

**2008 HSC Notes from  
the Marking Centre  
Design and Technology**

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Published by Board of Studies NSW  
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# 2008 HSC NOTES FROM THE MARKING CENTRE

## DESIGN AND TECHNOLOGY

### Introduction

This document has been produced for the teachers and candidates of the Stage 6 course in Design and Technology. It contains comments on candidate responses to the 2008 Higher School Certificate examination, indicating the quality of the responses and highlighting their relative strengths and weaknesses.

This document should be read along with the relevant syllabus, the 2008 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 Design and Technology.

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 their knowledge, understanding and skills developed through studying the course. This reflects the fact that the 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.

### Major design project

#### General comments

Projects presented in 2008 represented a broad range of technologies and showcased a wide range of skills and abilities.

Better major design projects identified a genuine need rather than just stating a final outcome for the project. Candidates then followed this with relevant research, experimentation and testing, to produce a quality product, system or environment, demonstrating appropriate and relevant evaluation.

Typically, the most successful major design projects showed development by models, scale models, hypothetical tests of concepts and design ideas, evidence of relevant experimentation and testing in addition to a strong and applied evaluation of the overall project. Better projects included succinct summaries of the candidate's research and demonstrated application of the results of that research. They also included succinct, less detailed portfolios and provided real evidence of how they developed solutions to identified needs. Candidates are reminded that the relevance of research and information is more valuable than its extent. Many of the better projects were innovative and demonstrated ongoing resolution of design problems in order to achieve a design solution. Candidates should be encouraged to use real evidence of development in model or prototyping form, photographic or brief video evidence where appropriate, to summarise conclusions and place the source material within an appendix.

Outsourcing may be necessary if the candidate is unable to complete the required task at school, but should not become an essential or major component of the project. Those candidates who outsource the bulk of their project are not able to demonstrate relevant syllabus outcomes. Please consult the Official Notice: BOS 50/08 (Vol 17 No 4) as a reminder about acknowledging assistance and sources in submitted works in the 2009 HSC course.

Candidates are also reminded that most of the major design project is to be completed at school. Increasingly, photographic documentation of various stages of production of the project indicates that much of the work is done off-site. Teachers and candidates are reminded that projects need to be appropriately supervised.

Some projects and folios used or displayed practices that indicate students may not understand OHS requirements. Attention is drawn to Section 9.3.1.1 of the Board's *Assessment Certification and Examination (ACE) Manual*, regarding health and safety issues in the development and selection of student projects, major works, bodies of work, exhibitions and performances.

### **Project proposal and project management**

Better responses indicated that the candidate had initiated research early and spent time clearly identifying and exploring the need to be addressed in their project. Weaker responses tended to discuss or simply state what it was that the candidate wanted to make rather than providing a thorough investigation of a problem, situation, want or need.

In the weaker responses, it was obvious that the proposal and planning section of the folio had been finalised after the project was complete and therefore did not allow the candidate to demonstrate the evolution of the development process. Generic and non-specific information prevented candidates from demonstrating a clear understanding of their intention for the development of the project.

### **Assessment criteria**

#### ***Identification and exploration of the need***

Better responses demonstrated the application of critical analysis skills to the investigation of the need and drew conclusions regarding the criteria for evaluation. The flow from need identification to the development of evaluative criteria provided candidates with focus and direction for the product, system or environment's development. Weaker responses tended to simply state what the candidate proposed to make without identifying a genuine need and subsequently exploring opportunities for other solutions.

#### ***Areas of investigation***

Better responses included a detailed analysis of the range of logical and relevant areas that could possibly be researched, and the methodologies to be used, to inform the development of the product, system or environment, rather than listing some broad areas which may be considered in future research.

#### ***Criteria to evaluate success***

The better responses considered the project proposal and the needs that the product, system or environment should meet, in many cases creating an assessment tool for use in the final evaluation of the success or otherwise of the product, system or environment. Better responses linked this work to an analysis of the functional and aesthetic aspects of design. Weaker responses tended to list the criteria without any analysis.

### ***Action, time and finance plans and their application***

In better responses, candidates used the action plan as an ongoing tool for assessment of progress and found it a management tool to help them achieve success. They frequently referred to it during the process and evaluated it regularly giving a self-evaluation of progress.

Some timelines that were presented clearly did not give specific details relevant to the project. Candidates need to add headings and stages that are relevant to their project in order to make it a well-formulated and useful management tool. Candidates need to develop their own timeline, specific to their project and themselves. It was often evident that many candidates completed a generic template after the completion of the project, thereby presenting a very obviously false representation.

Better responses had clear project management strategies applied, with quality original action plans in place from the commencement of the project, and evaluated throughout its development.

Financial planning was often quite poor and not a demonstration of actual planning, rather a documentation and listing of costs. Many candidates listed their source of income with a well-justified reason for the amount of money they allocated to their project. Many provided receipts to demonstrate all expenses. Better responses demonstrated a genuine effort to develop a budget based on available financial resources and likely costs and expenses.

Weaker responses were simply a collection of receipts after the event with no real evidence of financial planning or management. Little ongoing evaluation was evident with these projects and few financial decisions were justified.

Aspects of development and realisation, investigation and experimentation, prototype development, production, implementation and evaluation should be built into the process of planning. Candidates should be advised that it is appropriate to develop a plan of action and evaluate it during the project development. It may be necessary to deviate from this plan and it is then appropriate to document variations that may occur. It is essential, however, that the original documentation, written at the commencement of the project, remains as evidence of its early development.

### ***Selection and use of ideas and resources***

In better projects, candidates identified resources that could potentially be used for the project, then evaluated these resources and selected from the range. The selection of resources is part of project management. Many candidates used a table to document this process succinctly. Better responses linked the identification and justification of resources to the completed major design project.

### **Project development and realisation**

Evidence of the development and realisation of the major design project, the folio and product, system or environment should be clearly presented and explained. Application of the conclusions of research should be evident in the development. This is best shown by models, scale and not-to-scale, made of a range of materials, simulations and, where appropriate, photographic evidence or similar. The development and the results should be clear in the final product, system or environment. Successful projects included a 3D folio, where design development was evident in samples of modelled solutions. Lengthy written discussions that include information that is irrelevant to the project or this section of the folio should be avoided.

Better responses demonstrated an ability to critically assess existing designs and research relevant areas, which ultimately had a positive impact on the success of the final project. Candidates distinguished between relevant and irrelevant research. They analysed their findings and conducted relevant tests and experiments. The ability to convey this information in a succinct fashion was a feature of the best responses.

Weaker responses demonstrated little design development, presenting a predetermined project idea with little evidence of source or developmental research. The final design was shown immediately without any research and investigation into existing designs. They often included irrelevant testing, which unfortunately rarely had an impact on the final project. Many did not distinguish materials, tools and techniques. In many instances, tools were described but very few actually tested. Some candidates listed tests and experiments without evidence of ever having carried them out.

### ***Evidence of creativity – ideas generation, degree of difference and exploration of existing ideas***

Better responses demonstrated a thorough understanding of the difference between innovation and invention.

### ***Consideration of design factors relevant to the major design project***

Though the design factors are explicitly listed in the syllabus, weaker responses did not relate these factors directly to their project. They simply listed these factors and wrote a definition of them rather than relating them to the product, system or environment they were developing. Better responses addressed these factors by actually considering them in context rather than listing them in isolation.

### ***Documentation of research, experimentation and testing of design ideas, materials, tools and techniques***

The best responses referred to the use of relevant and appropriate testing and created a broad range of model solutions to inform the design development. These responses drew their conclusions explicitly, with the evidence of the positive impact on the product, system or environment being noted. Weaker responses tested and experimented unnecessarily or provided extensive irrelevant documentation. Candidates need to carefully consider the reason(s) for testing, the method of testing and the application of the conclusions drawn from the testing.

Research that can be extracted from external and well-respected sources can be referenced or summarised in projects, but should not simply be downloaded and duplicated by candidates.

### ***Application of conclusions***

Those candidates who carried out relevant developmental processes provided evidence of their application of the conclusions drawn to their product, system or environment.

### ***Identification and justification of ideas and resources***

Better responses identified the resources used in the major design project and justified their application and value, while weaker responses just listed the resources used.

### ***Evidence of the testing of design solutions and application of conclusions***

Many responses showed no evidence of a process of a prototype or model, digital 3D modelling or mock-up development. Such processes of development enable candidates to demonstrate both the testing of solutions to design challenges that they meet as they progress, and the testing of whole concepts.

### ***Use of communication and presentation techniques***

Access to technology has provided candidates with the opportunity to display a broad range of communication and presentation techniques in all aspects of product, systems and environment development. From written text to multimedia presentations, excellent use of the internet for research and person-to-person communication, candidates demonstrated a wide range of techniques they could apply appropriately.

### ***Evidence and application of practical skills to produce a quality project***

Successful projects demonstrated production of work at the highest technical level. This was evident in many products, systems and environments, and in a growing range of technologies. Many of the better responses tended to communicate their construction phase through the use of photographs, which showed them completing various phases. Explicit instructions followed these photographs along with ongoing evaluations. This enabled the markers to identify that the candidates were clearly solving ongoing problems and making relevant decisions.

Better responses showed little use of outsourcing and, when used, it was well documented and justified. The majority of the product, system or environment was completed by the candidates themselves, demonstrating that they had developed many new skills and managed their time in an effective way.

### ***Consideration of the practices in industrial/commercial settings as they relate to the major design project***

Better responses clearly demonstrated an understanding that the ‘practices’ referred to in the guidelines are the practices of both designing and producing. They discussed the whole process from needs identification through to production and compared their own practice with that of practising designers and producers.

Weaker responses generally named an industrial or commercial setting, and then failed to compare and contrast these processes with their own. In many instances this was a speculative comparison rather than a factual link to industrial or commercial settings. By evaluating the design, management and production techniques in these settings, the candidate is able to demonstrate a sound knowledge of the industrial and commercial practices along with their own.

### **Project evaluation**

Ongoing evaluation was again much stronger throughout folios. Many projects demonstrated ongoing problem-solving and decision-making processes by demonstrating what effect they would have on the final product, system or environment. Many of these candidates referred to their criteria to evaluate success.

In better responses, candidates were thorough in relating their evaluation, both ongoing and final, to their project proposal work.

Better responses included a photo of the final product, system or environment in its environment, for example showing or perhaps modelling its successful operation. This demonstrated that there was a significant link between the final product, system or environment and the project proposal that was initially set by the candidate.

The final evaluation of the product, system or environment's impact on society and the environment continues to provide challenges for candidates. The better responses linked to current trends in design. They discussed the uses of their product, system or environment and its potential.

There was a more frequent use of professional evaluations, but many responses failed to link such evaluations to the way the project would impact on society as a whole. Many candidates tended to include these evaluations without realising their significance or reflecting upon it.

In relation to evaluating environmental considerations, the best responses consistently discussed recycling issues with a detailed analysis. They clearly stated what impact the design had on the environment in terms of resource usage.

### ***Recording and application of evaluation procedures throughout the design project***

The better responses recorded evaluative comments and procedures as they occurred. Better projects used incidental pages or notes throughout the folio or attached to their models of design development to emphasise their efforts at evaluation. The presentation of developing models and prototypes communicates clearly to markers that ongoing evaluation has occurred.

### ***Analysis and evaluation of functional and aesthetic aspects of design***

Better projects commenced this analysis in the early stages of development. They analysed functional and aesthetic criteria while developing criteria to evaluate success. Candidates then drew upon this in a final evaluation of their solution using functional and aesthetic criteria.

### ***Final evaluation with respect to the project proposal and the project's impact on society and the environment***

Many candidates found it difficult to evaluate the impact of their project on society. Environmental issues were better addressed, but rarely extended to life-cycle assessments of materials or of the environmental impact of processes used. Better projects effectively related the candidate's evaluation criteria directly to their final evaluation.

### ***Relationship of the final product, system or environment to the project proposal***

Better responses provided a brief personal reflection relating back to the criteria to evaluate success. Weaker responses failed to draw a parallel between the product, system or environment and the criteria for success established in the project proposal.

## Written examination

### Section I – Multiple choice

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

### Section II

#### Question 11

- (a) Better responses sketched in general terms the impact of cost as a factor in designing. Typically these better responses focused on the cost of materials, production, expert advice, environmental considerations and efficiency. They also indicated the impact of cost factors, for example, the product will be more or less expensive, or more environmentally friendly.
- (b) Better responses indicated how each chair was similar or different through a direct comparison of each chair's features. Some responses contained a table to compare the features. Weaker responses simply listed either functional or aesthetic features for each chair.
- (c) Mid-range responses described how ergonomics can influence function, for example, a door handle should be comfortable, safe and easy to use. The better responses used examples to indicate how ergonomics can influence both function and aesthetics. Weaker responses simply identified a feature of ergonomics, function or aesthetics or outlined a weak link between ergonomics and function and/or aesthetics.
- (d) Mid-range responses described the interaction between designers and individuals, for example, target market research, collaboration with other designers, manufacturers, etc. Better responses indicated how this affects the success or failure of the design. These responses articulated how information gained from individuals helped to clarify design decisions so that improvements or modifications could be made. Weaker responses outlined a link between designers and individuals, such as individuals telling designers their opinion, or identified a factor that affects success or failure.

## Section III

### Question 12

- (a) Better responses demonstrated a sound knowledge of how the consideration of environmental issues impacted on design and production. These responses made specific reference to examples from the stimulus material and linked them to both the design and production phases of innovative power generation. They made reference to a variety of environmental issues that may be considered and provided an explanation as to how they affected design and production.

Weaker responses outlined environmental issues, without linking them to the design and production of electrical power, or simply outlined a method of generating electricity.

- (b) Responses drew upon a variety of innovative examples. In addition some responses were based on examples from the stimulus material.

Better responses included specific examples of both social and ethical factors, for example environmental awareness and the consideration of intellectual property. They analysed how these factors influenced the development of innovations. Some of these better responses considered the development phase as inclusive of the process of design and/or the need for an innovation to undergo development.

Weaker responses generally provided a description of social and/or ethical factors without differentiating between the two. They displayed limited understanding of how social and/or ethical factors influenced the development of innovations.

### Question 13

- (a) Better responses described a number of trends in society and made evident the relationship between them and the activities of designers. They provided clear cause-and-effect statements to support their understanding of how the activities of designers responded to these trends. These answers often incorporated examples indicating where the change occurred in the activities of designers.

Weaker responses generally provided an outline of the activities of designers, without making reference to how they have changed in response to social trends. Other weaker responses were only able to identify a social trend with no reference to how it impacted on the activities of the designer.

- (b) Better responses demonstrated a clear understanding of the impacts that social and economic change have on the development of new technologies. They identified and provided a detailed analysis of the implications of a variety of social and economic changes, by stating relevant examples of change, and indicating how the development of a number of technologies had been affected. Some responses also drew out the relationship that the effect of a change in technology had on the economy and consequently future societal change.

Weaker responses identified a number of technologies and outlined how they were impacted upon by social or economic change. Other weaker responses identified and described

aspects of social and economic change but did not provide examples of how the development of technology was affected.

#### Question 14

- (a) Better responses demonstrated an understanding of how needs are met in both developing and developed nations by the introduction of the ‘one laptop per child’ initiative. These responses made the relationship evident through a variety of social, educational and economic needs being met in developing nations through the introduction of the initiative. They articulated clearly how the introduction of the initiative provided a number of positive outcomes for these nations. These responses also demonstrated how the introduction of this initiative met the needs of developed nations.

Weaker responses generally consisted of extracts from the stimulus without providing an explanation of how the needs of developed nations were being met. Some of these responses also provided an outline of the needs of developing nations, without indicating how the ‘one laptop per child’ initiative met those needs.

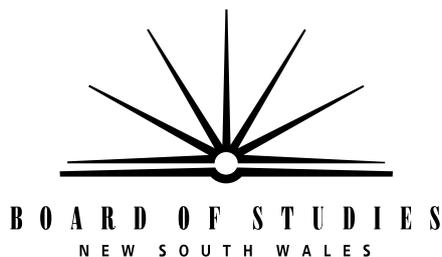
- (b) Better responses explained specifically how a variety of new technologies impacted on both society and culture. They outlined a detailed relationship between technological development and the consequences on individuals, community groups, nations and the global community. These responses exhibited a thorough understanding of the interrelationships that exist between society and culture and how technology can generate change.

Weaker responses generally provided outlines of technologies without referring to how they impacted on either society or culture. These responses approached the question through a holistic description of society and/or culture without discriminating between the two.

# Design and Technology

## 2008 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
<b>Section I</b>			
1	1	Market research	H4.1
2	1	Creativity and innovative design practice	H3.2
3	1	Project management	H5.1
4	1	Factors affecting design	H1.1
5	1	Project management	H5.1
6	1	Ethical issues	H2.2
7	1	Factors affecting design	H1.1
8	1	Factors that influence success of innovation	H3.1
9	1	Factors affecting design	H1.1
10	1	Practices in industrial/commercial settings	H6.1
<b>Section II</b>			
11 (a)	2	Factors affecting design	H1.1, H4.3
11 (b)	3	Identifying functional and aesthetic criteria	H1.1, H4.3
11 (c)	4	Factors affecting design and ergonomics	H1.1
11 (d)	6	Factors affecting design	H1.1
<b>Section III</b>			
12 (a)	6	Environmental issues	H2.2, H6.2
12 (b)	9	Appraise social and ethical implications	H6.2
13 (a)	6	Trends in designing and producing	H2.1, H6.2
13 (b)	9	Emerging technologies	H2.1, H6.2
14 (a)	6	Trends in designing and producing	H2.1, H4.1
14 (b)	9	Trends in designing and producing	H2.1, H4.1



## **2008 HSC Design and Technology Marking Guidelines**

The following marking guidelines were developed by the examination committee for the 2008 HSC examination in Design and Technology, and were used at the marking centre in marking student responses. For each question the marking guidelines are contained in a table showing the criteria associated with each mark or mark range. For some questions, 'Sample Answers' or 'Answers may include' sections are included. These are developed by the examination committee for two purposes. The committee does this:

- (1) as part of the development of the examination paper to ensure the questions will effectively assess students' knowledge and skills, and
- (2) in order to provide some advice to the Supervisor of Marking about the nature and scope of the responses expected of students.

The examination committee develops the marking guidelines concurrently with the examination paper. The 'Sample Answers' or similar advice are not intended to be exemplary or even complete answers or responses. As they are part of the examination committee's 'working document', they may contain typographical errors, omissions, or only some of the possible correct answers.

The information in the marking guidelines is further supplemented as required by the Supervisor of Marking and the senior markers at the marking centre.

A range of different organisations produce booklets of sample answers for HSC examinations, and other notes for students and teachers. The Board of Studies does not attest to the correctness or suitability of the answers, sample responses or explanations provided. Nevertheless, many students and teachers have found such publications to be useful in their preparation for the HSC examinations.

A copy of the Mapping Grid, which maps each question in the examination to course outcomes and content as detailed in the syllabus, is also included.

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## Section II

### Question 11 (a)

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

#### MARKING GUIDELINES

Criteria	Marks
• Sketches in general terms the impact of cost as a factor when designing	2
• Identifies a cost factor when designing	1

*Sample answer/Answers could include:*

- Cost of materials may make product, system or environment expensive
- Increasing cost of production will lead to more expensive product, system or environment
- More efficient production could make product, system or environment cheaper
- Environmentally sustainable issues may lead a designer to choose a different material

### Question 11 (b)

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

#### MARKING GUIDELINES

Criteria	Marks
• Shows how each chair is similar or different in its purpose (function) AND • Shows how each chair is similar or different in its aesthetics	3
• Describes a function of each chair AND • Describes an aesthetic feature of each chair	2
• Names a functional and/or aesthetic feature of each chair	1

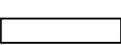
*Sample answer/Answers could include:*

- **Chair 1** – formal chair design could be used at a work station, on legs that move to allow ease of use with an ergonomic lifter for various users, larger chair to accommodate a range of body types, foot stool allows the purpose to change to a more relaxing chair. Traditional looking chair in a combination of fabric/metal. Suited to particular environments.
- **Chair 2** – less formal chair to relax in, long lines allow the whole body to mould into the chair with leg rest built into design. Visual attractive feature piece. Ergonomic design, modern looking, suited to different environments to chair 1. Design shape less suited to the range of body types, harder to get out of this chair. The choice of materials is less forgiving so harder on the user sitting in the chair.

**Question 11 (c)***Outcomes assessed: HI.1***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>Makes the relationship evident between ergonomics and function and aesthetics</li></ul> AND <ul style="list-style-type: none"><li>Provides cause and effect of the product being successful</li></ul>	4
<ul style="list-style-type: none"><li>Describes how ergonomics can be influenced by function and aesthetics, providing a link to successful product design</li></ul>	3
<ul style="list-style-type: none"><li>Outlines a link between ergonomics and function</li></ul> OR <ul style="list-style-type: none"><li>Outlines a link between ergonomics and aesthetics</li></ul>	2
<ul style="list-style-type: none"><li>Identifies a feature of ergonomics</li></ul> OR <ul style="list-style-type: none"><li>Identifies a feature of aesthetics</li></ul> OR <ul style="list-style-type: none"><li>Identifies a feature of function</li></ul>	1

**Question 11 (c)***Sample answer/Answers could include:*

- Examples of products that are improved because of their ‘ergo-friendliness’ ie because the designer considered ergonomic factors well.
- Ergonomics is important to a successful, easy to use and safe and healthy product.
- Measurements of humans and the range of human sizes will impact on the shape and placement of features on a product.
- Smooth edges, not sharp or dangerous.
- The aesthetic of an object, eg a door handle, reflects its function and ergonomic operation eg a  handle vs a  handle/knob.
- The sponge grip tip on the end of a pen invites the writer to grasp the pen in the correct place versus a plain pen.

**Question 11 (d)***Outcomes assessed: H1.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Makes the interaction between individuals and designers evident</li></ul> AND <ul style="list-style-type: none"><li>• Shows how this affects the success or failure of design</li></ul>	5–6
<ul style="list-style-type: none"><li>• Describes the interaction between individuals and designers</li></ul> AND <ul style="list-style-type: none"><li>• Outlines how this affects the success or failure of design</li></ul>	3–4
<ul style="list-style-type: none"><li>• Outlines a link between individuals and designers</li></ul> AND <ul style="list-style-type: none"><li>• Identifies a factor that affects the success or failure of a design</li></ul>	2
<ul style="list-style-type: none"><li>• Outlines a link between individuals and designers</li></ul> OR <ul style="list-style-type: none"><li>• Outlines a success or failure factor</li></ul>	1

***Sample answer/Answers could include:***

Designers consider the whole range of individuals who may have an interest in a design. They should consult these people and react to their input by improving the product. Should designers not involve those people with interest in the design the solution may not, probably won't, meet the needs of this broad range of individuals and fail in the market place.

Successful designs are likely to result from broad consultations with potential users, service personnel, engineers, manufacturers, cleaners, entrepreneurs, advertisers and potentially, other designers who have worked on similar products.

The success or failure of a design may be attributed to the designers' ability to consult with the broad range of people with interest in the design.

## Section III

### Question 12 (a)

*Outcomes assessed: H2.2, H6.2*

#### MARKING GUIDELINES

Criteria	Marks
<ul style="list-style-type: none"><li>Makes the relationship evident between environmental issues and the design and production of an innovation in electricity generation, with specific links to stimulus examples</li></ul>	5–6
<ul style="list-style-type: none"><li>Describes environmental issues and links these to the design and/or production of an innovation in electricity generation, with reference to stimulus examples</li></ul>	3–4
<ul style="list-style-type: none"><li>Outlines environmental issues in electricity generation</li></ul> OR <ul style="list-style-type: none"><li>Outlines features of design or production of electricity generation</li></ul>	2
<ul style="list-style-type: none"><li>Identifies an environmental issue</li></ul> OR <ul style="list-style-type: none"><li>Identifies a feature of design or production, in electricity generation</li></ul>	1

#### *Sample answer/Answers could include:*

- When developing innovations with respect to tidal energy, the disruption to marine life habitat must be considered. For example, when the water flows in and out of the tidal pools, some marine life may be stranded in the shallows and die. In addition, the impeller blades may kill marine life if the creatures get caught in the vortex.
- Hydroelectric dams may flood and destroy land areas, which may kill plant and animal life. Further, erosion of land may occur because rivers have changed course. Farmers may not have access to water for irrigation. Algae blooms caused by slow or stagnant water, choking the dam, kills the fish in the rivers.
- Generation of waste products in the production process – by-products
- Waste products generated through design, production and use
- Land degradation and habitat destruction
- Mining of metals for construction of wind towers etc
- Use of land for wind towers
- Visual and noise pollution
- Environmental impact of infrastructure – roads and buildings required for access to these new innovations
- Short-term vs long-term effects

**Question 12 (b)***Outcomes assessed: H6.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Draws out and relates the implications of social and ethical factors which influence the development of innovations by making the relationships between them evident</li></ul>	8–9
<ul style="list-style-type: none"><li>• Explains the influence that social and ethical factors can have on the development of innovations</li></ul>	6–7
<ul style="list-style-type: none"><li>• Provides the characteristics and features of social and ethical factors on innovation development</li></ul>	4–5
<ul style="list-style-type: none"><li>• Sketches in general terms, aspects of social or ethical factors</li></ul> AND <ul style="list-style-type: none"><li>• Sketches in general terms an understanding of innovation</li></ul>	2–3
OR <ul style="list-style-type: none"><li>• Identifies social or ethical factor</li></ul> OR <ul style="list-style-type: none"><li>• Identifies an innovation</li></ul>	1

***Sample answer/Answers could include:***

- Trends in society as an influence on innovation
  - Australian Made’s marketing trend
  - Fashion trends
  - Environmental awareness
  - Government funding and rebate schemes for solar, etc
  - Entrepreneurial investment innovation
- Global influences – economic change, areas, impact on available funding for innovations and target market affordability
- Timing of an innovation in response to social and ethical trends
- Designed for marginalised groups/ ethical responsibility
  - Hearing impaired
  - Various ethnic groups
- Designer’s ethical responsibility in the design process and production – LCA (Life Cycle Analysis) as a tool to indicate potential for re-design
- Intellectual property in relation to innovation
- Ethical responsibility can involve environmental responsibility

**Question 13 (a)***Outcomes assessed: H2.1, H6.2***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Makes the relationship evident between the activity of designers and how they change in response to trends in society. Demonstrates cause and effect through reference to the stimulus</li></ul>	5–6
<ul style="list-style-type: none"><li>• Describes the activity of designers and how they change in response to trends in society, referring to the stimulus</li></ul>	3–4
<ul style="list-style-type: none"><li>• Outlines the activity of designers and how they respond to change</li></ul> OR <ul style="list-style-type: none"><li>• Outlines trends in society using examples</li></ul>	2
<ul style="list-style-type: none"><li>• Identifies an activity of designers</li></ul> OR <ul style="list-style-type: none"><li>• Identifies a trend in society</li></ul>	1

***Sample answer/Answers could include:***

- Designers survey population to gain insights in trends and needs
- Designers sample populations to determine likes and dislikes
- Designers undertake a range of research in society including trends, needs, population shifts to determine where, when and what to develop as a result of changes in society
- Using ‘keep the change’ – society has changed over a period of time – hard to save, we live in consumer society of goods and services being purchased on other peoples money, keeping-up-with-the-Jones syndrome. This has resulted in a population who struggle to save their own money. Designers who are ahead of the market recognise this and design innovations like ‘keep the change’ to find new niche markets.

**Question 13 (b)**

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

**MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>• Draws out the relationship between the development of new technologies and the effect on social and economic change, through discussion of cause and effect and the relating implications</li></ul>	8–9
<ul style="list-style-type: none"><li>• Explains the relationship between the development of new technologies and the effects on social and economic change</li></ul>	6–7
<ul style="list-style-type: none"><li>• Provides the characteristics and features of new technologies and the effect on social and economic change</li></ul>	4–5
<ul style="list-style-type: none"><li>• Sketches in general terms, aspects of new technologies and the effect on social OR economic change</li></ul>	2–3
<ul style="list-style-type: none"><li>• Identifies a new technology OR a social or economic issue</li></ul>	1

***Sample answer/Answers could include:***

Strong relationship between new technologies and social and economic change. Can be driven from either perspective.

Economic – hard economic times → less money for research and development → less new development of products for release → timing into the market if products to be released during hard times. Economic hard times can also lead to new technologies, developed to assist people, ie ‘keep the change’.

Social – consumers are becoming socially responsible in the use of plastics that will not breakdown. Over a period of time consumers are increasingly asking for bio-degradable shopping bags. This had lead to the development of the ‘green shopping bag’ and brown paper bags and those that breakdown in a short period of time. Society can force designers to come up with new technologies to deal with their changing social responsibility.

Consumers need to accept change before it will become an area where a designer can implement new products that are acceptable to society.

**Question 14 (a)***Outcomes assessed: H2.1, H4.1***MARKING GUIDELINES**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Makes the relationship evident between needs being met in BOTH the developing and developed nations by BOTH the product (laptop) and the strategy (2 for 1)</li></ul>	5–6
<ul style="list-style-type: none"><li>• Describes the needs being met in BOTH developing and developed nations through the introduction of the product (laptop) and the strategy (2 for 1)</li></ul>	3–4
<ul style="list-style-type: none"><li>• Describes needs of developing nations for a product strategy like this</li></ul> OR	2
<ul style="list-style-type: none"><li>• Describes the needs of a developed nation for the product or strategy</li></ul>	
<ul style="list-style-type: none"><li>• Identifies a need that the product or strategy may satisfy</li></ul>	1

***Sample answer/Answers could include:***

Cause: Children in the developing world have no access to internet and often no power, this limits their learning.

Effect: Development of a low price computer that can be used by powering up with a crank. With wireless internet access to enable these people to have better learning opportunities.

Cause: Developed nation people feel the need to assist the undeveloped for reasons of social equality or guilt.

Effect: Enable sponsorship of each computer so there is no cost or debt for the developing world recipients.

Cause: Developing nation need is also related to communication, language skills and improved computer skills.

Effect: Supply of computers that can interact via wireless and internet to improve keyboard skills, computer skills in addition to reading and comprehension.

**Question 14 (b)***Outcomes assessed: H2.1, H4.1***MARKING GUIDELINES**

Criteria	Marks
<ul style="list-style-type: none"><li>Draws out and relates the implications of new technologies and their impact on society and culture by making the relationship between the technology and those impacts evident</li></ul>	8–9
<ul style="list-style-type: none"><li>Describes features of new technologies</li></ul> AND <ul style="list-style-type: none"><li>Explains the impact new technologies have upon society and culture</li></ul>	6–7
<ul style="list-style-type: none"><li>Provides characteristics and features of new technologies</li></ul> AND <ul style="list-style-type: none"><li>Discusses changes in society and/or culture resulting from new technologies</li></ul>	4–5
<ul style="list-style-type: none"><li>Sketches in general terms, impacts on society and/or culture from new technologies</li></ul>	2–3
<ul style="list-style-type: none"><li>Identifies an impact on society or culture</li></ul>	1

***Sample answer/Answers could include:***

Technologies such as the low cost notebook, mobile phones, printers and video audio players all have components of text, audio, video, and the communication of these.

These are related because, for example, text can be created by one student can be communicated to another to be edited. A teacher can develop or refer students to text, audio, video to enable them to learn. The implications of this are that students in poorer countries have access to the same resources for learning as these in developed nations. This increased knowledge and ability to communicate will have impacts on the society by:

- Students and parents will be more globally aware
- Society in these places will know about more things and may lead to wanting more products
- Society will become more technologically literate
- Society will become closer as increased communication should lead to greater understanding of each other
- There are likely to be romances between people from larger distances
- Society may develop more intellectual products for sale internationally
- Society can develop ‘information products’ due to increased literacy and ‘connectedness’

**Culture may change by:**

- Access to PCs/Internet will expose people to other places/cultures. This may lead to copying of American (USA) culture (good/bad?)
- A culture of communication will develop, leading to chat rooms, online advertising etc
- Increased communication/education is likely to result in a healthier nation eg AIDs is widespread in Africa, lots of illiteracy → graphical ads about safer sex could impact all cultures
- Exposure to other cultures must change their own in terms of art/technology/literature