
2021 HSC Design and Technology Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

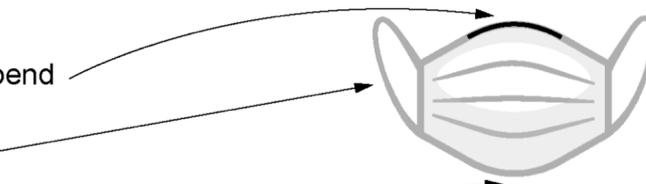
Question 11 (a)

Criteria	Marks
<ul style="list-style-type: none"> Draws and annotates using relevant information a piece of personal protective equipment (PPE) 	2
<ul style="list-style-type: none"> Draws a piece of personal protective equipment (PPE) OR <ul style="list-style-type: none"> Provides some relevant information regarding personal protective equipment (PPE) 	1

Sample answer:

Face masks

- Metal inserted over nose to bend to the form of the body
- Elastic to wrap around ears
- Cloth to stop dust entering airways.



Question 11 (b)

Criteria	Marks
<ul style="list-style-type: none"> Describes how the designer can respond to the brief 	3
<ul style="list-style-type: none"> Outlines how the designer can respond to the brief 	2
<ul style="list-style-type: none"> Provides some relevant information 	1

Sample answer:

In order to respond to the brief, the designer could use the cloth area as a canvas to communicate ideas. For example, rather than having a plain surface, it could have a company brand or logo on it to help promote the company's or the individual's identity.

For the designer to increase the comfort of the face mask, padding can be added to the metal insert that will help soften the contact of the mask with the bridge of the nose.

Question 12

Criteria	Marks
• Demonstrates a comprehensive understanding of a positive effect and a negative effect of one aspect of the changing nature of work	4
• Demonstrates a sound understanding of a positive effect and/or a negative effect of one aspect of the changing nature of work	3
• Outlines a positive effect and/or a negative effect of one aspect of the changing nature of work	2
• Provides some relevant information	1

Sample answer:

- Positive:
 - Designers are finding more opportunities to work from home and are able to complete work to the same standard as in person. Travel time is saved, so time is then made available for activities to build social wellbeing and strengthen social ties.
- Negative:
 - Due to the need to work at home, changes would need to occur to the built environment to ensure a safe workspace exists. This could mean that the designer has to create an office space or workshop in order to conduct business. This is a negative effect on the designer, as it would cause them financial expense.

Answers could include:

- Positive:
 - Working from home
 - Saving money
 - ◇ Reduced travel expenses
 - ◇ Eating at home rather than buying lunch
 - Relaxed atmosphere – reduced uniform requirements
- Negative:
 - Working from home
 - Increased utilities expense – electricity, water
 - Decreased social interaction
 - Increased automation in the workplace
 - Job loss due to implementation of new equipment.

Question 13

Criteria	Marks
• Provides a comprehensive explanation of why the designer of a new product should consider the needs of society	6
• Provides some explanation of why the designer of a new product should consider the needs of society	5
• Provides characteristics and features of why the designer of a new product should consider the needs of society	4
• Demonstrates some understanding of why the designer of a new product should consider the needs of society	2–3
• Provides some relevant information	1

Sample answer:

When creating a new product, it is important that a designer considers the needs of society to ensure that the item being developed is successful in terms of meeting needs and values. That is, if the product being developed focuses on the environment rather than responding to society's needs and values, then the product has the potential to fail. For example, if a new form of electrical water-saving washing machine was being developed to meet global environmental concerns, the designer must ensure that the society that they are targeting has access to power and water for it to work. By the designer focusing on the environmental concerns of the product, without considering the society's specific situation, then the potential to fail will be high. If the product is being designed for inhabitants of a remote community that does not have access to power and relies on limited tank water, the product and the designer will not be successful.

Designers should also understand the impact that their designs can have on society. This can be seen with the introduction of the electronic cigarette, which is a product that eliminates the dangers of smoking tobacco products, but introduces society to the inhalation of chemical vapours.

Answers could include:

- Cultural diversity
- Technological change
- Sustainable technologies.

Section III

Question 14

Criteria	Marks
<ul style="list-style-type: none"> • Demonstrates a comprehensive understanding of the legal issues and economic issues that may arise due to the increased use of the innovative systems • Draws out and relates the implications of these issues • Provides a logical and cohesive response with detailed reference to supplied examples 	13–15
<ul style="list-style-type: none"> • Explains the legal issues and economic issues that may arise due to the increased use of the innovative systems • Provides a mostly logical and cohesive response with reference to the supplied examples 	10–12
<ul style="list-style-type: none"> • Describes legal issues and economic issues which may arise due to the increased use of the innovative systems • Provides a mostly organised response with reference to the supplied example(s) 	7–9
<ul style="list-style-type: none"> • Outlines legal and/or economic issue(s) which may arise due to the use of an innovative system(s) 	4–6
<ul style="list-style-type: none"> • Provides some relevant information about legal and/or economic issues and/or innovation systems 	1–3

Answers could include:

Legal:

- Who’s at fault in an accident without driver
- Companies with driverless fleets don’t have to pay driver wages. Fair to other industries?
- Electric vehicles not paying fuel excise taxes, should they be charged alternative fees?
- Increased air traffic with more drones, impacts on noise in neighbourhoods / clutters the night sky
- Development and protection of intellectual property
- Increase in crime eg delivered items can be stolen
- Responsibility of stolen items may lead to litigation between customer and client
- Increase in litigation as autonomous driverless cars are electric, so pedestrians would find it hard to hear them coming.

Economic:

- No need for driver rest breaks in trucks, results in more time on the road
- Extra time to complete tasks (reply to email, online meeting) while commuting
- Speed of delivery, straight-line flight versus following twisted roads. Immediate delivery of key goods from warehouse
- Up-skilling of workforce with the need to transition to other employment opportunities
- Developing, refining and using innovative technologies
- Changes in required infrastructure developments
- Effect of litigation could be a financial loss to stakeholders due to legal fees
- Cost of retraining unemployed truck drivers
- Cost of damages to vehicles if accidents occur and who pays for those damages.

2021 HSC Design and Technology Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	Factors of design	H1.1
2	1	Practices and processes of designers	H1.2
3	1	Factors affecting design	H1.1, H3.1
4	1	Protection of intellectual property	H2.2, H3.1
5	1	Role of the designer	H2.1, H3.1
6	1	Ethical and environmental issues	H2.2
7	1	Trends in society	H2.1
8	1	Communication	H2.2, H5.2
9	1	Research methods	H5.2
10	1	Impact on society and the environment	H6.2

Section II

Question	Marks	Content	Syllabus outcomes
11 (a)	2	Work health and safety, communication	H1.1, H5.2
11 (b)	3	Motivational stimuli, function and aesthetics	H1.1, H3.2
12	4	Changing nature of work	H2.1
13	6	Factors of design – needs, impact on society	H1.1, H2.1, H2.2, H6.2

Section III

Question	Marks	Content	Syllabus outcomes
14	15	Trends in society, success of innovation, legal and economic factors, emerging technologies	H2.1, H2.2, H3.1, H6.2