
2018 HSC Design and Technology Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

Question 11 (a)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> • Sketches in general terms the ergonomic benefits of the workstations shown in Figure 1 and Figure 4 | 2 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1 |

Sample answer:

In Figure 4, the worker is able to move from sitting to a standing position and back again during work to relieve the stress of standing and/or sitting for long periods of time. Figure 1 shows a worker reclined in a frame. This allows gravity to act at a different angle on their body, relieving stress on the body that is normally in a vertical position.

Question 11 (b)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> • Clearly demonstrates technological changes that have influenced the design of workstations like those shown | 3 |
| <ul style="list-style-type: none"> • Sketches in general terms how technological changes have influenced the design of workstations like those shown | 2 |
| <ul style="list-style-type: none"> • Provides some relevant information | 1 |

Sample answer:

Workstations have been influenced by the improvement of materials and the techniques used to process and manipulate them. Wider use of polymers, both existing and newly developed, allows for easy and accurate processes to develop components such as the connectors shown in Figure 2. The stand up workstation in Figure 3 allows for the smaller and lighter modern day computer to be used and easily moved around the workplace. Without the new technologies the workstation could be unsafe if holding a larger computer.

Question 12

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Describes the difference between designing a new product and redesigning one that already exists | 4 |
| <ul style="list-style-type: none"> Outlines the difference between designing a new product and redesigning one that already exists | 3 |
| <ul style="list-style-type: none"> Identifies some aspect of designing a new product and/or redesigning one that already exists | 2 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

After analysing the brief, the designer would be in a position to examine the product which already exists. One path could be to carry out a PMI analysis. Following this, the fact that the product currently exists may allow the designer to carry out market research. This may be via interview/panel or survey to gauge consumers' response to its function, features and appearance. However, the design of a brand new product would rely more on the R&D of concepts and prototypes. This would be more costly, but allow the more conceptual aspects of the design to be understood by the consumer. This data may then enable the designer to experiment and/or trial different models with the view to producing a prototype of the new product. This may be a time-consuming process and delay the release of the new product into the market. However, being able to make reference to a product that already exists may give the designer some greater insight into the positive and/or negative features with the view to improving them in the new product.

Question 13

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> Makes evident the relationship between the use of new and emerging technologies and negative effects on security for an individual in the workplace | 6 |
| <ul style="list-style-type: none"> Shows some relationship between the use of new and emerging technologies and negative effects on security for an individual in the workplace | 5 |
| <ul style="list-style-type: none"> Describes new and emerging technologies and their effects on security for an individual | 4 |
| <ul style="list-style-type: none"> Sketches in general terms new and emerging technologies and/or security for an individual | 2–3 |
| <ul style="list-style-type: none"> Provides some relevant information | 1 |

Sample answer:

Fingerprint recognition relies on the user to register the print of the finger they wish to use into the database but eg grit, moisture, grease can make the scan unrecognisable. Therefore, the user will be locked out. Face recognition will be deemed unusable if the employee changes facial features in any way or has their appearance altered. This may be by growing a beard, wearing sunglasses or possibly receiving a facial injury.

Identification cards for employees are widely used in the office these days. If an employee forgets their card or loses it they are denied access to the workplace.

PINs are also widely used. They are generally used in conjunction with a swipe card in a two-tier system of security. As they are primarily four-digit codes, once another person has the swipe card the PIN can be systematically found and used. PINs and passwords are easily forgotten thus making their use quite limiting at times.

Section III

Question 14

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Shows a comprehensive understanding of how new and emerging technologies have improved communication methods Draws out and relates these improvements to technologies Provides a logical and cohesive response, supported by relevant examples | 13–15 |
| <ul style="list-style-type: none"> Explains how new and emerging technologies have improved communication methods Communicates using relevant examples Provides a mostly logical and cohesive response, supported by relevant examples | 10–12 |
| <ul style="list-style-type: none"> Describes how new and emerging technologies have improved communication methods Provides a mostly organised response, supported by relevant example(s) | 7–9 |
| <ul style="list-style-type: none"> Outlines new and emerging technologies and/or improvements to communication methods Provides example(s) | 4–6 |
| <ul style="list-style-type: none"> Demonstrates some understanding of new and emerging technologies and/or communication methods | 1–3 |

Answers could include:

- Voice recognition software has allowed for data to be recorded and transmitted as text via communication networks; this provides convenience and speed.
- Real time video messaging eg FaceTime allows for communication ‘face-to-face’ over vast distances and recording of images and videos of the communication therefore providing instant and personal communication.
- Email via the computer network has enabled efficient dissemination of information to one or many. It provides quick, convenient and inexpensive communication.
- Social media, such as Facebook and Snap Chat, allow for instant communication between those parties signed up to the service.
- Cloud storage technology provides access to information over vast distances, eg documents can be stored and retrieved from any location in the world via internet access and/or the mobile phone network, therefore allowing flexibility in the workplace.
- Wearable technologies eg Apple Watch enable people to communicate independently from the connecting mobile phone.

2018 HSC Design and Technology Mapping Grid

Section I

| Question | Marks | Content | Syllabus outcomes |
|----------|-------|---|-------------------|
| 1 | 1 | Factors affecting design | H1.1 |
| 2 | 1 | Research methods | H5.2 |
| 3 | 1 | The work of designers | H1.2 |
| 4 | 1 | Intellectual property | H2.2 |
| 5 | 1 | The work of designers | H1.2, H5.2 |
| 6 | 1 | Project management | H5.1 |
| 7 | 1 | Research methods | H5.2 |
| 8 | 1 | The work of designers | H1.2 |
| 9 | 1 | Social trends | H2.1 |
| 10 | 1 | Factors affecting design, success of innovation | H1.1, H3.1 |

Section II

| Question | Marks | Content | Syllabus outcomes |
|----------|-------|--------------------------|-------------------|
| 11 (a) | 2 | Ergonomics | H1.1 |
| 11 (b) | 3 | Factors affecting design | H1.1 |
| 12 | 4 | The design process | H1.2, H5.2 |
| 13 | 6 | Emerging technologies | H6.2 |

Section III

| Question | Marks | Content | Syllabus outcomes |
|----------|-------|--------------------------------------|-------------------|
| 14 | 15 | Emerging technologies, communication | H6.2 |