

2014 HSC Design and Technology Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

Question 11 (a)

Criteria	Marks
<ul style="list-style-type: none"> Identifies and shows the characteristics and features of one similar and one different design feature of the tap turners 	4
<ul style="list-style-type: none"> Identifies one similar AND one different design feature of the tap turners AND Sketches in general terms the features of both 	3
<ul style="list-style-type: none"> Identifies one similar AND one different design feature of the tap turners OR Identifies and outlines either one similar OR one different design feature of the tap turners 	2
<ul style="list-style-type: none"> Identifies one similar OR one different design feature of the tap turners 	1

Sample answer:

Similar features in both tap turner designs include the long handle length, which provides users with sufficient space for one or two hands to hold securely. The long length of both tap turner handles also provides ergonomic benefit in terms of decreasing the amount of strength the user needs to have in order to rotate the tap handle between ON/OFF positions.

The differing feature in the tap turners is the different size and shape of the tap gripping section which allows for use on varying sizes of taps and ensures the tap turner can easily mould around the tap handle, minimising the pressure required from the human hand.

Question 11 (b)

Criteria	Marks
• Identifies issues and provides points for AND/OR against how entrepreneurial activity can influence the success of a product	5
• Provides characteristics and features of entrepreneurial activity that can influence the success of a product	4
• Sketches in general terms and/or indicates the main features of entrepreneurial activity that can influence the success of a product	2–3
• Recognises AND/OR names an aspect of entrepreneurial activity that may influence the success of a product	1

Sample answer:

Entrepreneurial activity can actively contribute to the success of a new product by ensuring that societal needs are addressed through the input of entrepreneurial resources such as time, business skills and economic backing. These enable effective market research and provide human resources and equipment required for manufacturing the new product effectively and efficiently. Entrepreneurial activity can also facilitate effective use of business and community networks for the promotion of the new product to the appropriate niche markets. For example, senior citizen organisations, occupational therapy and medical groups can be approached to promote the tap turner. An entrepreneur's enthusiasm, risk-taking and resource support is vital from the designer's vision through to the final market release of the product.

Entrepreneurial activity may also lead the product towards failure if the resources and skills provided cause the product to be manufactured using ineffective processes or inappropriate materials that eventuate in a product with minimal function.

Answers could include:

- Entrepreneurial activity may provide the legal processes to protect the design and/or company logo through trademarks and patents. Ongoing legal support may be provided to ensure the safety of the design and that all standards are met.
- Entrepreneurial activity provides additional support to design activities and ensures that a good design can be effectively manufactured and promoted to society.

Question 12

Criteria	Marks
<ul style="list-style-type: none"> • Shows a thorough understanding of why new and emerging technologies will continue to be developed • Makes clear the relationship between the continual development of these technologies and the needs and wants of society and their capacity to facilitate change 	6
<ul style="list-style-type: none"> • Shows a sound understanding of why new and emerging technologies will continue to be developed 	4–5
<ul style="list-style-type: none"> • Shows some understanding of why new and emerging technologies will continue to be developed 	2–3
<ul style="list-style-type: none"> • Makes reference to new or emerging technologies 	1

Sample answer:

Society as it exists and by nature is very demanding in its want and need for change. As a result, technological change is constant in order to meet this expectation and new technologies will continue to be developed. These emerging technologies will also continue to evolve for a number of reasons. The availability and access to information from designers and innovators means that the timeframe with which change is brought about can be short. Similarly, a constant capacity to experiment, the speed with which change can be implemented, along with the ability to produce a newly developed product all contribute to the evolution of these new technologies. As an example, the development of biometric technology has continued to evolve, and as a result is being utilised across a wider range of applications. Initially biometric technology seemed to revolve around fingerprint recognition and facial feature scanning for security purposes. Technological capacity and societal need have now allowed the application of this technology to go beyond that of just security and be developed for passenger cars as a means of identifying and warning of driver fatigue.

Section III

Question 13 (a)

Criteria	Marks
<ul style="list-style-type: none"> Makes clear the relationship between a variety of sources of inspiration and the development of innovative and creative designs 	6
<ul style="list-style-type: none"> Shows a sound understanding of how designers are inspired to develop innovative and creative designs 	4–5
<ul style="list-style-type: none"> Shows some understanding of how designers are inspired to develop innovative and creative designs 	2–3
<ul style="list-style-type: none"> Makes reference to an aspect of inspiration and/or innovative and creative design 	1

Sample answer:

A designer's ability to develop and create innovative and creative designs is reliant on a diverse range of factors that may include the client and consumer needs, creative thinking, processes utilised, sources of inspiration gathered, evaluation and feedback processes, innovative and emerging technologies and new manufacturing processes and materials.

A designer who embarks on a process of developing a creative or innovative design may have been led into the process through the stated needs of the client or target consumer market which provide the designer with the criteria required to ensure market success and a design that differs from all others currently available. A designer may continue the creative journey with the exploration of existing ideas, products and new materials and processes that may further develop the design. Additional research conducted by the designer may further contribute to the development of a new and creative idea, as designers continue to explore their knowledge, skills and expertise. Designers may further continue this creative process by participation in professional learning experiences that enable the acquisition of new skills, processes and knowledge that can be utilised in the designing and modifying of innovative designs.

These creative thinking processes a designer engages in ensure that a wide range of ideas related to the designing and making of innovative products are embedded within their designs. For example mobile phone technologies have evolved from the basic function of calling and communicating verbally into multifunction devices that permit a user to complete all daily tasks on their mobile phones, such as shopping lists, online shopping, email, gaming, camera and photo image storage. These technologies are also evidence of the ability of designers to source and utilise emerging technologies within existing products, which results in innovative designs that consumers desire. Designers who utilise emerging technologies are encouraged to modify and create products that consumers have not yet seen, thus creating excitement in society. If a designer further embraces these new consumer needs, they may create additional versions of the first design or subsequent new products.

Answers could include:

- Designers consistently seek inspiration from a variety of sources, including nature, history and culture. These processes may involve a designer collecting images, generating sketches, mind-maps or attending sites to acquire an experience that may lead to the development of aesthetic and functional features of a design.
- The diverse range of inspirational sources a designer may utilise is apparent within interior design and fashion which may be developed with an inspirational theme, such as the work of fashion designers Collette Dinnigan and Alex Perry who produced an entire range of eyewear to complement fashion ranges released each season.
- Designers continue to be inspired throughout the entire design process, as consistent evaluation and feedback processes provide ideas from consumers through market research, their own critical analysis and external sources.
- The thoughts and ideas presented in these evaluation processes are then utilised by designers in the modification of existing designs or development of the initial concepts for a future design.
- Designers may also initiate new design ideas when manufacturing methods and new materials/resources become available or known to the designer. This may provide the designer with further ways to develop and produce their ideas in the form of an innovative product.
- Designers may also be inspired by the economic rewards or personal satisfaction gained by the release or eventual completion of their design. This type of inspiration may also result in the ability of the designer to attain legal ownership of the design/concept through patents/trademark processes. This may inspire a designer to dedicate themselves to efficiently designing an innovative design.

Question 13 (b)

Criteria	Marks
• Draws out and relates implications of how economic, historical and timing factors affect the success or failure of designs	9
• Provides reasons through the use of cause and effect as to how economic, historical and timing factors affect the success or failure of designs	7–8
• Identifies issues and provides evidence of how economic, historical and timing factors affect the success or failure of designs	5–6
• Provides characteristics and features of how at least TWO of these factors (economic, historical and timing) affect the success or failure of designs	3–4
• Sketches in general terms how economic and/or historical and/or timing factors affect the success and/or failure of designs	2
• Identifies a feature of economic or historical or timing factors that affects the success and/or failure of designs	1

Sample answer:

Many factors contribute to the success and/or failure of designs, including the economical, historical and timing aspects related to the design development and subsequent release to the market and society.

Economic factors impact immensely on the success or failure of a design, as indicated by the potential a design has when released to society during a negative economic climate. In these times when interest rates on loans are high and disposable income is minimal, the chances of a design being successfully embraced and purchased are minimised, as consumers have less money to spend on items that are not essential. Designers therefore need to consider the timing of the product release to ensure it is during a positive economic climate, or when the product would be most desired or needed by consumers, as recently indicated by the release of the Dyson air fan during the warmer spring and summer season. This encourages the sales of this design, as consumers need to keep cool, therefore even if the economic climate is negative, interest rates and taxes are high, consumers will prioritise the purchase of cooling devices, thus the Dyson air fan may receive high accolades from society and potentially good sales. Conversely if the Dyson fan is released to the market during cooler winter seasons or poor economic times, coupled with a high sale price set by the manufacturer, the Dyson fan may fail to attract a consumer or community following.

Frequently in poor economic periods, government may provide incentives, financial support and beneficial importing and exporting conditions for manufacturers and designers, in order to provide the economic support required for the products to be designed, manufactured and successfully sold. This will often assist in the economic viability of the design and production process, eventuating in creative and innovative projects that successfully appeal to society, meet the needs of the time of release and are affordable for the target market. If these conditions are not provided, then the design may not be desired by consumers and hence not accepted by society, as indicated by computer operating systems developed to compete and take over other leading systems which are too expensive for consumers to purchase due to the associated costs of required hardware upgrades.

By contrast, some designs/products are proven to be successful regardless of their high purchase price, high costs of upgrading and replacing components. These product designs gain a successful place in society purely on the basis of perceived need and time of release to the market as seen with Apple phones and music devices. Although economically not viable, due to expensive purchase costs and ongoing upgrade costs, these products have continually dominated society and the technology marketplace as the design is perceived as needed and essential through effective marketing aimed at convincing society that these items are necessary to improve the quality of life through their multifunction features and aesthetically pleasing accessories.

These economic, historical and timing factors all significantly determine the success and/or failure of a product design, not simply in terms of sales to the target market, but also in terms of acceptance and desirability of the product design by society.

Design and Technology

2014 HSC Examination Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	Entrepreneurial Activity	H3.1
2	1	Product Success	H1.1
3	1	Life Cycle Analysis	H1.1
4	1	Design Practice	H1.2
5	1	Work, Health and Safety	H4.2
6	1	Intellectual Property	H2.2
7	1	Prototype	H1.2
8	1	Sustainability	H2.2
9	1	Effective Design	H1.1
10	1	Ethical Practice	H2.2

Section II

Question	Marks	Content	Syllabus outcomes
11 (a)	4	Design Features and Factors Affecting Design	H1.1
11 (b)	5	Entrepreneurial Activity	H1.1, H3.1
12	6	Emerging Technologies	H1.1, H6.2

Section III

Question	Marks	Content	Syllabus outcomes
13 (a)	6	Innovative and Creative Design	H1.2, H3.2
13 (b)	9	Success and Failure of Design	H1.1, H2.1, H3.1