

2015 HSC Industrial Technology Graphics Technologies Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

Question 11

Criteria	Marks
<ul style="list-style-type: none"> • Correctly identifies the material 	1

Sample answer:

Concrete

Question 12

Criteria	Marks
<ul style="list-style-type: none"> • Clearly demonstrates why and how freehand sketching can be more appropriate than CAD in some situations 	3
<ul style="list-style-type: none"> • Outlines a reason why freehand sketching can be more appropriate than CAD in a situation 	2
<ul style="list-style-type: none"> • Lists an advantage of sketching 	1

Sample answer:

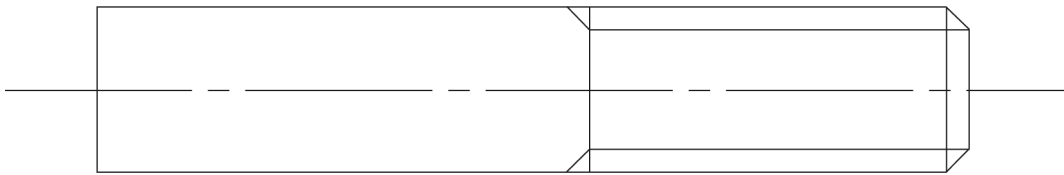
It is often faster to record ideas freehand as you don't have to try and navigate menus to find the correct tool for what is often a simple procedure with a pencil and paper. Freehand sketching is not constrained by the tools that are available on a particular CAD package and the user requires no knowledge of computers.

Answers could include:

- Multiple people can provide input simultaneously
- Faster for the production of thumbnail sketches
- People are not limited by the CAD package's included tools
- No site licence has to be purchased
- Can be used on-site if no electricity is available
- Allow users to work faster for some purposes

Question 13

Criteria	Marks
• Shaft drawn to correct scale and the thread correctly indicated as per AS1100	3
• Shaft not drawn to scale but correct method of representing screw thread used OR • Shaft drawn to scale but screw thread incorrectly indicated	2
• Basic drawing with some attempt at a screw thread	1

Sample answer:**Question 14**

Criteria	Marks
• Demonstrates the cause and effect of how adhering to AS1100 is important in reducing the confusion and/or eliminates problems that may occur if standards were not used in engineering drawing	3
• Sketches in general terms how adhering to AS1100 is important in reducing confusion or eliminating problems that may occur if varying drawing standards were used in engineering drawing	2
• Lists relevant information about why adhering to AS1100 is important	1

Sample answer:

Because engineering drawing is such a complex and broad area of technical drawing, it is important to ensure consistency amongst the draughting profession. This consistent method of representing features of the drawing will eliminate misunderstanding when multiple draughtspeople are working on the same drawing. This helps to ensure that products are drawn accurately and can be made anywhere in the world regardless of what language is spoken locally.

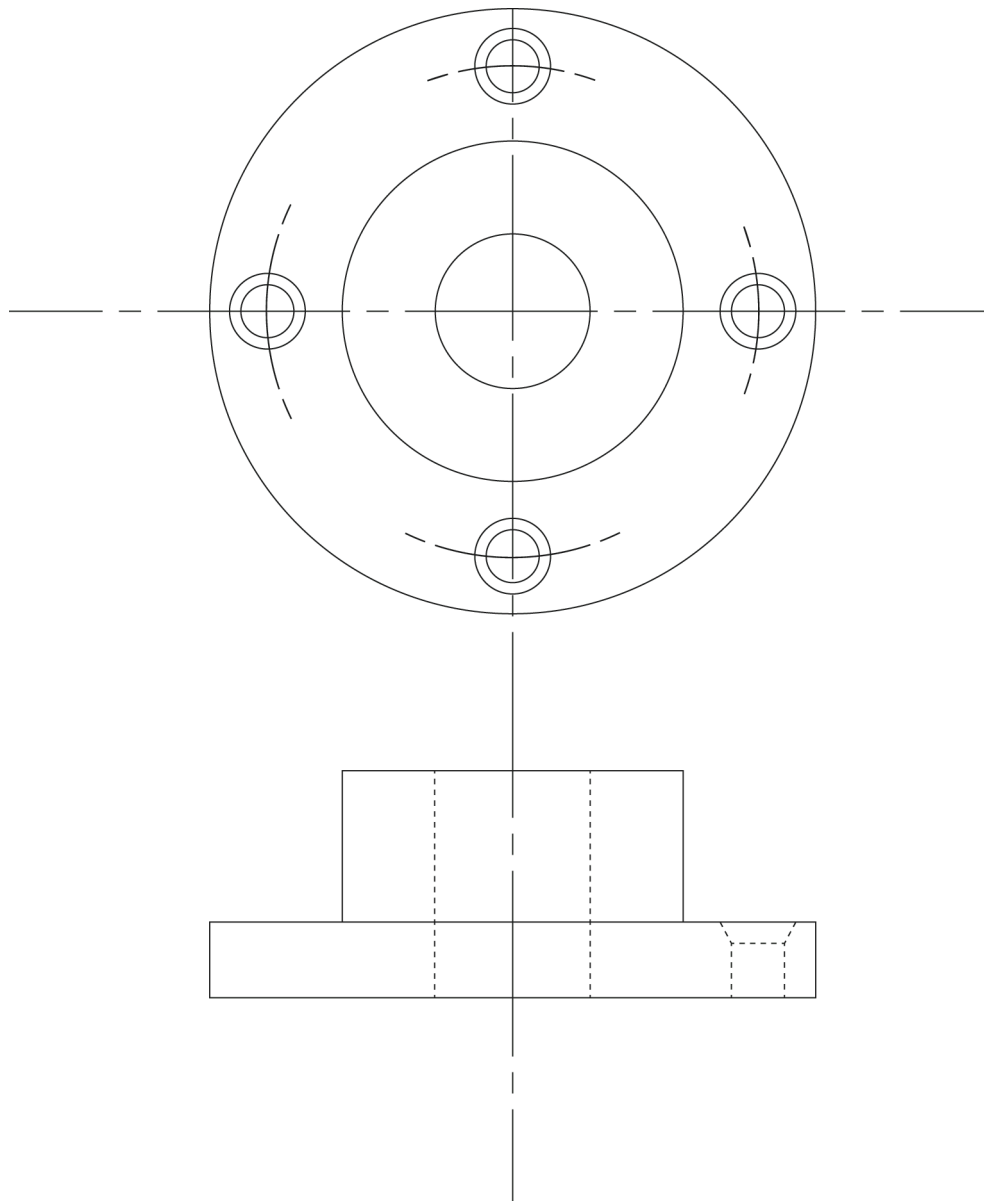
Answers could include:

- Reduces confusion
- Enables consistency
- Eliminates problems associated with language barriers
- Allows for multiple draughtspeople

Question 15

Criteria	Marks
<ul style="list-style-type: none"> Develops an accurate top and front view which adheres to all relevant drawing standards including accurate PCD 	5
<ul style="list-style-type: none"> Develops a mostly accurate top and front view which adheres to most of the relevant drawing standards including accurate PCD 	3–4
<ul style="list-style-type: none"> Some information relevant to orthogonal drawing and/or PCD 	1–2

Sample answer:



Section III

Question 16 (a)

Criteria	Marks
• Detailed understanding of the causes and effects of restructuring a business on quality control	5
• Provides characteristics and features of the causes and effects of restructuring a business on quality control	3–4
• Indicates the main features of restructuring and/or quality control	1–2

Answers could include:

- Restructuring can involve personnel, systems, processes, physical environment
- Effects can be positive and negative
- Restructuring can cause stress/anxiety on workers, causing a lowering of the quality of the product/services
- Workers moved during a restructure may initially lack the skills to perform new tasks, retraining must be under taken to provide knowledge to overcome lack of experience. This can lead to a short drop in quality of the product/services.
- New workers can provide a fresh attitude and show less complacency, possibly improving the quality of product/services
- The introduction of new machinery can improve the quality of products through increased accuracy, precision and output
- Restructuring personnel into specific teams with designated roles can help to improve product quality through skill specialisation

Question 16 (b)

Criteria	Marks
<ul style="list-style-type: none"> Provides a detailed judgement of the value of new technology with an explanation of its effects on production and efficiency in the industry 	10
<ul style="list-style-type: none"> Provides an effective judgement of the value of new technology with a description of its effects on production and efficiency in the industry 	8–9
<ul style="list-style-type: none"> Provides some measure of the value of new technology with features of its effects on production and efficiency in the industry 	5–7
<ul style="list-style-type: none"> Attempts to provide an assessment of the effect of new technology on production and/or efficiency in the industry 	3–4
<ul style="list-style-type: none"> Lists aspects of new technology or production or efficiency in the industry 	1–2

Sample answer:

There are ways to determine the value of new technology improving production and efficiency. CAD drawings have allowed faster production due to reduced time in planning and drawing. These drawings are able to have elements such as a library of parts, which can be reused and save time for the business, therefore increasing efficiency in the production of drawings. For example, if you consistently use one component of a drawing, eg a particular cog, then you can save complex drawings and reuse and edit them. CAD drawings allow for electronic distribution of drawings around the world via the internet (even attached to emails). This could previously not have been done with hand drawings, as the drawings would have to be physically sent. This fast method of distribution is a significant cost saving, which is more efficient due to the time and cost saved by not having down time when waiting for delivery. With electronic distribution, there are no postal costs and no flying workers around the world with drawings/plans to attend meetings. In addition, if you were sending physical drawings, these may be lost. CAD allows for multiple backups to be made so the work will be able to be sent again reducing duplication of effort. As this globalisation has been made so much easier by the introduction of new technologies, you also have access to a global work force, and companies can get more qualified and experienced staff which are then likely to work more efficiently, thus increasing the amount of drawings produced in a set time.

3D printing allows rapid prototyping in the early stages of production. It allows concept sketches to be produced quickly, and then tested as a physical prototype to scale. This physical prototype is faster to generate than previous methods such as creating cardboard models thus reducing money the company may have spent on labour costs and freeing up this capital for re-investment. This model can then be shown to clients and feedback given which is then applied to the model. The time within the design process in preparing for production is then minimised, as changes can be made quickly and easily to the model based on feedback. This is a more efficient process, as previously, feedback would be received, drawing would have to be modified then new drawings printed, or perhaps new models created. This can all be done in the one process now with the model that is used for the prototype can then be repurposed and sent out for production, thus saving time in making a separate prototype and product, therefore being more efficient. Some 3D printers also print in different resins that can be used for things such as moulding and casting of multiple copies of objects. This is time and cost efficient and allows smaller businesses that do not have access to large budgets to be competitive in the market.

2015 HSC Industrial Technology Graphics Technologies Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	Principles and standards	H3.1
2	1	Processes	H3.1
3	1	Equipment	H1.2
4	1	Principles and standards	H1.3
5	1	Principles and standards	H3.1
6	1	Principles and standards	H1.2, H3.1
7	1	Principles and standards	H3.1
8	1	Processes	H3.1, H3.2
9	1	Processes	H1.2, H3.1
10	1	Principles and standards	H3.2, H6.2

Section II

Question	Marks	Content	Syllabus outcomes
11	1	Processes	H1.2
12	3	Processes	H1.2, H7.2
13	3	Principles and standards	H2.1, H3.1
14	3	Principles and standards	H3.1, H5.1, H6.1
15	5	Processes	H3.1, H4.3, H6.2

Section III

Question	Marks	Content	Syllabus outcomes
16 (a)	5	Structural considerations	H1.1, H2.1, H6.1, H6.2
16 (b)	10	Structural considerations	H1.1, H2.1, H7.2