

External Assessment 2023

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. 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 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 (3 hours)	A+ to z rating

Criteria

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

- Criterion 6 analyse the impact of design in society.

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Section A

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

Question 1

The design process has several recognisable steps or stages, but it is not a linear process and has feedback loops between stages.

Give **two (2)** practical examples of scenarios where the designer needs to go back and make changes to previous stages.

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Question 2

Marker use

The elements and principles of design are the building blocks of graphic communication.

Use a combination of text and drawings to illustrate **one (1)** of the following: Hot, Cold, or Heavy. Explain in your answer how the elements and principles conform to social understanding.

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Question 3

Marker use

The design brief should not describe the solution to the problem but outline the core details, expectations, and constraints of a design challenge.

Why is this important to the overall outcome of the design?

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Question 4

Marker use

Google has stated that every image that is artificially generated using Google's AI tools will feature an embedded watermark, along with metadata, to identify that it is a synthetic image.

Why would you normally embed a watermark in an image file and what issue is Google highlighting with this step?

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Question 5

Marker use

“If it can't be reduced, reused, repaired, rebuilt, refurbished, refinished, resold, recycled or composted, then it should be restricted, redesigned or removed from production” is a quote taken from lyrics from a song by Pete Seeger.

What does this sentiment mean for product designers?

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Question 6

Marker use

The design idiom “Form follows function” is well known, but if this were truly the case, products with the same function would all look the same and there would be little choice.

Describe the importance of both form and function in product design and give **two (2)** real world examples to back up your answer.

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Question 7

Marker use

During the pandemic many people were forced to work from home or remotely and so had to develop the skills and strategies to work cooperatively across different locations. Graphic designers have been doing this for a long time.

Outline **five (5)** skills or strategies that you would advise designers to adopt when working as a team over the Internet?

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Question 8

Marker use

“To steal ideas from one person is plagiarism; to steal from many is research.” – Steven Wright.

Referring to previous designs is a common practice; this is evident in the field of retro or vintage designs.

How is this practice of collecting ideas evident in good design practice? Give **two (2)** practical examples of where a classic design has been reworked in a modern form.

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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 in 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 the listed criterion.

Marker use	
C7	/ Alpha

Guide to Exam Structure

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Section B	8	4	20 minutes	
Section C	4	1	40 minutes	
Section D	6	1	40 minutes	
Totals	26	10	120 minutes (3 hours)	A+ to z rating

Criteria

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

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

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Section B

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

Question 9

The Graphical User Interface on computers, the WIMP (Windows Icon Menus Pointer), was first developed in 1973 by Xerox and the first touch screen phone was developed by IBM in 1992. These GUI (Graphical User Interfaces) have served well for a long time.

Outline **two (2)** more recent interface technologies and their applications.

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Question 10

Marker use

Figure 1 represents the screen of a 3D modelling program. The top right window is blank. From the images on the screen, sketch the view that you would see in the top right window.

State the type of drawing you have sketched and outline the drawing conventions that it adheres to.

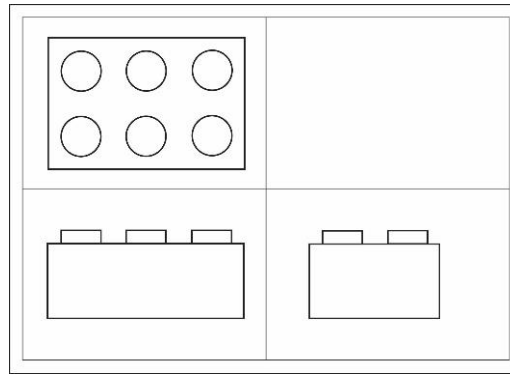


Figure 1: Diagram of the screen of a 3D modelling program, with a blank top right window.

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Question 12

Marker use

An increase in network bandwidth has enabled the mainstream adoption of streaming services, video conferencing, multi-player network gaming, online shopping, and financial services. But file compression is still important in the design of efficient online graphics.

Briefly discuss **four (4)** types of compressed files and where they are best used.

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Question 13

Marker use

With reference to computer graphic systems, explain the difference between a native file type and an open file type.

Give **two (2)** examples of each and their application and state whether they are raster or vector-based files.

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Question 14

Mesh topography is particularly important in 3D modelling.

Give **five (5)** examples of problems which can occur when creating a character using a 3D mesh.

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Question 15

Marker use

There are **two (2)** main types of CAM (Computer Aided Manufacturing), Additive and Subtractive.

Describe both types and give examples of the materials involved and where each could be effectively used.

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Question 16

Tweening and motion capture are two (2) vastly different systems that can be used to develop animation.

Describe the key concepts of these two (2) systems in creating animated content and give examples where each could effectively be used.

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End of Section B
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COMPUTER GRAPHICS AND DESIGN

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Section **C**

Pages: 12

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. It is suggested that you spend **approximately 40 minutes** in total answering the question in this section.
- 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 D	6	1	40 minutes	
Totals	26	10	120 minutes (3 hours)	A+ to z rating

Criteria

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

- Criterion 6 analyse the impact of design in society.

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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.
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Question 17

Throughout the COVID-19 pandemic a common feature in all commercial premises has been the hand sanitising station. Many of these stations are poorly designed and either don't work properly because they have run out of sanitiser or create a mess and generate waste. Most don't look inviting or don't give the appropriate information needed.

- a) Discuss the social, ethical, and environmental considerations that should be taken into account in the development of this product.
- b) Make a series of sketches for the design of a sanitising station that functions well for a range of users, is environmentally friendly, looks appealing and communicates the need for good hygiene. Annotate your sketches to clearly indicate your design choices.

OR

Question 18

Many local councils have spent lots of money to make elaborate playgrounds in their municipalities to attract visitors and support the needs of their communities.

Design a playground with the features that would make it worthy of a visit and address any social, ethical, and environmental issues.

- a) Describe the process that you would undertake to develop plans for the playground, which would reflect current societal expectations.
- b) Discuss the issues that need to be taken into account in your design.
- c) Draw the initial layout of the playground specifying details of the features you would include. (The site plan of the playground is the same dimensions as an A4 page.)

OR

Question 19

Providing temporary accommodation is a current social issue due to a range of factors such as fires, floods, and economic disadvantage. Local governments have called for designs of portable, compact, affordable living facilities for short to medium-term emergency accommodation.

- a) Describe the social, ethical, and environmental considerations you would take into account when developing a solution for this design problem.
- b) Sketch developmental drawings showing the design features that you would include in such a system, showing the individual unit layout. Annotate your sketches to clearly indicate your design choices.
- c) Sketch the possible ways these units could be deployed on site.

OR

Question 20

Occupations like physiotherapists, exercise instructors and yoga teachers all aim to instruct clients in specific human movements. You have been asked to design an animated character which could be used in one of these applications to guide clients through a defined set of movements.

- a) Discuss the social and ethical considerations you would take into account when designing this character for this specific purpose and explain the advantages of using an animated 3D character rather than just using video footage of a person.
- b) Sketch a design of the character that could be used as a basis for a computer model.
- c) Create storyboards (at least **five (5)** boards) explaining one of the possible routines the animated character could complete. Use an exercise of your choice.

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

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:

- 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. It is suggested that you spend **approximately 40 minutes** in total answering the question in this section.
- 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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Section C	4	1	40 minutes	
Section D	6	1	40 minutes	
Totals	26	10	120 minutes (3 hours)	

Criteria

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

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

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Section D

- Answer **one (1)** question.
 - 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 is an array of different methods, techniques, and software solutions for creating 3D models. These include box or subdivision modelling, edge modelling, 3D sculpting, and 3D scanning.

Outline the characteristics of the four (4) modelling techniques listed above and give real world examples of where each technique would best be used.

OR

Question 22 (Video and Motion Graphics)

Video and motion graphics have become increasingly sophisticated and accessible and have applications from social media to motion pictures.

Outline the difference between motion graphics and video graphics.

Define some of the technical innovations in video and motion graphics.

Discuss their application across a range of platforms from social media to motion pictures, illustrating your answer with examples.

OR

Question 23 (Solid Modelling and 3D Digital Fabrication)

3D printing and CNC machining are two (2) different technologies which are often grouped together because they both produce physical products from computer models. But within each technology there are significant differences in the methods of producing a physical product.

Explain the differences between 3D printing and CNC machining and give examples of where each technology can be used to its best advantage.

OR

Question 24 (Asset Development, Game Design and Production)

The quality of graphic design, the realism of the game environment and the connectivity of multiplayer games has increased markedly in recent times.

Discuss the advances in technology that game developers have used to simulate a higher level of detail in the game environment.

Describe how a game asset is best developed to ensure effective functionality and visual quality.

OR

Question 25 (Interactive design)

Walk Throughs, Interactive Graphics, Virtual Reality and Augmented Reality can be seen as a technological progression of interactive design.

Describe each of these four (4) technologies and give examples of where they can be used to good effect.

OR

Question 26 (Animation)

The creation of a professionally produced animated production, whether 2D or 3D, is a huge undertaking and can only be completed using teams of graphic designers with specific expertise.

Describe the stages or workflow that would be required to produce an animated story from concept through to the finished production including Pre-Production, Production and Post-Production stages.

End of Section D
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