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External Assessment 2022

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 from this section.
- Write your answers in the spaces provided in this exam paper.
- The exam is **two (2)** hours in length. It is suggested that you spend **approximately 20 minutes** in total answering the questions in this section.
- All answers must be written in **English**.
- You **must** make sure your answers address:
 - Criterion 6 analyse the impact of design in society.

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Guide to Exam Structure

	Questions available	Questions to answer	Suggested working time	Marks available
Section A	8	4	20 minutes	Assessed using extended ratings of: A+ to z
Section B	8	4	20 minutes	Assessed using extended ratings of: A+ to z
Section C	4	1	40 minutes	Assessed using extended ratings of: A+ to z
Section D	6	1	40 minutes	Assessed using extended ratings of: A+ to z
Totals	26	10	120 minutes (2 hours)	A+ to z rating

Section A

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

Question 1

Design principles such as **balance, contrast, emphasis,** and **proportion** help to communicate a message to a viewer regardless of language.

Using an **annotated sketch**, describe how a designer might use **two (2)** of the above principles to convey a message that warns of a safety hazard.

Marker use

Section A continues

Question 2

Understanding colour theory is an important aspect of design thinking to convey mood or emotion in design. What might be the **emotions** or **moods** that a designer is seeking to convey, through the use of warm colours such as yellows and oranges?

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Question 3

Renowned 20th Century German industrial designer Dieter Rams described **10 principles of good design** that have become a model set of principles for many designers. One of these principles is “**good design is environmentally friendly**”. Why would Rams propose this as a principle of good design?

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Section A continues

Question 4

What are the **intellectual property rights (copyright)** implications that a **designer** needs to be aware of when contracted to **produce graphic content**, from the perspective of the contractor and the client?

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Question 5

Sustainable design is becoming an increasingly important consideration for designers working across a diverse range of design disciplines. What are some of the **key principles** to consider in the context of sustainable design?

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Section A continues

Section A continued

Marker use

Question 6

When it comes to design, many argue that **ease of use** is more important than **user desirability**. When you are designing a new product, which do you think is the most important and why?

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Question 7

A designer has been asked to develop a prototype of a new off-grid holiday studio apartment. What might be some of the **functional and environmental design** considerations required when designing a prototype for such a setting?

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Section A continues

Question 8

The **design process** includes several recognised stages, one of which is **the brief**. What would be some of the important **social**, **ethical**, and **environmental issues** that need to be considered in the brief when designing a chair for use in a café?

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End of Section A

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COMPUTER GRAPHICS AND DESIGN

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Section **B**

Pages 12

Questions 8

Suggested working time: 20 minutes

Instructions:

- Answer **four (4)** questions from this section.
- Write your answers in the spaces provided in this exam paper.
- The exam is **two (2)** hours in length. It is suggested that you spend **approximately 20 minutes** in total answering the questions in this section.
- All answers must be written in **English**.
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 - Criterion 7 describe and apply key features, applications and influences on contemporary computer graphics systems.

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Guide to Exam Structure

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Section D	6	1	40 minutes	Assessed using extended ratings of: A+ to z
Totals	26	10	120 minutes (2 hours)	A+ to z rating

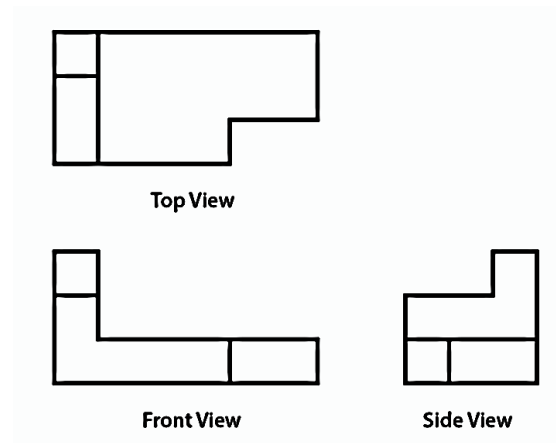
Section B

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

Question 9

Perspective and **isometric** drawing systems are common methods designers use to represent objects in a realistic way on a flat surface. This surface can be a computer screen or a piece of paper. Sketch an isometric **and** a one-point (parallel) perspective representation of the simple block shown below to demonstrate your understanding of these visual communication systems.

Marker use



Section B continues

Question 10

There are many different **raster graphic based file formats** available to the computer graphic designer when they produce visual content. Compare the key features of **two (2)** raster graphic formats, in terms of colour depth, image compression techniques and the type of images they are best suited for.

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Question 11

A designer has saved a brightly coloured product visualisation **rendered 3D image** in the **8-bit PNG format** for a client, only to find that some of the colours have shifted and there is some evidence of apparent banding. Describe why this has happened and what could be done to produce a high quality rendered 3D image.

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Section B continues

Question 12

Why do most 3D graphic applications typically have a **multi-view user interface layout**? Explain why it is beneficial to be able to adjust the display mode in these viewports.

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Question 13

Vertex, edge and face are components associated with the production of 3D graphic models when producing polygon-based objects. Define each of these terms and the specific roles they play in producing such graphic content.

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Section B continues

Question 14

Contemporary animations often use **computer-generated effects** like fire, moving water, falling leaves and clouds moving across the sky. Describe a system and process used to place **one (1)** of these effects into an animation.

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Question 15

A fellow designer has sought your advice about producing a short animation of a chicken running around an enclosed chicken coop. She has heard of **pose to pose** and **straight ahead** as methods of creating animation. Provide some advice by briefly explaining these **two (2)** animation methods and their relative strengths and weaknesses for producing such an animation.

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Section B continues

Question 16

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

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End of Section B

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Section **C**

Pages 12

Questions 4

Suggested working time: 40 minutes

Instructions:

- Answer **one (1)** question from this section.
- Write your answer in the spaces provided in this exam paper.
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Totals	26	10	120 minutes (2 hours)	A+ to z rating

Section C

- Answer **one (1)** question.
 - 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 6 – 8.
 - Section C carries double the weight of Section A.
-

Question 17

There are significant health concerns about peoples' over-exposure to the sun and the links to skin cancer in Australia.

Your design team have been asked to design and develop a 30-second advertisement incorporating both animation and live footage as a central part of the advertising campaign. It will be shown on television and a range of social media platforms.

- a) Describe the design process for developing such an advertisement before production can begin. Outline the key social and environmental messages that you will need to communicate.
- b) Sketch a storyboard with at least **eight (8)** image boards. Include supporting annotations, clearly outlining the different shots for the advertisement.

OR

Question 18

New broadacre housing developments often lack sufficient public open space for the community to play and relax. As part of a new community park, a council is seeking a design concept for a picnic module consisting of a table, seating and BBQ space. They require significant use of sustainably sourced materials in the design concept.

You and your design team are approached to design, prototype and build the picnic module, which you hope will also be marketed to other councils.

- a) Describe in detail the sort of decisions and consultation that you would need to make prior to production of the picnic module. Consideration should be made of the need for the application of sustainable design thinking in terms of the design and choice of materials for manufacture.
- b) **Sketch at least two (2)** preliminary designs, with notes clearly showing how they meet the requirements for the picnic space. It needs to be:
 - aesthetically attractive with a modern feel
 - comfortable to use
 - resistant to damage and wear.

OR

Section C continues

Section C continued

Question 19

Effective branding is critically important for any new business to build recognition and brand awareness. A Tasmanian start-up company has decided to take advantage of Tasmania's clean, green image and produce bottled water captured from rainwater on Tasmania's west coast. The product is aimed at the Asian and European market. The company calls their brand Sky Juice. The company requires a visual identity (logo) for their product packaging and marketing materials. The marketing focus is that the water is pure and pristine, sourced from the edge of the world.

- a) Describe the social, ethical, and environmental factors to be considered in designing this beverage brand for such a target market.
- b) Describe the processes you would need to consider in developing a logo for effective branding, from the brief until the finalisation of the design.
- c) Provide sketches of **three (3)** logo concepts that the company could select from. Annotate the three logo designs, considering the application of specific design elements and principles for each design.

OR

Question 20

A 3D animation company is producing a short series for television and online broadcasting. The series title is The Bot Kids. It is about a ten (10) year old boy robot and thirteen (13) year old girl robot and their adventures in a futuristic town.

- a) Describe the processes a designer/developer would go through to produce a character design for **one (1)** of the characters prior to commencing modelling. In this description of the process, also discuss the social and ethical considerations of designing characters for a younger audience.
- b) Produce **detailed front and side-on sketched views** of **one (1)** of the characters. Show their persona (body & facial features) and typical clothing, with annotations about how the design reflects their personality traits.

Section C continues

Section C continued

Marker use

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

Question Number:

Write the question number you are answering in the box.

Section C continues

Section C continued

Marker use

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

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End of Section C

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COMPUTER GRAPHICS AND DESIGN

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Section **D**

Pages 12

Questions 6

Suggested working time: 40 minutes

Instructions:

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Section D	6	1	40 minutes	Assessed using extended ratings of: A+ to z
Totals	26	10	120 minutes (2 hours)	A+ to z rating

Section D

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

Question 21 (3D Modelling)

3D modellers have a diverse range of toolsets available to them across a wide range of 3D graphics applications. Compare and contrast the production methods of **polygon-based modelling**, **digital sculpting** and **3D scanning**. Include in your response the advantages and disadvantages of each method, considering the integrity of the resultant 3D geometry.

OR

Question 22 (Video and Motion Graphics)

Motion capture and **rotoscoping** are two methods designers use to create digital content.

- Compare and contrast the different approaches of motion capture and rotoscoping.
- Describe **two (2)** different industry contexts where motion capture technology is employed.

OR

Question 23 (Solid Modelling and 3D Digital Fabrication)

3D Printing has been a game changer, particularly in rapid prototyping for product manufacturing. Explain the process of 3D printing, from model development, to the production of the final physical prototype and how it benefits the design process in product manufacturing.

OR

Question 24 (Animation)

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

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.

What may be the benefits of combining both 2D and 3D components within a sequence?

OR

Section D continues

Section D continued

Question 25 (Game Design and Production)

A **game engine** is a software development environment primarily used for creating video games.

- a) Game assets can be produced entirely within the game engine or outside. Discuss the advantages and disadvantages of both.
- b) Describe some of the key content development features of a game engine of your choice

OR

Question 26 (Interactive Design)

Augmented Reality (AR) and **Virtual Reality (VR)** have become influential technologies for communicating design content across diverse design contexts. Explain the similarities and differences between AR and VR. Provide examples of how each of these technologies are being used in the retail and architectural industries.

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End of Section D

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