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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

	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	
Totals	26	10	120 minutes (2 hours)	

Criterion

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.

Question 1

Design elements such as line, shape, texture, tone, and colour help to communicate ideas.

Warning signs use a common visual language, and these can be understood regardless of written language and culture.

How would a designer use this common visual language to warn of a cliff edge?

Respond with words and a sketch.

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Question 2

Marker use

A designer almost always works within set **limitations** or **specifications** when responding to a **design brief**. These often reference social and environmental contexts.

Why are such limitations or specifications important for the designer to consider?

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Question 3

Marker use

Historically human creativity and innovation have been the cornerstone of **great design**.

Identify a design solution that exemplifies these ideas of human creativity and innovation.

Explain the impact of this design solution on our way of life.

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Question 4

Marker use

There is a diverse range of **artificial intelligence (AI)** 2D and 3D graphic tools. They can be used to generate content and can enhance a designer's productivity.

When developing design content, discuss a situation where **AI** tools enhance productivity.

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Question 5

Marker use

Clean Up Australia describe the Three R's of **sustainability** (Reduce, Reuse, Recycle) as the foundation of sustainability thinking and action. Recently they advocated for the addition of Refuse and Repair as sustainability principles in our society's approach to consumption and waste.

Discuss how a product designer might incorporate the ideas of Refuse and Repair into the development of a product.

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Question 6

Marker use

Colour is used to convey mood or emotion in design and has a cultural context.

Explain how **colour theory** can be used in a game concept where ideas of desolation and emptiness are key themes.

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Question 7

Marker use

Intellectual property rights (copyright) are often a challenge for designers. Digital communication channels enable the creation, distribution, and use of content. This has both positive and negative impacts.

Discuss the steps users of design content take to respect the rights of a designer.

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Question 8

Marker use

When it comes to design, there is an argument that ease of use (function) is more important than the object appearance (form).

Why then, does a design such as a chair have so many different forms?

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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.

Marker use	
C7	/ Alpha

Guide to Exam Structure

	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	
Totals	26	10	120 minutes (2 hours)	

Criterion

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

Display monitors vary in capability from entry level to high-end professional models.

Discuss the differences in specifications between an entry level display monitor and a high-end professional display monitor.

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Question 10

Marker use

Most 3D graphic applications typically have a **multi-view user interface layout** or **viewports**.

What is the purpose of this type of user layout and why is it beneficial to be able to adjust the display mode in the viewports?

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Question 11

Marker use

The **JPG** and **PNG** graphic file types are the two most common formats used to display digital images.

Compare the key features of the **two (2)** formats in terms of colour bit or depth, image compression techniques and the type of images they are best suited for.

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Question 12

Marker use

A beginner animator wants advice about producing a short animation of a sheep headbutting a bucket. She has heard of 'pose to pose' and 'straight ahead' as methods of creating animation.

Briefly explain the **two (2)** animation methods and their relative strengths and weaknesses when producing such an animation.

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Question 13

Marker use

In the branch of computer graphics called **CAD (Computer Aided Design)** there are two types of modelling systems used, **solid modelling** and **surface modelling**.

Explain the differences between these **two (2)** modelling systems when used to create objects for manufacture.

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Question 14

Marker use

Designers frequently use '**layering**' and '**grouping**' techniques to organise graphic content.

What is the difference between these **two (2)** methods? Provide a practical example of how each method can be effectively used when producing Computer Generated Imagery (CGI).

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Question 15

Marker use

Good **mesh topology** (the structure of polygons in an object) using four sided polygons is an important factor when creating effective 3D objects.

Explain why this is so.

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Question 16

Marker use

In **3D** architectural and automotive visualisation **HDRI** files are often used in the production workflow to create a rendered image.

What do the letters HDRI stand for? What are the advantages of using **image-based lighting (IBL)** with a HDRI file to light a scene?

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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.
- 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	
C6	/ Alpha

Guide to Exam Structure

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Section C	4	1	40 minutes	
Section D	6	1	40 minutes	
Totals	26	10	120 minutes (2 hours)	

Criterion

You **must** make sure your answer addresses:

- Criterion 6 analyse the impact of design in society.

Section C

- Answer **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

A local high school has identified the need for more outside seating as part of a new student conversation space. The seating must be comfortable for students, be resistant to damage and wear, and mostly be constructed from a recycled material. The seating must be arranged to encourage conversation and student interaction.

You and your design team are approached to design, prototype and build the seating system. You hope to market the design to other schools.

- a) Discuss in detail the sort of consultation and decisions that you would need to make prior to production of the seating. **Sustainable design thinking** should be used when considering the choice of recycled materials.
- b) Sketch **at least two (2)** preliminary designs with annotations justifying how the seating meets the design requirements.

OR

Question 18

The Tasmanian Government wants to attract more visitors to enjoy Tasmania's unique natural environment in an environmentally sustainable way.

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 development phase to communicate the **key environmental and social messages**.
- b) Sketch a storyboard of **at least six (6)** image boards with supporting annotations clearly outlining the key social and environmental messages.

OR

Question 19

Effective branding is important for any new business to build recognition and awareness. A local food company has won an airline contract to develop a healthy slice called 'NATURE'S BOUNTY'. It will be served to passengers on flights within Australia.

The company requires a visual identity (logo) for their packaging. The marketing focus is that the slice is healthy, tasty, and made from locally sourced ingredients.

- a) Discuss the **social, ethical, and environmental factors** to be considered when designing the branding for this product.
- b) Provide **sketches of three (3) logo concepts** that the company 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 20

An animation company is producing a short G-rated series for television and online broadcasting. The series title is *Sea Breeze*. It is about a ten-year-old girl and twelve-year-old boy's adventures in a seaside town.

The company requires concept designs for the characters.

- a) Discuss in detail the types of **social and ethical consultations and decisions** that would need to be made before production commences.
- b) Produce **detailed sketches of front and side views of one (1)** of the characters. 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).

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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External Assessment 2024

COMPUTER GRAPHICS AND DESIGN

CGD315118

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

	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	
Totals	26	10	120 minutes (2 hours)	

Criterion

You **must** make sure your answer addresses:

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

Section D

- Answer **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)

Designers who produce 3D models have a diverse range of toolsets available to them across multiple 3D graphics applications. These enable the designer to construct 3D models using a variety of different methods.

- a) Compare and contrast the production methods of **polygon-based modelling, digital sculpting** and **3D scanning**.
- b) Discuss the advantages and disadvantages of each method listed above considering the integrity of the resultant 3D geometry.

OR

Question 22 (Video and Motion Graphics)

Motion capture and **performance capture** are two methods designers use to create digital content using actors.

- a) Compare and contrast the different approaches of motion capture and performance capture.
- b) Discuss **two (2)** different industry contexts where these capture technologies are used.

OR

Question 23 (Solid Modelling and 3D Digital Fabrication)

Finite element analysis (FEA) is a valuable system in the areas of civil, aerospace and automotive engineering.

- a) Describe the process and application of **FEA** explaining why solid modelling is used.
- b) Discuss a practical example where this system may be used in each of the industry areas listed above.

OR

Question 24 (Animation)

When designers produce animated content, they often apply many of the **12 principles of animation** as described in texts such as *Disney Animation: The Illusion of Life* by Frank Thomas and Ollie Johnston.

- a) Explain some of the systems and processes that 2D and 3D animation applications use that enable designers to apply these principles and produce effective content.
- b) Compare and contrast the application of these principles in digital and analogue animation.

OR

Question 25 (Asset development, game design and production)

Game development is ever-evolving, shaped by technological advancements, shifting consumer preferences, and a relentless drive for innovation. It can be argued that game development is one of the main drivers of computer graphic advances.

An analysis of the trends, tools and technologies in game development identifies some of the emerging trends as: **Cloud Gaming, Cross-Platform Development, Artificial Intelligence / Machine Learning, Virtual Reality / Augmented Reality**, and the **Metaverse** (interconnected virtual worlds).

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

OR

Question 26 (Interactive Design)

Photorealistic visualisation is now an integral part of the workflow of many architectural design practices. Clients are increasingly demanding the ability to interact with the visualisation rather than passively watch a walkthrough.

Augmented Reality (AR) and **Virtual Reality (VR)** may be used to experience a seamless integration of virtual and real content.

- a) Discuss the advantages of either **AR** or **VR** from the designer's perspective.
- b) Discuss the technical challenges for the designer in the development of this type of content.



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