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# COMPUTER GRAPHICS AND DESIGN

CGD315118

## Section **A**

Pages: 12  
Questions: 8

**Preparation time for this exam:** 15 minutes

**Suggested working time:** 20 minutes

### Instructions:

- Answer **four (4)** questions in this section.
- Write your answers in the spaces provided in this exam paper.
- The exam is **two (2) hours** in length. The suggested working time for this section is **approximately 20 minutes**.
- All answers must be written in **English**.
- You **must** make sure your answers address the listed criterion.

Marker use	
C6	/ Alpha

# Guide to Exam Structure

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	Questions available	Questions to answer	Suggested working time	Marks available
Section <b>A</b>	8	4	20 minutes	All criteria are assessed using extended ratings of A+ to z
Section <b>B</b>	8	4	20 minutes	
Section <b>C</b>	4	1	40 minutes	
Section <b>D</b>	6	1	40 minutes	
<b>Totals</b>	<b>26</b>	<b>10</b>	<b>120 minutes (2 hours)</b>	

## Criterion

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You **must** make sure your answers address:

- Criterion 6 analyse the impact of design in society.

# Section A

- Answer only **four (4)** questions in this section.
- All questions are of equal value.

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## Question 1

Applying **sustainable design principles** is an important consideration for all designers. What are some of the key principles to consider in the application of sustainable design thinking?

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**Question 2**

Marker use

Creativity and innovation have been the cornerstone of **great design**. Identify a design solution that exemplifies these ideas of creativity and innovation. Explain the impact of this design solution on our way of life.

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**Question 3**

Marker use

A designer has been asked to develop a concept for a tiny home in an area of outstanding natural beauty. What might be some of the **functional and environmental design** considerations required when designing the tiny home for such a setting?

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**Question 4**

Marker use

The design process includes several recognised stages, one of which is **research**. How would you research the information to design a cup for a person with reduced hand function?

List important social, ethical and environmental factors.

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**Question 5**

Marker use

3D models, texture maps, and other visual content can be downloaded from the internet to use in design solutions. What are the **intellectual property rights** implications for the content creator and the end user when using such content?

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**Question 6**

Marker use

In the development of **Interactive Design** an important consideration is the idea of **usability** as a component of the **User Experience (UX)**. Why is usability an important interactive design consideration?

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**Question 7**

Marker use

20th Century German industrial designer Dieter Rams described **10 principles of good design**. Rams described one of those principles as being “**good design makes a product useful**”. Why would Rams propose this as a principle of good design?

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**Question 8**

Marker use

When it comes to design, many argue that **ease of use (function)** is more important than **user desirability (form)**. When you are designing a walking aid for a person with reduced mobility, which do you think is the most important and why?

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End of Section A  
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# COMPUTER GRAPHICS AND DESIGN

CGD315118

## Section **B**

Pages: 12  
Questions: 8

**Suggested working time:** 20 minutes

### Instructions:

- Answer **four (4)** questions in this section.
- Write your answers in the spaces provided in this exam paper.
- The exam is **two (2) hours** in length. The suggested working time for this section is **approximately 20 minutes**.
- All answers must be written in **English**.
- You **must** make sure your answers address the listed criterion.

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# Guide to Exam Structure

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	Questions available	Questions to answer	Suggested working time	Marks available
Section A	8	4	20 minutes	All criteria are assessed using extended ratings of A+ to z
Section B	8	4	20 minutes	
Section C	4	1	40 minutes	
Section D	6	1	40 minutes	
<b>Totals</b>	<b>26</b>	<b>10</b>	<b>120 minutes (2 hours)</b>	

## Criterion

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You **must** make sure your answers address:

- Criterion 7 describe and apply key features, applications and influences on contemporary computer graphics systems.

# Section B

- Answer only **four (4)** questions in this section.
- All questions are of equal value.

## Question 9

**Raster** and **vector** graphic systems are **two (2)** methods to produce 2D computer graphic content. Describe how these **two (2)** systems represent graphic content.

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**Question 10**

Marker use

Designers frequently use **layers** and **groups** in both 2D and 3D Computer Graphics. What is the difference between these **two (2)** methods? Provide a practical example of how each method can be effectively used in producing **Computer Generated Imagery (CGI)**.

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**Question 11**

Marker use

3D animation in games and feature films often use **computer-generated effects** to replicate fire, moving water, falling leaves and explosions. Describe a system and process used to place **one (1)** of these effects into an animation.

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**Question 12**

Marker use

Explain some of the advantages and disadvantages of using **AI systems** to generate computer graphic content.

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**Question 13**

Marker use

The **mouse** as an **input device** varies in capability from entry level to high-end models. Discuss the differences in specifications between an entry level mouse and a high-end professional mouse.

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**Question 14**

Marker use

A designer has imported a **rendered 3D image sequence** into a video composition application, only to find that the sequence is pixelated and does not fully cover the 16:9 aspect ratio of the output preview window.

Describe what has happened. What could be done to produce an appropriate rendered 3D image sequence?

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**Question 15**

Marker use

**Boolean operations** are often a toolset in both 2D and 3D graphic applications. Explain using words and sketches how different types of **Boolean operations** can be used to create computer graphic content.

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**Question 16**

Marker use

Computer graphic applications typically support a native file format and a range of open file formats. Describe **two (2)** native file formats of **two (2)** computer graphic applications and **one (1)** open file format. State whether each format is raster-based, or vector-based or supports both.

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End of Section B  
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# COMPUTER GRAPHICS AND DESIGN

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## Section **C**

Pages: 8

Questions: 4

**Suggested working time:** 40 minutes

### Instructions:

- Answer **one (1)** question in this section.
- Write your answers in the spaces provided in this exam paper.
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Marker use	
C6	/ Alpha

# Guide to Exam Structure

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<b>Totals</b>	<b>26</b>	<b>10</b>	<b>120 minutes (2 hours)</b>	

## Criterion

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You **must** make sure your answers address:

- Criterion 6 analyse the impact of design in society.

# Section C

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- Answer only **one (1)** question in this section.
  - All questions are of equal value. Answers must consist of written notes accompanied by sketches with annotations explaining important features of the design. Space is provided on pages 5–7.
  - Section C carries double the weight of Section A.
- 

## Question 17

Effective branding is important for any new business or organisation to build recognition and awareness. A local National Disability Insurance Scheme (NDIS) service called Consone, which means “to bring together”, is about to begin operation. Their services are focused on supporting people with neurodiversity and providing individual support to people to help achieve their life goals and live the life they choose.

The service requires a visual identity (logo) for their organisation that aligns with the idea of bringing people together for purposeful lives.

- a) Discuss the **social, ethical, and environmental factors** to be considered when designing the branding for this organisation.
- b) Provide **sketches of three (3) logo concepts** that the organisation could select from. Annotate the **three (3)** logo designs justifying your application of the social, ethical and environmental factors discussed in part a).

**OR**

## Question 18

The Tasmanian Government has just introduced a container deposit scheme to increase the recycling of beverage containers. This is part of a broader sustainable futures initiative for the state.

Your design team has been asked to design and develop a 30-second advertisement. It will incorporate both animated and filmed footage as part of the advertising campaign. It will be shown on television and a range of social media platforms.

- a) Discuss the types of consultation that need to occur during the design and development phase to communicate the **key environmental and social messages**.
- b) Sketch a storyboard of **at least six (6)** image boards with supporting annotations for each board. Clearly highlight the key social and environmental messages as discussed in part a).

**OR**

**Question 19**

The 2032 Olympic Games are planned to be held in Brisbane. The organising committee of the Games have issued a call to the Australian community to provide design ideas for the Games' mascot. The mascot must capture the essence of Australian cultural and social diversity. This must be communicated as part of the design submission process. You have decided to submit a design for the event's mascot to the organising committee.

- a) Discuss in detail the types of **social, cultural and ethical consultations and decisions** that would need to be made before design commences. The mascot will be made into a toy/souvenir for promotion.
- b) Produce **detailed sketches of the front and side views** of your character. Show their persona (body and facial features) and typical clothing. Include annotations about how the design reflects the social and ethical considerations discussed in part a).

**OR**

**Question 20**

A global furniture brand is seeking designs for a new desk system to be called "Overlagsen". The brand is renowned for well-designed and affordable flat-pack furniture. The desk system will be suitable for computer use and include three drawers. The desk system must be ergonomically adjustable, resistant to damage and wear, and mostly constructed from recycled materials.

You and your design team are approached to design and prototype the desk system.

- a) Discuss in detail the sort of consultation and decisions that you would need to make prior to production of the desk. **Sustainable design thinking** should be used when considering the choice of materials in both design and packaging.
- b) Sketch **at least two (2)** preliminary designs with annotations, showing how the desk system looks fully assembled. For **one (1)** of the design solutions show how it would pack flat.

Complete sketches for Question 17 or 18 or 19 or 20 on this page.

Marker use

Question Number:

Write the question number you are answering in the box.

Complete sketches for Question 17 or 18 or 19 or 20 on this page.

Marker use





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# COMPUTER GRAPHICS AND DESIGN

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## Section **D**

Pages: 8

Questions: 6

**Suggested working time:** 40 minutes

### Instructions:

- Answer **one (1)** question in this section.
- Write your answers in the spaces provided in this exam paper.
- The exam is **two (2) hours** in length. The suggested working time for this section is **approximately 40 minutes**.
- All answers must be written in **English**.
- You **must** make sure your answers address the listed criterion.

Marker use	
C7	/ Alpha

# Guide to Exam Structure

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<b>Totals</b>	<b>26</b>	<b>10</b>	<b>120 minutes (2 hours)</b>	

## Criterion

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You **must** make sure your answers address:

- Criterion 7 describe and apply key features, applications and influences on contemporary computer graphics systems.

# Section D

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- Answer only **one (1)** question in this section.
  - All questions are of equal value.
  - Your answer must consist of an **extended response**.
  - Section D carries double the weight of Section B.
- 

## Question 21 (3D Modelling)

There are several methods, techniques and software solutions for creating 3D models. These include **box or subdivision surface modelling, spline modelling, 3D sculpting** and **3D scanning**.

- a) Discuss the characteristics of the **four (4)** modelling techniques listed above.
- b) Describe some real-world examples of where each technique would best be used.

**OR**

## Question 22 (Solid Modelling and 3D Digital Fabrication)

**3D printing** and **CNC machining** are **two (2)** technologies used to produce physical products from digital models. Each technology has significant differences in the methods used to produce a physical product.

- a) Explain the differences between **3D printing** and **CNC machining**.
- b) Describe examples of where each technology can be used to its best advantage.

**OR**

## Question 23 (Animation)

Digital animation is broadly produced using 2D-based and 3D-based toolsets, either in isolation or in combination.

- a) Using examples, briefly describe **2D and 3D animation processes**. Discuss the differences in terms of the associated production processes, some of the software tools used to create content and the likely production times.
- b) Discuss a situation where it may be beneficial to combine both 2D and 3D components in an animated sequence.

**OR**

**Question 24 (Video and Motion Graphics)**

Video and Motion Graphic content development is heavily dependent on the capabilities of hardware systems. Allied with software development this industry area is seeing a range of trends such as: **Artificial Intelligence (AI) Powered Editing, Hyper-Realistic 3D Motion Graphics, Augmented Reality (AR) and Virtual Reality (VR) Integration, Experimental Minimalism and Generative AI in Motion Design.**

- a) Discuss how **two (2)** of these areas are currently used in video and motion graphic design.
- b) Discuss how the development of these areas discussed in part a) may benefit from advancements in CPU and video graphics technology.

**OR**

**Question 25 (Asset Development, Game Design and Production)**

A **game engine** is a software framework that developers use to build and design video games. It provides essential tools and functionalities, such as rendering graphics, physics simulations, artificial intelligence, scripting and sound management.

- a) Production assets can be created entirely within the game engine or with alternative software. Discuss the advantages and disadvantages of both options.
- b) Describe some of the specific content development features of a game engine of your choice.

**OR**

**Question 26 (Interactive Design)**

Interactive design is evolving rapidly, with new trends shaping how users engage with digital experiences.

Some key emerging trends are: **Extended Reality (XR)**, (including Augmented Reality (AR), Mixed Reality (MR) and Virtual Reality (VR)); **AI-Powered Personalisation; Animated Product Reveals;** and **Immersive 3D Worlds.**

- a) Discuss how **two (2)** of these areas are currently used in interactive design.
- b) Discuss how the development of these areas discussed in part a) could drive future innovation in interactive design.









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