses linked these to the importance of consistent terminology and standards.

## **Section II**

### **Focus Area – Automotive Industries**

#### **General Comments**

Generally, candidates provided good responses to question 4, although a number of candidates failed to attempt some parts of question 5. Many responses displayed limited knowledge of compulsory third party insurance and main bearings in engines.

#### **Question 4**

- (a) The majority of candidates were able to relate vehicle shape and air resistance in their responses.
- (b) Most responses displayed a poor understanding of compulsory third party insurance and very few understood the at-fault driver principle.

- (c) Most responses identified the appropriate technologies in automotive design to improve safety but lacked depth of explanation.
- (d) A wide range of responses was given. Most gave an answer relating to improved gas flow and improved efficiency but few responses related this to a standard manifold. Few responses demonstrated an understanding of the advantages of a tuned exhaust system.
- (e) The majority of responses simply listed, instead of describing, the advantages and disadvantages of water and air cooled engines.

### **Question 5**

- (a) Most candidates provided a good response to this part relating their answer to safety and the need to have modifications that were certified and that complied with the current regulations.
- (b) Few candidates understood the benefits provided by five bearings over three. A small number of responses outlined how a bearing either side of each piston reduced the flexing of the crankshaft providing increased support and less wear on the bearings. These responses also related this to high-performance engines. Generally, candidates limited their response to the extra bearings providing extra strength or sharing the load.
- (c) This part was generally well answered, with candidates having a good understanding of the advantages and disadvantages of each fuel system. Some candidates limited their responses by simply listing rather than providing an explanation.
- (d) Candidates provided a full range of responses to this part. Many failed to relate the improvement to a small electric vehicle and incorrectly suggested bigger (but heavier) batteries. In the better responses, candidates considered improved aerodynamics, more efficient motors, lithium (light weight) batteries and lighter manufacturing materials.
- (e) Most responses identified more than one alternative fuel, or fuel additive, but were often limited in their description. Many responses only provided a limited discussion of the advantages of the alternate fuels and failed to fully discuss environmental issues.

### **Focus Area – Electronics Industries**

#### **General Comments**

Generally, candidates provided good responses to question 5. Some areas of question 4, in particular those related to semiconductors and calculations, were poorly answered by many candidates.

#### Question 4

- (a) Most responses indicated some understanding of logic circuits.
- (b) The responses of most candidates indicated some understanding of how light dependent resistors (LDRs) operate.
- (c) Most responses, while providing a description of semiconductors, indicated no appreciation of the influence of light and temperature on the conducting and insulating properties of semiconductor materials.
- (d) Most responses included a completed circuit diagram with the correct placement and orientation of the power diode. However, descriptions of the consequences of the incorrect orientation of a power diode in a circuit were generally provided without any reference to the effect of reverse bias and the depletion layer.
- (e) Better responses provided correct calculations that demonstrated strong mathematics skills and an understanding of series-parallel resistance and the relationship between resistance, current, voltage drop and power. However, weaker responses indicated very poor mathematical skills and a limited understanding of the relevant electronic concepts.

#### Question 5

- (a) Most responses provided relevant safety precautions when working with electronic circuits.
- (b) In this part, most responses provided relevant information on the concept of electrical power.
- (c) Most responses demonstrated an adequate understanding of the advantages of using analogue and digital multimeters.
- (d) Many responses provided an accurate interpretation of the behaviour of the vehicle. In the better responses, candidates demonstrated an understanding of the link between the LDR, transistor, relay and the left motor.
- (e) In most responses, candidates demonstrated an adequate understanding of how to follow a logical fault finding sequence.

#### Focus Area – Graphics Industries

##### General Comments

The majority of parts in questions 4 and 5 were answered reasonably well. Some candidates experienced difficulty with those parts of question 4 that focused on Australian drawing standards. Many candidates were able to demonstrate their graphics skills and knowledge in those parts of both questions that either required an interpretation of a drawing or a drawing as a response.



#### Question 4

- (a) Most candidates were able to recognise the drawings as types of pictorial drawings with common responses including *exploded*, *isometric* and *assembled*.
- (b) Most responses outlined a number of advantages. These included ‘to provide detail of each component’ or ‘to show how the pieces fitted together’.
- (c) A number of candidates outlined the function of drawing standards and a smaller number of these were also able to name a common Australian drawing standard such as AS1100. In many of the poorer responses, candidates focused on a drawing convention, such as sectioning, and explained its function.
- (d) The concepts of first and third angle projection were not well understood by the majority of candidates. Many candidates included correct concepts in either the sketch or text but contradicted themselves when the whole of the answer was considered.
- (e) Generally, candidates understood which techniques were commonly used by product designers to develop and communicate their initial ideas. The majority were also able to discuss some of the advantages of each technique. Some candidates incorrectly focused on techniques that would be used as part of a final presentation rather than for initial ideas.

#### Question 5

- (a) (i) Most candidates were able to recognise the drawing as a single point perspective drawing and many were also able to correctly locate the vanishing point.
  - (ii) The concept of using computer generated drawings for these specific drawings was understood by most candidates with common responses including advantages such as ease of modification and simplicity of reproduction.
- (b) Most candidates were able to complete the single point perspective sketch of the kitchen benches. Those responses that reflected time and care with the drawing received higher marks for this part.
- (c) Most candidates were able to indicate a number of pieces of additional information that would allow the kitchen to be completed.
- (d) The majority of candidates described a number of appropriate presentation techniques and provided an explanation of their purpose. A number of responses simply provided basic characteristics and features of the techniques but did not explain the purpose of the techniques as part of the final architectural proposal.

## Focus Area – Metals and Engineering Industries

### General Comments

Candidates responded better to question 4 than question 5. In question 5, some responses indicated a lack of familiarity with some of the terms used in the examination. A small number of candidates appeared to run out of time.

### Question 4

- (a) Most responses were in general terms rather than in terms of the properties of mild steel.
- (b) This question was well answered with many responses suggesting mild steel as a suitable material.
- (c) Few responses included a description of the method of forming a wired edge. However, most gave two valid reasons for wiring the edge.
- (d) The majority of responses provided two valid methods of joining the items together but only the better responses gave a detailed comparison of the two processes.
- (e) Candidates were required to select one finishing process and then asked to justify more than one process of application. Better responses were able to justify more than one process of application.

### Question 5

- (a) This part was not well answered with many responses in general terms rather than giving the specific properties of cast iron that made it suitable. Many responses were single word responses rather than providing reasons.
- (b) Most candidates were able to explain why machine screws were used but few correctly referred to the problems inherent in welding cast iron.
- (c) This part was not well answered. Most responses displayed limited or no knowledge of heat treatment processes. A small number of responses correctly described the hardening and tempering processes.
- (d) Only a small number of responses demonstrated full knowledge of machining and used the correct terms to describe the lathe functions.
- (e) The majority of responses provided good descriptions of the processes of casting and fabrication and were able to compare the advantages of each.

## Focus Area – Multimedia Industries

### General Comments

Candidates are advised to respond to all aspects of the parts. For example where questions ask candidates to ‘identify and discuss’ specific concepts, they should include a discussion as required. Candidates are advised to attempt all parts of each question. Any response, no matter how unsure the candidate is of its accuracy, has a chance of achieving marks while a non-attempt will receive zero.

### Question 4

- (a) The majority of candidates were able to provide a complete answer to this part of the question. Responses demonstrated a good understanding of elements of multimedia presentations.
- (b) Most candidates were able to indicate the main features of factors that affect the quality and size of digital audio files.
- (c) Many candidates were unable to identify two types of scanners. Some candidates failed to recognise that the question was in relation to scanner types and provided responses in relation to printers. A few candidates provided responses in relation to specific brand names of scanners.
- (d) Although most responses provided clear descriptions of appropriate uses for the storyboard formats, poorer answers did not recognise and name the illustrated storyboard formats.
- (e) Many responses recognised and named key issues in the development of a website; however, a few provided limited discussion of the identified issues.

### Question 5

- (a) This part of the question was generally well answered. Most responses identified two audio file formats.
- (b) Many responses did not respond to the question in relation to authoring-software. Significant proportions were confused between authoring-software and authorship.
- (c) The majority of responses demonstrated a sound understanding of the term DPI and described the effect of increased DPI on associated file sizes.
- (d) A significant number of responses confused software specific terminology with methods of image animation. Many inadequately described differences between recognised methods of animation.
- (e) Although many responses identified and discussed specifications of computer hardware components in relation to the display of multimedia presentations, few responses related the hardware specifications to the production aspect of the question. Many candidates referred to software issues in their responses and were confused by responding in relation to peripheral devices.

## Focus Area – Timber Products and Furniture Industries

### General Comments

Most responses demonstrated knowledge and understanding of a wide range of outcomes. Some candidates were challenged by the need to *describe* and *justify* various procedures.

### Question 4

- (a) Better responses clearly identified at least two suitable advantages of using one piece of solid timber for the table top.
- (b) Many candidates were able to produce the sketch of a decorative edge and could also name a suitable machine. Weaker responses lacked depth and understanding of how the profile was formed.
- (c) In most responses, candidates identified a suitable method for mass producing the turned section. In the weaker responses, candidates did not address the method of producing the mortices.
- (d) Many candidates performed well in this part and demonstrated sound knowledge of different clear finishes and the advantages of each.
- (e) Responses reflected a sound knowledge of different joints but some candidates found difficulty justifying the appropriate features of the drawer construction.

### Question 5

- (a) The majority of responses correctly named two suitable materials such as medium density fibreboard (MDF) or melamine coated particle board. Better responses indicated why the selected material was suitable in this specific application.
- (b) The majority of responses correctly identified a suitable fastener for the kitchen cabinet. Weaker responses did not describe the fastener fully and provided only one feature of the fastener.
- (c) The candidates were required to outline advantages of using the photographed hinge, both when fitting and operating. Better responses outlined a number of advantages both when fitting and operating the hinge while poorer responses could not provide a response for either. The majority of responses outlined one advantage of each, with some providing a second advantage for either the fitting or the operation. A few responses provided only one advantage for either the fitting or the operation of the hinge.
- (d) The majority of candidates were able to outline a suitable manufacturing process for the frame and the panel.

- (e) Most responses did not demonstrate a clear understanding of composite materials and did not identify them by name, or could only name one. However, they did have sufficient familiarity with the suitable properties of the benchtops and doors to gain a mid-range result. Better responses identified composite materials by name and discussed the properties well, or could identify composite materials and outlined the properties rather than discussing them.

## Major Project

There was an identifiable improvement in the quality of Major Projects presented in most focus areas. Some were truly outstanding and represented work of quality far above that expected. Folios were of a pleasing standard and showed a broader range of information and communication technology (ICT) skills in their preparation.

## Design and Management

Candidates should be aware of the marking criteria, which are readily available from the Board of Studies website. Candidates should be familiar with these criteria and be able to apply them to their projects.

Candidates are advised to ensure that folios make reference to the headings given within the marking criteria on the Board's website: [http://www.boardofstudies.nsw.edu.au/syllabus\\_hsc/pdf\\_doc/ind\\_tech\\_prac\\_markguide.pdf](http://www.boardofstudies.nsw.edu.au/syllabus_hsc/pdf_doc/ind_tech_prac_markguide.pdf). Candidates who don't may omit whole sections from their folios. In the better folios, candidates often arranged the folio under these headings.

The Statement of Intent needs to be written as a clear statement of how the candidate will approach their Major Project. It needs to be specific and include detail. Simple statements of what they want, intend, or need to make are not sufficient. Candidates need to relate the 'what' to 'why' and 'how' and also give details of 'where'. In better folios, candidates presented the examiners with a statement that related more fully to the Major Project and clearly indicated what was included in the folio. Candidates should be reminded that this statement gives the foundation for their research and planning and should give details of what direction they are taking with the project.

Research and information gathering should be relevant to the project as detailed in the Statement of Intent. Brochures, catalogues, company information and downloads from web pages must relate to the project being constructed and the candidate must interact with the information in some way. Better folios showed clearly what information had been gained and how it would be used in the project. They also included a brief, to the point, evaluation of the research for each item, process or material, as part of ongoing evaluation.

Timelines and finance plans were usually well presented and in an increasing variety of ways. Candidates need to be sure to add detail in these plans and not restrict them to a few general headings. Research should include details of the type of research, how it will be undertaken and/or where it will be done. It is also important to note that these time and finance plans should include both a proposed plan and an actual plan and should not be written after the event.

Most candidates were able to comment in some detail regarding the Personal Protective Equipment (PPE) aspects of Occupational Health and Safety. However, this was often restricted to PPE for machine use and the safe handling of tools. Better folios outlined the risks attached to the materials and processes used as well as the safe handling of materials.

## **Communication**

In most instances, candidates successfully used a variety of communication techniques to complete the design, management and communication (DMC) folio. Some candidates used sophisticated computer assisted drawings (CAD), digital images and a variety of output devices to produce a quality approaching professional desktop publishing. Very few candidates completed the folio without displaying some ICT skills and even the weakest folios contained evidence of word-processing and spreadsheets.

Sketching of ideas and their development was not particularly strong, with some exceptions. Most folios included some rough, and in some cases almost unidentifiable, sketches often without any annotation. Candidates must remember that this section of the folio communicates to the examiner how they arrived at their final design, or how an original design was modified.

Sketches of all stages of development should be included and they should be annotated. Candidates should include only their own work or acknowledge the source of any other resources that have been included in the folio.

## **Production**

The quality of the major projects continues to improve with far fewer candidates either presenting incomplete projects or failing to submit a project for marking.

A few candidates produced a standard of work more suited to the lower and middle years of secondary education. It should be remembered that these projects show little development in skills beyond those attainable in Stage 4 and 5. Projects of this calibre, even when competently completed, rarely score the better marks. Candidates should be reminded to choose a project to ‘showcase’ their abilities and not just make something. Projects should also be of sufficient rigour to allow the candidate to fully satisfy the requirements of the syllabus.

Many of the multimedia candidates simply downloaded material from sources found on the internet and included this without acknowledgement in the folio. In most instances the markers recognise quickly the different standard of the downloaded material compared to the candidate's own work. This is very obvious as the standard of the downloaded material is different to the candidate's own work and the development of this work cannot be shown. In most cases the development of the candidate's work is not sufficiently recognisable in the folio. Poorer folios showed little evidence of storyboarding, sketching or planning. Better responses included screen dumps, dated and initialled by their teachers at regular intervals, to give a clear indication of project development. These responses also used a range of processes that included video, digital imaging and web design.

Candidates should present as much supporting material as possible with their projects. Jigs, models, prototypes, preliminary sketches, working rods and all other material used during construction identifies a broader range of skills and techniques that may have otherwise been overlooked.

Multimedia candidates and Electronics candidates should be aware that it is their responsibility to ensure that their project is fully operational at the time of marking. If a multimedia project requires a specific software package, it should be installed on the computer that is available to the markers.

Many candidates used some degree of outside help and/or resources as is allowed in the course examination specifications. Care must be taken to fully acknowledge these outside resources, persons or agencies.

# Industrial Technology

## 2006 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
<b>Section I</b>			
1 (a)	2	Structural Factors	H1.1
1 (b)	3	Structural Factors	H1.1, H1.2
1 (c)	4	Personnel Issues	H1.1, H1.2
1 (d)	4	Personnel Issues	H1.1, H1.2, H7.1
1 (e)	7	Personnel Issues	H1.1, H1.2, H7.1
2 (a)	2	Environmental and Sociological Factors	H1.1, H1.2, H7.1
2 (b)	3	Technical Factors	H1.1, H1.2, H7.1
2 (c)	4	Technical Factors	H1.1, H1.2
2 (d)	4	Occupational, Health and Safety Factors	H1.1, H1.2, H7.1
2 (e)	7	Environmental and Sociological Factors, OHS	H1.1, H1.2, H7.1
3 (a)	2	Occupational, Health and Safety Factors	H1.1, H1.2, H5.1
3 (b)	3	Graphics	H1.1, H1.2, H5.1
3 (c)	4	Graphics, Literacy	H1.1, H3.1, H5.1
3 (d)	4	Occupational, Health and Safety Factors, Literacy	H1.1, H1.2, H5.1
3 (e)	7	Literacy, Calculations	H1.1, H5.1
<b>Automotive Industries</b>			
<b>Section II</b>			
4 (a)	2	Automotive Design	H1.2, H4.3
4 (b)	3	Government and Statutory Regulations	H1.2, H4.3
4 (c)	4	Automotive Design	H1.2
4 (d)	4	Engine and Related Systems	H4.3
4 (e)	7	Engine and Related Systems	H1.2, H4.3
5 (a)	2	Government and Statutory Regulations	H2.1, H6.1
5 (b)	3	Engine and Related Systems	H1.2



Question	Marks	Content	Syllabus outcomes
5 (c)	4	Engine and Related Systems	H1.2, H6.1
5 (d)	4	Automotive Design	H1.2, H4.3
5 (e)	7	Engine and Related Systems	H1.2, H4.3
<b>Electronics Industries Section II</b>			
4 (a)	2	Electrical Principles	H3.1
4 (b)	3	Electrical Principles	H4.3
4 (c)	4	Electrical Principles	H4.3
4 (d)	4	Electrical Principles	H3.1, H4.3
4 (e)	7	Electrical Principles, Graphics	H3.1, H4.3
5 (a)	2	Electrical Principles	H2.1, H4.3
5 (b)	3	Electrical Principles	H4.3
5 (c)	4	Electrical Principles	H1.2, H4.3, H6.1
5 (d)	4	Electrical Principles, Graphics Processes	H3.1, H4.3, H6.1
5 (e)	7	Graphics, Instruments and Test Equipment, Electrical Principles Processes	H1.2, H3.1, H4.3
<b>Graphics Industries Section II</b>			
4 (a)	2	Processes	H1.2, H3.1
4 (b)	3	Processes	H1.2, H3.1, H4.3
4 (c)	4	Processes, Principles/Standards	H1.2, H3.1, H4.3
4 (d)	4	Principles/Standards	H1.2, H3.1
4 (e)	7	Processes, Principles/Standards	H1.2, H3.1
5 (a) (i)	2	Processes	H1.2, H3.1
5 (a) (ii)	3	Processes	H1.2, H3.1
5 (b)	4	Processes	H1.2, H3.1
5 (c)	4	Processes	H1.2, H4.3
5 (d)	7	Processes, Principles/Standards	H1.2, H3.1, H4.3

Question	Marks	Content	Syllabus outcomes
<b>Metals and Engineering Industries</b>			
<b>Section II</b>			
4 (a)	2	Materials	H3.1, H4.3, H6.1
4 (b)	3	Materials	H3.1, H4.3, H6.1
4 (c)	4	Processes, Tools and Machinery	H1.2, H4.3, H6.1
4 (d)	4	Processes, Tools and Machinery	H1.2, H4.3, H6.1
4 (e)	7	Materials, Processes, Tools and Machinery	H1.2, H2.1, H4.3, H6.1
5 (a)	2	Materials	H3.1, H4.3, H6.1
5 (b)	3	Processes, Tools and Machinery	H4.3, H6.1
5 (c)	4	Processes, Tools and Machinery	H1.2, H4.3, H6.1
5 (d)	4	Processes, Tools and Machinery	H1.2, H3.1, H4.3, H6.1
5 (e)	7	Processes, Tools and Machinery	H1.2, H4.3, H6.1
<b>Multimedia Industries</b>			
<b>Section II</b>			
4 (a)	2	Materials and Resources	H1.2
4 (b)	3	Materials and Resources	H1.2, H4.3
4 (c)	4	Processes, Tools and Machinery	H1.2, H6.1
4 (d)	4	Processes, Tools and Machinery	H1.2, H4.3
4 (e)	7	Materials and Resources	H1.2, H4.3
5 (a)	2	Materials and Resources	H1.2
5 (b)	3	Processes, Tools and Machinery	H1.2, H4.3
5 (c)	4	Materials and Resources	H1.2, H4.3
5 (d)	4	Processes, Tools and Machinery	H1.2, H4.3
5 (e)	7	Processes, Tools and Machinery	H1.2, H4.3
<b>Timber Products and Furniture Industries</b>			
<b>Section II</b>			
4 (a)	2	Materials, Processes, Tools and Machinery	H1.2
4 (b)	3	Processes, Tools and Machinery	H1.2, H2.1, H3.1
4 (c)	4	Processes, Tools and Machinery	H1.2, H2.1, H4.3, H6.1

<b>Question</b>	<b>Marks</b>	<b>Content</b>	<b>Syllabus outcomes</b>
4 (d)	4	Processes, Tools and Machinery	H1.2, H2.1, H4.3, H6.1
4 (e)	7	Processes, Tools and Machinery	H1.2, H2.1, H3.1, H4.3, H6.1, H7.1
5 (a)	2	Materials	H1.2
5 (b)	3	Processes, tools, machinery	H1.2, H4.3
5 (c)	4	Processes, tools, machinery	H1.2, H4.3
5 (d)	4	Processes, Tools and Machinery, materials	H1.2, H2.1, H3.1, H4.3, H6.1
5 (e)	7	Materials, Processes, tools and machinery	H1.2, H2.1, H3.1, H4.3, H6.1

## 2006 HSC Industrial Technology Marking Guidelines

### Section I

#### Question 1 (a)

*Outcomes assessed: H1.1*

#### MARKING GUIDELINES

Criteria	Marks
• Recognises and names more than ONE organisational change	2
• Names ONE organisational change	1

#### Question 1 (b)

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

#### MARKING GUIDELINES

Criteria	Marks
• Sketches in general terms more than one reason why Ind-Tech would retain its present workforce	3
• Sketches in general terms a reason why Ind-Tech would retain its present workforce OR	2
• Names TWO reasons why Ind-Tech would want to keep its present workforce	
• Names a reason why Ind-Tech would want to keep its present workforce	1

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

<b>Criteria</b>	<b>Marks</b>
• Identifies key issues and provides reasons why Ind-Tech should retrain some of its workforce to remain competitive	4
• Identifies issues and provides a reason why Ind-Tech should retrain some of its workforce to remain competitive	3
• Identifies an issue and provides a reason why Ind-Tech should retrain some of its workforce to remain competitive	2
• Provides a reason why Ind-Tech should retrain some of its workforce to remain competitive	1

**Question 1 (d)***Outcomes assessed: H1.1, H1.2, H7.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Sketches in general terms more than one possible role of unions during the organisational change	4
• Sketches in general terms a possible role of unions during the organisational change	3
• Identifies possible roles of unions during the change process	2
• Names a possible role of the union	1

**Question 1 (e)***Outcomes assessed: H1.1, H1.2, H7.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Identifies equity issues and provides relevant points for each issue that must be considered when changing Ind-Tech's organisation	7
• Identifies equity issues and provides a relevant point for each issue that must be considered when changing Ind-Tech's organisation	5–6
• Identifies an equity issue and provides relevant points that must be considered when changing Ind-Tech's organisation	3–4
• Names relevant equity issue(s)	1–2

**Question 2 (a)**

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

**MARKING GUIDELINES**

Criteria	Marks
• Recognises and names more than ONE way in which costs could be reduced through recycling	2
• Recognises and names ONE way in which costs could be reduced through recycling	1

**Question 2 (b)**

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

**MARKING GUIDELINES**

Criteria	Marks
• Names an appropriate emerging technology and indicates features showing how this technology could improve the production system	3
• Names an appropriate emerging technology and indicates a feature showing how this technology could improve the production system	2
• Names an appropriate emerging technology	1

**Question 2 (c)**

Outcomes assessed: H1.1, H1.2

**MARKING GUIDELINES**

Criteria	Marks
• Defines in detail the term <i>mass production</i> and clearly indicates how production techniques help Ind-Tech to compete with cheap imports	4
• Defines the term <i>mass production</i> and indicates how mass production helps Ind-Tech to compete with cheap imports	3
• Shows an understanding of the term <i>mass production</i> and states a way in which mass production helps Ind-Tech to compete	2
• Shows an understanding of the term <i>mass production</i> OR • Identifies ONE mass production technique	1

**Question 2 (d)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Provides characteristics and features of safe material handling practices and relates these practices to reduced costs and improved efficiency</li> </ul>	4
<ul style="list-style-type: none"> <li>Provides characteristics and features of a safe material handling practice and relates this practice to reduced costs and improved efficiency</li> </ul> OR <ul style="list-style-type: none"> <li>Provides characteristics of safe material handling practices and relates these practices to reduced costs OR improved efficiency</li> </ul>	3
<ul style="list-style-type: none"> <li>Provides characteristics and features of a safe material handling practice and relates this practice to reduced costs OR improved efficiency</li> </ul> OR <ul style="list-style-type: none"> <li>Provides characteristics and features of safe material handling practices</li> </ul> OR <ul style="list-style-type: none"> <li>Relates how efficiency is improved and costs are reduced</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides a characteristic or feature of a safe material handling practice</li> </ul> OR <ul style="list-style-type: none"> <li>Relates how efficiency is improved OR costs are reduced</li> </ul>	1

**Question 2 (e)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies issues and provides points for and/or against why the EPA and OHS may impact on Ind-Tech's planning for change</li> </ul>	7
<ul style="list-style-type: none"> <li>Identifies issues, providing a point for and/or against why both the EPA and OHS may impact on Ind-Tech's planning for change</li> </ul>	5–6
<ul style="list-style-type: none"> <li>Identifies issues and provides points for and/or against why the EPA or the OHS may impact on Ind-Tech's planning for change</li> </ul> OR <ul style="list-style-type: none"> <li>Provides a point for and/or against why the EPA and OHS may impact on Ind-Tech's planning for change</li> </ul>	3–4
<ul style="list-style-type: none"> <li>Identifies issues without giving points for and/or against why the EPA and OHS may impact on Ind-Tech's planning for change</li> </ul>	1–2

**Question 3 (a)***Outcomes assessed: H1.1, H1.2, H5.1***MARKING GUIDELINES**

Criteria	Marks
• Lists TWO relevant characteristics	2
• Lists ONE relevant characteristic	1

**Question 3 (b)***Outcomes assessed: H1.1, H1.2, H5.1***MARKING GUIDELINES**

Criteria	Marks
• Indicates TWO or more advantages of using computer software graphics giving reasons for their use	3
• Indicates an advantage of using computer software graphics giving a suitable reason for their use OR • Identifies TWO or more advantages	2
• Identifies ONE advantage without giving reasons	1

**Question 3 (c)***Outcomes assessed: H1.1, H3.1, H5.1***MARKING GUIDELINES**

Criteria	Marks
• Identifies points supporting the use of graphics and text in a catalogue	4
• Identifies points supporting the use of graphics and a point for the use of text OR • Identifies a point for graphics and points for text	3
• Identifies a point for graphics and a point for text OR • Identifies points for text or points for graphics OR • Provides two points for graphics and two points for text	2
• Identifies a point for either form OR • Provides two points	1



**Question 3 (d)**

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

**MARKING GUIDELINES**

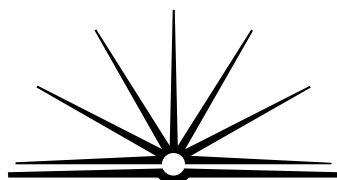
Criteria	Marks
<ul style="list-style-type: none"> <li>Indicates TWO or more reasons why MSDS are produced, and outlines their relevance for Ind-Tech</li> </ul>	4
<ul style="list-style-type: none"> <li>Indicates a reason why MSDS are produced and outlines aspects of their relevance for Ind-Tech</li> </ul> OR <ul style="list-style-type: none"> <li>Indicates reasons why MSDS are produced and outlines an aspect of their relevance for Ind-Tech</li> </ul>	3
<ul style="list-style-type: none"> <li>Identifies reasons why MSDS are produced OR outlines aspects of their relevance for Ind-Tech</li> </ul> OR <ul style="list-style-type: none"> <li>Identifies a reason why MSDS are produced AND identifies an aspect of their relevance for Ind-Tech</li> </ul>	2
<ul style="list-style-type: none"> <li>Identifies a reason OR an aspect of their relevance for Ind-Tech</li> </ul>	1

**Question 3 (e)**

*Outcomes assessed: H1.1, H5.1*

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Provides a well-developed set of reasons why consistent terminology and standards are essential and applies to calculating, ordering and reporting</li> </ul>	7
<ul style="list-style-type: none"> <li>Demonstrates how consistent terminology AND standards apply to TWO of either calculating, ordering and reporting</li> </ul> OR <ul style="list-style-type: none"> <li>Provides a well-developed set of reasons why consistent terminology or standards are essential and applies to calculating, ordering and reporting</li> </ul>	5–6
<ul style="list-style-type: none"> <li>Demonstrates how consistent terminology OR standards apply to TWO of either calculating, ordering and reporting</li> </ul>	3–4
<ul style="list-style-type: none"> <li>Identifies terminology or standards and applies to either calculating, ordering OR reporting</li> </ul>	1–2



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2006 HSC Industrial Technology Automotive Industries Marking Guidelines**

### **Section II**

#### **Question 4 (a)**

*Outcomes assessed: H1.2, H4.3*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Clearly shows the relationship between vehicle shape and air resistance	2
• Mentions air resistance only, or shape of vehicle only	1

#### **Question 4 (b)**

*Outcomes assessed: H1.2, H4.3*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Clearly shows the relationship between the components of CTP that make up the scheme – injury to passengers, the driver, and the costs covered	3
• Indicates that it is a scheme to cover people injured in accidents without reference to nature of cover	2
• Refers only to an insurance scheme covering accidents	1

**Question 4 (c)***Outcomes assessed: H1.2***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>Recognises, names and provides reasons why technologies are used to improve safety</li></ul>	4
<ul style="list-style-type: none"><li>Recognises, names and provides reasons why a technology is used to improve safety</li></ul> OR <ul style="list-style-type: none"><li>Recognises and names more than one technology and provides a reason why it is used to improve safety</li></ul>	3
<ul style="list-style-type: none"><li>Names a technology, giving a reason why it is used</li></ul>	2
<ul style="list-style-type: none"><li>Names a technology</li></ul>	1

**Question 4 (d)***Outcomes assessed: H4.3***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>Provides characteristics and features that show an understanding of the difference between a tuned exhaust and standard manifold</li></ul>	4
<ul style="list-style-type: none"><li>Clearly indicates that there is improved gas flow over a normal manifold which improves power output/efficiency</li></ul>	3
<ul style="list-style-type: none"><li>Relates improved gas flow to improved efficiency but makes no comparison to normal manifolds</li></ul>	2
<ul style="list-style-type: none"><li>Makes a statement that indicates a benefit gained thorough better gas flow but makes no comment on characteristics or features</li></ul>	1

**Question 4 (e)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>Provides characteristics/features of advantages and disadvantages of each system</li></ul>	7
<ul style="list-style-type: none"><li>Provide characteristics and features of the advantages of one system and an advantage of the other</li></ul>	5–6
<ul style="list-style-type: none"><li>Identifies one feature of either water-cooled OR air-cooled systems</li><li>Gives one advantage AND disadvantage of the system</li></ul>	3–4
<ul style="list-style-type: none"><li>Identifies one feature of either water-cooled OR air-cooled systems</li><li>Gives one advantage OR one disadvantage of the system</li></ul>	1–2

**Question 5 (a)**

*Outcomes assessed: H2.1, H6.1*

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Provides reasons for the need to ensure modifications are approved AND that they are carried out safely</li> </ul>	2
<ul style="list-style-type: none"> <li>Give reasons why modifications are approved OR they are carried out safely</li> </ul>	1

**Question 5 (b)**

*Outcomes assessed: H1.2*

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Clearly indicates the reasons why a five bearing shaft is a benefit over a three bearing shaft by making reference to EACH shaft</li> </ul>	3
<ul style="list-style-type: none"> <li>Gives an answer that indicates the main reasons, but relates the answer ONLY to one or the other shaft</li> </ul>	2
<ul style="list-style-type: none"> <li>Makes a basic statement that the five bearing shaft is better than a three bearing shaft, because there are more bearings in the former to take the loads</li> </ul>	1

**Question 5 (c)**

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

**MARKING GUIDELINES**

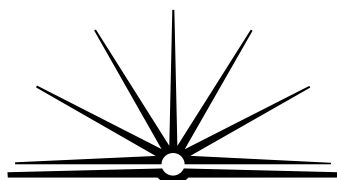
Criteria	Marks
<ul style="list-style-type: none"> <li>Provides advantages and disadvantages of fuel injection and carburetion systems</li> </ul>	4
<ul style="list-style-type: none"> <li>Provides one advantage and more than one disadvantage of fuel injection or carburetion systems</li> </ul> OR <ul style="list-style-type: none"> <li>Provides one disadvantage and more than one advantage of fuel injection or carburetion systems</li> </ul> OR <ul style="list-style-type: none"> <li>Provides two advantages and two disadvantages of fuel injection or carburetion systems</li> </ul>	3
<ul style="list-style-type: none"> <li>Lists one advantage and one disadvantage of fuel injection or carburetion systems</li> </ul>	2
<ul style="list-style-type: none"> <li>Lists one advantage or one disadvantage of fuel injection or carburetion systems</li> </ul>	1

**Question 5 (d)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises, names and provides characteristics/features of ways in which efficiency can be improved</li></ul>	4
<ul style="list-style-type: none"><li>Recognises and names one way in which efficiency can be improved, providing the characteristics/features of this method</li></ul> OR <ul style="list-style-type: none"><li>Recognises, names and provides more than one characteristic with a brief description of ONE</li></ul>	3
<ul style="list-style-type: none"><li>Identifies ONE suitable method with brief description</li></ul>	2
<ul style="list-style-type: none"><li>Identifies ONE suitable method, without description</li></ul>	1

**Question 5 (e)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises, names and provides the characteristics/features of fuels and/or fuel additives</li><li>Provides points for their use</li><li>Includes reference to environmental issues</li></ul>	7
<ul style="list-style-type: none"><li>Recognises, names and provides the characteristics/features of more than one fuel and/or fuel additives</li><li>Provides a point for their use</li><li>Includes reference to environmental issues</li></ul>	5–6
<ul style="list-style-type: none"><li>Recognises, names and provides a characteristic/feature of fuels and/or fuel additives</li><li>Provides a point for its use</li><li>Includes reference to environmental issues</li></ul>	3–4
<ul style="list-style-type: none"><li>Makes a general comment about environmental issues without identifying specific fuel products</li></ul>	1–2



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2006 HSC Industrial Technology Electronics Industries Marking Guidelines**

### **Section II**

#### **Question 4 (a)**

*Outcomes assessed: H3.1*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides TWO correct values	2
• Provides ONE correct value	1

#### **Question 4 (b)**

*Outcomes assessed: H4.3*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides details of how LDRs operate with correct reference to the conversion of light energy to electrical energy	3
• Provides details of how LDRs operate with some reference to the conversion of light energy to electrical energy	2
• Provides a basic statement about the operation of LDRs	1

**Question 4 (c)***Outcomes assessed: H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Recognises and names correct characteristics and features of semiconductor materials	4
• Recognises and names some characteristics and features of semiconductor materials	3
• Recognises and names a relevant characteristic and feature of a semiconductor material	2
• Provides a basic statement about semiconductors	1

**Question 4 (d)***Outcomes assessed: H3.1, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides a correct sketch with correct details of the effect of reverse biasing a diode	4
• Provides a correct sketch with some details of the effect of reverse biasing a diode	3
• Provides a relevant sketch with relevant details of the effect of reverse biasing a diode	2
• Provides a basic statement of reverse biasing a diode OR	1
• Provides a correct orientation of a power diode	

**Question 4 (e)***Outcomes assessed: H3.1, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides correct calculations with correct units	7
• Provides correct calculations without correct units	5–6
• Provides some correct calculations with correct units	3–4
• Provides a relevant calculation	1–2

**Question 5 (a)***Outcomes assessed: H2.1, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Names TWO correct features	2
• Names ONE correct feature	1

**Question 5 (b)***Outcomes assessed: H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• States correct meaning with a correct description of power rating	3
• States a relevant meaning with some relevant description of power rating	2
• States a basic meaning	1

**Question 5 (c)***Outcomes assessed: H1.2, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides correct details of the similarities and differences of each type of multimeter display	4
• Provides some details of the characteristics and differences of each type of multimeter display	3
• Provides some information of the characteristics of each type of multimeter display	2
• Provides a basic statement of the characteristics of multimeters	1

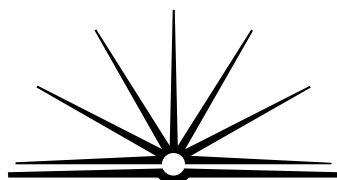


**Question 5 (d)***Outcomes assessed: H3.1, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides detailed characteristics and features of the behaviour of the vehicle	4
• Provides some characteristics and features of the behaviour of the vehicle	3
• Provides some information about the behaviour of the vehicle	2
• Provides a relevant statement	1

**Question 5 (e)***Outcomes assessed: H1.2, H3.1, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides a detailed and correct fault-finding sequence indicating the relationship between each process	7
• Provides a correct fault-finding sequence indicating the relationship between each process	5–6
• Provides a characteristic or feature of fault finding	3–4
• Provides a basic statement about fault finding	1–2



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2006 HSC Industrial Technology Graphics Industries Marking Guidelines**

### **Section II**

#### **Question 4 (a)**

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

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Correctly identifies exploded isometric and isometric	2
• Correctly identifies a major drawing type	1

#### **Question 4 (b)**

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

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Gives reasons for using these different drawing types for the assembly instructions	3
• Gives a reason for using different drawing types for the assembly instructions	2
• Gives a reason for using one drawing type	1

**Question 4 (c)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies an Australian drawing standard, providing an indepth explanation of its importance</li> </ul>	4
<ul style="list-style-type: none"> <li>Identifies an Australian drawing standard and provides an explanation of its importance</li> </ul> OR <ul style="list-style-type: none"> <li>Provides an indepth explanation of the importance of drawing standards</li> </ul>	3
<ul style="list-style-type: none"> <li>Identifies an Australian drawing standard and provides a reason for its use</li> </ul> OR <ul style="list-style-type: none"> <li>Provides an explanation of the importance of drawing standards</li> </ul>	2
<ul style="list-style-type: none"> <li>Identifies an Australian drawing standard</li> </ul> OR <ul style="list-style-type: none"> <li>Gives a reason why any standard is used</li> </ul>	1

**Question 4 (d)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Shows a clear understanding of the difference between 1<sup>st</sup> and 3<sup>rd</sup> angle projections</li> </ul> AND <ul style="list-style-type: none"> <li>Provides an accurate labeled sketch of each projection</li> </ul>	4
<ul style="list-style-type: none"> <li>Shows an understanding of the difference between 1<sup>st</sup> and 3<sup>rd</sup> angle projection</li> </ul> OR <ul style="list-style-type: none"> <li>Provides an accurate labeled sketch of each projection</li> </ul>	3
<ul style="list-style-type: none"> <li>Provides an understanding of one projection</li> </ul> AND <ul style="list-style-type: none"> <li>Provides a labeled sketch of the same projection</li> </ul> OR <ul style="list-style-type: none"> <li>Provides a limited understanding of both projections</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides limited understanding of either projection</li> </ul>	1

**Question 4 (e)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Identifies different techniques and provides points for using these techniques to communicate ideas</li> </ul>	7
<ul style="list-style-type: none"> <li>Identifies techniques and provides detailed points for one and general points for the other</li> </ul> OR <ul style="list-style-type: none"> <li>Identifies techniques and provides a point for the use of each technique</li> </ul>	5–6
<ul style="list-style-type: none"> <li>Identifies a techniques but only provides points for one</li> </ul> OR <ul style="list-style-type: none"> <li>Identifies a technique and provides points for its use</li> </ul>	3–4
<ul style="list-style-type: none"> <li>Identifies one technique and provides a point for its use</li> </ul> OR <ul style="list-style-type: none"> <li>Lists techniques</li> </ul>	1–2

**Question 5 (a) (i)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Names the type of drawing and locates the vanishing point</li> </ul>	2
<ul style="list-style-type: none"> <li>Locates the vanishing point only</li> </ul> OR <ul style="list-style-type: none"> <li>Names the type of drawing only</li> </ul>	1

**Question 5 (a) (ii)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Indicates the advantages of using computer generated perspective drawings</li> </ul>	3
<ul style="list-style-type: none"> <li>Indicates an advantage of using computer generated perspective drawings</li> </ul> OR <ul style="list-style-type: none"> <li>Lists advantages of using computer generated perspective drawings</li> </ul>	2
<ul style="list-style-type: none"> <li>Gives an advantage of using computer generated perspective drawings</li> </ul>	1

**Question 5 (b)***Outcomes assessed: H1.2, H3.1***MARKING GUIDELINES**

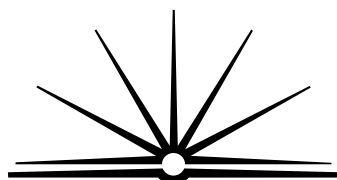
<b>Criteria</b>	<b>Marks</b>
• Completes the sketch showing all benches and fittings correctly drawn	4
• Completes the sketch showing most of the benches and fittings correctly drawn	3
• Sketch shows most of the benches and fittings – poorly drawn	2
• Attempts the sketch showing some of the benches or fittings –mostly incomplete	1

**Question 5 (c)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides relevant additional information to be included on the drawing that will allow the kitchen to be completed	4
• Provides some relevant additional information to be included	3
• Names pieces of relevant information that would be needed	2
• Names one piece of relevant additional information that would be needed	1

**Question 5 (d)***Outcomes assessed: H1.2, H3.1, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Provides characteristics/features of appropriate presentation techniques, giving reasons for the use of each	7
• Provides characteristics/features of appropriate presentation techniques, giving a reason for the use of each	5–6
• Provides characteristics/features of appropriate presentation techniques OR • Provides characteristics/features of an appropriate technique, giving reasons for its use	3–4
• Identifies techniques OR • Provides a reason for using presentation techniques	1–2



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2006 HSC Industrial Technology Metals and Engineering Industries Marking Guidelines**

### **Section II**

#### **Question 4 (a)**

*Outcomes assessed: H3.1, H4.3, H6.1*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• States TWO reasons for the use of mild steel	2
• States ONE reason for the use of mild steel	1

#### **Question 4 (b)**

*Outcomes assessed: H3.1, H4.3, H6.1*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Identifies a suitable sheet metal • States TWO reasons for its suitability	3
• Identifies a suitable sheet metal • States ONE reason for its suitability	2
• Identifies a suitable sheet metal	1

**Question 4 (c)***Outcomes assessed: H1.2, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Provides at least TWO features of the forming process for the wired edge</li><li>Provides at least TWO reasons for its inclusion</li></ul>	4
<ul style="list-style-type: none"><li>Provides TWO features of the forming process of the wired edge and ONE reason for its inclusion</li></ul> OR <ul style="list-style-type: none"><li>Provides ONE feature of the forming process and TWO reasons for its inclusion</li></ul>	3
<ul style="list-style-type: none"><li>Provides TWO features of the forming process</li></ul> OR <ul style="list-style-type: none"><li>Provides TWO reasons for the inclusion of the wired edge</li></ul> OR <ul style="list-style-type: none"><li>Provides ONE feature of the forming process and ONE reason for the inclusion</li></ul>	2
<ul style="list-style-type: none"><li>Provides ONE feature of the forming process</li></ul> OR <ul style="list-style-type: none"><li>Provides ONE reason for its inclusion</li></ul>	1

**Question 4 (d)***Outcomes assessed: H1.2, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Names TWO suitable joining processes</li><li>States TWO differences between the processes</li></ul>	4
<ul style="list-style-type: none"><li>Names a suitable joining process</li><li>States TWO reasons for its use</li></ul> OR <ul style="list-style-type: none"><li>Names TWO suitable joining processes</li><li>States ONE difference between the processes</li></ul>	3
<ul style="list-style-type: none"><li>Names a suitable joining process and states ONE reason for its use</li></ul> OR <ul style="list-style-type: none"><li>Names TWO suitable joining processes</li></ul>	2
<ul style="list-style-type: none"><li>Names a suitable joining process</li></ul>	1

**Question 4 (e)***Outcomes assessed: H1.2, H2.1, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies a suitable finish and provides features of different application processes</li><li>• Gives reasons for the use of this finish</li><li>• Identifies both OHS and environmental issues related to the application process</li></ul>	7
<ul style="list-style-type: none"><li>• Identifies a suitable finish and provides features of an application process</li><li>• Gives reasons for the use of this finish</li><li>• Identifies an OHS or environmental issue</li></ul>	5–6
<ul style="list-style-type: none"><li>• Identifies a suitable finish and provides features of an application process</li><li>• Gives a reason for the use of this finish</li></ul> OR <ul style="list-style-type: none"><li>• Identifies a suitable finish and provides features of the application process</li><li>• Identifies OHS or environmental issues</li></ul>	3–4
<ul style="list-style-type: none"><li>• Identifies a suitable finish</li><li>• Gives a reason for its use</li></ul> OR <ul style="list-style-type: none"><li>• Identifies ONE OHS or environmental issue</li></ul>	1–2



**Question 5 (a)***Outcomes assessed: H3.1, H4.3, H6.1***MARKING GUIDELINES**

Criteria	Marks
• States TWO reasons for the use of cast iron	2
• States ONE reason for the use of cast iron	1

**Question 5(b)***Outcomes assessed: H4.3, H6.1***MARKING GUIDELINES**

Criteria	Marks
• Sketches in general terms TWO reasons	3
• Sketches in general terms ONE reason why machine screws are preferred	2
• Includes any relevant feature for the use of machine screws	1

**Question 5 (c)***Outcomes assessed: H1.2, H4.3, H6.1***MARKING GUIDELINES**

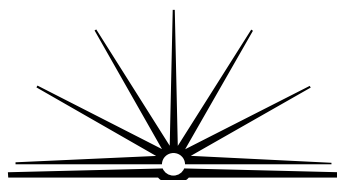
Criteria	Marks
• Identifies a suitable process	4
• Provides the features of the processes identified	
• Identifies a suitable process and provides ONE feature of the process	3
• Identifies a suitable process	2
• Names a heat treatment process	1

**Question 5 (d)***Outcomes assessed: H1.2, H3.1, H4.3, H6.1***MARKING GUIDELINES**

Criteria	Marks
• Gives detailed features of the processes used to machine the spindle	4
• Identifies the features of at least TWO of the processes in the machinery of the spindle	3
• Identifies the features of ONE process in the machinery of the spindle	2
OR	
• Identifies TWO machinery processes	2
• Identifies ONE machinery process	

**Question 5 (e)***Outcomes assessed: H1.2, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides features of casting AND fabrication processes</li><li>• Provides advantages of both processes that show similarities or differences</li></ul>	7
<ul style="list-style-type: none"><li>• Provides features of casting AND fabrication processes</li><li>• Provides ONE advantage of each process OR TWO advantages of ONE process</li></ul>	5–6
<ul style="list-style-type: none"><li>• Provides features of casting OR fabrication processes</li><li>• Provides an advantage of this process</li></ul> OR <ul style="list-style-type: none"><li>• Provides features of casting AND fabrication processes</li></ul>	3–4
<ul style="list-style-type: none"><li>• Provides a feature of casting OR fabrication processes</li></ul> OR <ul style="list-style-type: none"><li>• Provides an advantage of casting OR fabrication</li></ul>	1–2



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2006 HSC Industrial Technology Multimedia Industries Marking Guidelines**

### **Section II**

#### **Question 4 (a)**

*Outcomes assessed: H1.2*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Names TWO elements	2
• Names ONE element	1

#### **Question 4 (b)**

*Outcomes assessed: H1.2, H4.3*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Indicate the main features of TWO factors that affect the quality and size of audio files	3
• Indicates the main features of ONE factor that affects the quality and size of audio files OR	2
• Recognises TWO factors that affect the quality and size of audio files	
• Recognises ONE factor that affects the quality and size of audio files	1

**Question 4 (c)***Outcomes assessed: H1.2, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises and names TWO types of colour scanners</li></ul> AND <ul style="list-style-type: none"><li>Indicates a relative advantage of each scanner</li></ul>	4
<ul style="list-style-type: none"><li>Recognises and names TWO types of colour scanners</li></ul> AND <ul style="list-style-type: none"><li>Recognises a relative advantage of ONE type of scanner</li></ul>	3
<ul style="list-style-type: none"><li>Recognises and names TWO types of colour scanners</li></ul> OR <ul style="list-style-type: none"><li>Recognises ONE type of scanner and a relative advantage</li></ul>	2
<ul style="list-style-type: none"><li>Recognises and names ONE type of colour scanner</li></ul>	1

**Question 4 (d)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises and names the TWO storyboard formats and provides characteristics and features of each in relation to a multimedia presentation</li></ul>	4
<ul style="list-style-type: none"><li>Recognises and names the TWO storyboard formats and provides a characteristic and feature of ONE storyboard format in relation to a multimedia presentation</li></ul> OR <ul style="list-style-type: none"><li>Provides characteristics and features of TWO storyboard formats</li></ul>	3
<ul style="list-style-type: none"><li>Recognises and names the TWO storyboard formats</li></ul> OR <ul style="list-style-type: none"><li>Names ONE storyboard format and provides characteristics and features of the format</li></ul>	2
<ul style="list-style-type: none"><li>Recognises and names ONE storyboard format</li></ul> OR <ul style="list-style-type: none"><li>Provides characteristics/features of ONE storyboard format</li></ul>	1

**Question 4 (e)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises and names issues and provides points for and/or against the issues that need to be considered in the development of the website</li></ul>	7
<ul style="list-style-type: none"><li>Recognises and names an issue and provides points for and/or against the issue that needs to be considered in the development of the website</li></ul>	5–6
<ul style="list-style-type: none"><li>Names an issue and provides a point in relationship to the development of the website</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>Recognises more than TWO issues</li></ul>	3–4
<ul style="list-style-type: none"><li>Names an issue OR provides a point in relation to the development of the website</li></ul>	1–2

**Question 5 (a)***Outcomes assessed: H1.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Names TWO audio file formats	2
• Names ONE audio file format	1

**Question 5 (b)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• Indicates the main features of authoring software in the development of a multimedia presentation	3
• Indicates a feature of authoring software in the development of a multimedia presentation	2
• Names a feature of authoring software	1

**Question 5 (c)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
• States the meaning of DPI AND • Provides features of the effect an increase in DPI will have on the image quality AND the associated file size	4
• States the meaning of DPI AND • Provides a feature of the effect an increase in DPI will have on the image quality OR the associated file size	3
• States the meaning of DPI OR • Provides features of the effect an increase in DPI will have on the image quality AND the associated file size	2
• Provides a feature of the effect an increase in DPI will have on image quality or the associated file size OR • Displays an understanding of DPI	1

**Question 5 (d)**

*Outcomes assessed: H1.2, H4.3*

**MARKING GUIDELINES**

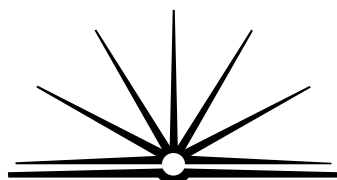
Criteria	Marks
<ul style="list-style-type: none"> <li>Recognises, names and provides characteristics and features of TWO methods of animating images</li> </ul>	4
<ul style="list-style-type: none"> <li>Recognises, names and provides a feature of TWO methods of animating images</li> </ul>	3
<ul style="list-style-type: none"> <li>Recognises, names and provides characteristics and features of ONE method of animating images</li> </ul> OR <ul style="list-style-type: none"> <li>Provides characteristics and features of TWO methods of animating images</li> </ul>	2
<ul style="list-style-type: none"> <li>Names a method of animating images</li> </ul> OR <ul style="list-style-type: none"> <li>Provides a characteristic and feature of ONE method of animating images</li> </ul>	1

**Question 5 (e)**

*Outcomes assessed: H1.2, H4.3*

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>Recognises and names hardware specifications that are best suited to the production and display of multimedia presentations</li> </ul> AND <ul style="list-style-type: none"> <li>Identifies issues and provides reasons for their suitability</li> </ul>	7
<ul style="list-style-type: none"> <li>Recognises and names hardware specifications that are best suited to the production and display of multimedia presentations</li> </ul> AND <ul style="list-style-type: none"> <li>Identifies issues and provides a reason for their suitability of each</li> </ul>	5–6
<ul style="list-style-type: none"> <li>Recognises and names a hardware specification that is best suited to the production AND display of multimedia presentations</li> </ul> AND <ul style="list-style-type: none"> <li>Identifies issues and provides reasons for its suitability</li> </ul> OR <ul style="list-style-type: none"> <li>Recognises and names hardware specifications that are best suited to the production OR display of multimedia presentations</li> </ul> AND <ul style="list-style-type: none"> <li>Identifies issues and provides reasons for its suitability</li> </ul>	3–4
<ul style="list-style-type: none"> <li>Recognises and names a hardware specification that is best suited to the production OR display of multimedia presentations</li> </ul> OR <ul style="list-style-type: none"> <li>Gives a reason why hardware specifications would benefit the production OR display of multimedia presentations</li> </ul>	1–2



**B O A R D O F S T U D I E S**  
NEW SOUTH WALES

## **2006 HSC Industrial Technology Timber Products and Furniture Industries Marking Guidelines**

### **Section II**

#### **Question 4 (a)**

*Outcomes assessed: H1.2*

#### **MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises and names TWO advantages of making the table top from more than one piece of solid timber</li></ul>	2
<ul style="list-style-type: none"><li>Recognises and names ONE advantage of making the top of the table from more than one piece of solid timber</li></ul>	1



**Question 4 (b)***Outcomes assessed: H1.2, H2.1, H3.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Sketches a suitable edge profile for the table top</li><li>• Outlines steps in the manufacture of a suitable edge profile for the table top</li></ul>	3
<ul style="list-style-type: none"><li>• Sketches a suitable edge profile for the table top</li><li>• Outlines a step in the manufacture of a suitable edge profile for the table top</li></ul> OR <ul style="list-style-type: none"><li>• Outlines steps in the manufacture of a suitable edge profile for the table top</li></ul>	2
<ul style="list-style-type: none"><li>• Sketches a suitable edge profile for the table top</li></ul> OR <ul style="list-style-type: none"><li>• Outlines a step in the manufacture of a suitable edge profile for the table top</li></ul>	1

**Question 4 (c)***Outcomes assessed: H1.2, H2.1, H4.3, H6.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Names suitable mass production procedures</li><li>• Provides characteristics/features of MORE THAN ONE procedure</li></ul>	4
<ul style="list-style-type: none"><li>• Names a suitable mass production procedure</li><li>• Provides a characteristic/feature of one procedure</li></ul> OR <ul style="list-style-type: none"><li>• Provides basic features/characteristics of mass production procedures</li></ul>	3
<ul style="list-style-type: none"><li>• Provides characteristics/features of one procedure used in the mass production of the rear legs without naming it</li></ul>	2
<ul style="list-style-type: none"><li>• Names a suitable mass production procedure</li></ul>	1

**Question 4 (d)**

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

**MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Names TWO suitable clear finishes</li><li>Indicates the advantages of each clear finishes for the table</li></ul>	4
<ul style="list-style-type: none"><li>Names TWO suitable clear finishes</li><li>Indicates the advantages of ONE for use on the table</li></ul>	3
<ul style="list-style-type: none"><li>Names TWO suitable clear finishes</li></ul> OR <ul style="list-style-type: none"><li>Names ONE suitable clear finish and indicates an advantage of using this finish</li></ul>	2
<ul style="list-style-type: none"><li>Names a suitable clear finish</li></ul> OR <ul style="list-style-type: none"><li>Indicates an advantage of using a clear finish on the table</li></ul> OR <ul style="list-style-type: none"><li>Names a suitable clear finish with ONE advantage</li></ul>	1

**Question 4 (e)**

*Outcomes assessed: H1.2, H2.1, H3.1, H4.3, H6.1, H7.1*

**MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Provides detailed supporting arguments for the use of the different drawer construction techniques</li></ul>	7
<ul style="list-style-type: none"><li>Provides supporting arguments for the use of the different drawer construction techniques</li></ul>	5–6
<ul style="list-style-type: none"><li>Provides basic supporting arguments for the use of the drawer construction technique</li></ul>	3–4
<ul style="list-style-type: none"><li>Identifies basic drawer construction techniques</li></ul>	1–2

**Question 5 (a)***Outcomes assessed: H1.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Recognises and names MORE THAN ONE suitable material for the sides of the kitchen cabinet</li></ul>	2
<ul style="list-style-type: none"><li>Recognises and names ONE suitable material for the sides of the kitchen cabinet</li></ul>	1

**Question 5 (b)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Names a suitable fastener</li><li>Provides MORE THAN ONE characteristic/feature of this fastener</li></ul>	3
<ul style="list-style-type: none"><li>Names a suitable fastener</li><li>Provides ONE characteristic/feature of this fastener</li></ul>	2
<ul style="list-style-type: none"><li>Recognises and names a suitable fastener used to assemble the kitchen cabinet</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>Provides ONE characteristic/feature of this fastener</li></ul>	1

**Question 5 (c)***Outcomes assessed: H1.2, H4.3***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Indicates MORE THAN ONE advantage of fitting and using this type of hinge</li></ul>	4
<ul style="list-style-type: none"><li>Indicates MORE THAN ONE advantage of using this type of hinge</li><li>Indicates ONE advantage of fitting this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Indicates MORE THAN ONE advantage of fitting this type of hinge</li><li>Indicates ONE advantage of using this type of hinge</li></ul>	3
<ul style="list-style-type: none"><li>Indicates ONE advantage of using this type of hinge</li><li>Indicates ONE advantage when fitting this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Indicates MORE THAN ONE advantage of using this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Indicates MORE THAN ONE advantage when fitting this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Names more than ONE advantage of using this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Names more than ONE advantage when fitting this type of hinge</li></ul>	2
<ul style="list-style-type: none"><li>Indicates ONE advantage of using this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Indicates ONE advantage when fitting this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Names ONE advantage of using this type of hinge</li></ul> OR <ul style="list-style-type: none"><li>Names ONE advantage when fitting this type of hinge</li></ul>	1

**Question 5 (d)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Provides MORE THAN ONE stage in the manufacturing process for both the frame and the panel</li> </ul>	4
<ul style="list-style-type: none"> <li>• Provides MORE THAN ONE stage in the manufacturing process for the frame</li> <li>• Provides ONE stage of the manufacturing process for the panel</li> </ul> OR <ul style="list-style-type: none"> <li>• Provides MORE THAN ONE stage in the manufacturing process for the panel</li> <li>• Provides ONE stage in the manufacturing process for the frame</li> </ul>	3
<ul style="list-style-type: none"> <li>• Provides ONE stage in the manufacturing process for both the frame and the panel</li> </ul> OR <ul style="list-style-type: none"> <li>• Provides MORE THAN ONE stage in the manufacturing process for either the frame OR the panel</li> </ul> OR <ul style="list-style-type: none"> <li>• Identifies MORE THAN ONE stage in the manufacturing process for the frame</li> </ul> OR <ul style="list-style-type: none"> <li>• Identifies MORE THAN ONE stage in the manufacturing process for the panel</li> </ul>	2
<ul style="list-style-type: none"> <li>• Provides a stage in the manufacturing process for the frame OR panel</li> </ul> OR <ul style="list-style-type: none"> <li>• Identifies ONE stage in the manufacturing process for the frame</li> </ul> OR <ul style="list-style-type: none"> <li>• Identifies ONE stage in the manufacturing process for the panel</li> </ul>	1

**Question 5 (e)**

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

**MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>Identifies TWO composite materials suitable for kitchen cabinet doors and bench tops</li><li>Provides reasons why these composite materials are suitable</li></ul>	7
<ul style="list-style-type: none"><li>Identifies TWO composite materials suitable for the kitchen cabinet and bench tops</li><li>Provides a reason why these composite materials are suitable, or outlines points for the use of composite materials</li></ul>	5–6
<ul style="list-style-type: none"><li>Identifies a composite material suitable for the kitchen cabinet and bench top, giving a reason for these suitability of each</li></ul>	3–4
<ul style="list-style-type: none"><li>Names a composite material</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>Gives reason why composite materials are used</li></ul>	1–2