

PLACE LABEL HERE

Tasmanian Secondary Assessment Board

Tasmanian Certificate of Education

External Assessment

2002

TE876 COMPUTER GRAPHICS AND DESIGN

Time: Three Hours

On the basis of your performance in this examination, the examiners will provide a rating of A, B, C or D on each of the following criteria taken from the syllabus statement:

Criterion 5 Solve problems.

Criterion 9 Demonstrate an understanding of technological change.

Questions: 27
Pages: 23

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CANDIDATE INSTRUCTIONS

Candidates must attempt:

Section A – Part I	SIX questions
Part II	ONE question
Section B	EIGHT questions
Section C	ONE question
Section D	ONE question

All sections are of equal value.

All answers must be written in the spaces provided on the examination paper.

Care should be taken with the presentation of answers. The answers should be comprehensive and to the point. Diagrams are encouraged but **NOT** to the exclusion of all text, **except** in **Section A – Part II** and **Section C** where labelled sketches are required.

It is recommended that you spend approximately:

- 45 minutes on Section A
- 45 minutes on Section B
- 45 minutes on Section C
- 45 minutes on Section D

SECTION A – PART I

This section assesses **Criterion 5**.

Answer **SIX** questions from this **Part**.

Question 1

What computer graphical information would you include in a slide show and/or animation demonstrating a new range of ergonomic chairs?

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Question 2

A large graphics file (2.5 Gb) requires distribution to ten colleagues. Describe **three** ways that this might be achieved and discuss the time factor with each method.

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Question 3

Software is required to produce complex photorealistic animations. What criteria would you use to evaluate the software prior to purchase.

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Question 4

Discuss the advantages of 'web support' for a software product.

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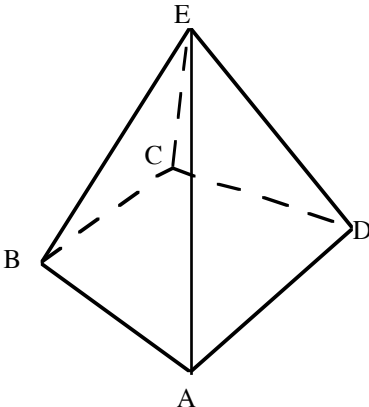
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Question 5

A square pyramid 75m x 75m has a vertical height of 90m. It sits on the World Coordinate Plane (WCP) and the co-ordinates of the left hand side of the base are A (30,20,0) and B (30,95,0). Calculate the other base (C and D) and the apex (E) co-ordinates if the pyramid is lifted 20m off the WCP.



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Question 6

There are a range of input devices available to the graphic designer. Recommend and describe **four** that would be required in a modern architectural design office.

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Question 7

Photorealism is a key element in today's graphic design. Describe how 'ray tracing', 'radiosity' and 'texture-mapping' have impacted on photorealism.

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Question 8

Describe **four** different storage devices for storing computer graphic files, and describe a procedure for backing up and archiving these files.

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SECTION A – PART II

Answer **ONE** question from this **Part**.

Your answer should consist of a sketch or series of sketches followed by written notes explaining important features of the design.

Question 9

Explain in detail the need for an animation storyboard then produce a storyboard for the following:

A new jetty at a suburban beach has been proposed as part of an election promise. You have been approached to produce a short video that puts a positive 'spin' on the project.

Produce a storyboard that outlines the benefits of the jetty project. It should contain at least 6 camera shots showing positive uses of the jetty and provide supporting text.

Question 10

Tasmanian Police have introduced patrols with the use of mountain bikes. A volunteer first-aid organisation are looking at a similar proposal with paramedics using bikes in crowded areas.

There are three related design problems presented below. Choose and discuss **one** problem and produce a six stage (or more) instruction diagram showing how you could solve that problem. Support your diagrams and sketches with appropriate text.

(a) Bicycle paramedics need to carry a large amount of emergency equipment and have quick access to it.

Or

(b) The paramedics bike is often unbalanced by the heavy equipment load when mobile and stationary.

Or

(c) The bicycle paramedic needs to be easily defined in crowds during emergencies and while on regular patrols.

Sketch Sheet for Question No:

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SECTION B

Answer **EIGHT** questions from this section.

All questions are of equal value.

This section assesses **Criterion 9**.

Question 11

What effect has the Internet had on computer graphics?

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Question 12

What advantages does a 3D model have over computer generated 2D orthographical images?

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Question 13

Describe the differences between the Phong shading model and the Gouraud method of shading and discuss the advantages of one method over the other.

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Question 14

Describe how a designer using a CAD drawing package, might effectively use layers.

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Question 15

There have been numerous improvements with operating systems. How has the graphic design industry benefited?

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Question 16

Describe Finite Element Analysis (FEA) and discuss its advantages over the traditional modes of load and stress testing.

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Question 21

Describe the common file formats used by web developers to present graphics and animation on their web sites. Discuss the advantages of these file types.

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Question 22

Many industries and professions are incorporating simulation software into their operation. Name **two** industries or professions that utilise this software and discuss how each benefits from its use.

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SECTION C

Answer **ONE** question from this section.

Answers should consist of an essay accompanied by a sketch as described in the question.

Clearly indicate which question you are answering.

This section assesses **Criterion 5**.

Question 23

You have been asked to develop an on-line virtual supermarket.

Discuss how you would approach this task taking into account such things as presentation, navigation, information, use of multi-media (graphics, video, sound, interactivity) orders, payment, and the timed delivery of goods.

Use preliminary sketches with notations to show the layout of your site.

Question 24

A survey conducted by a disabled persons association has revealed that there is a need for an all-terrain wheelchair. For example, this would allow easier access into national parks.

You and your design team decide to build an **all-terrain wheelchair** which you hope can be marketed for wider interest and sales.

- Provide notes showing the sorts of decisions that you would need to make prior to designing the wheelchair (design considerations).
- Sketch at least **two** preliminary designs with notation showing clearly what is required from an all-terrain wheelchair.

Sketch Sheet for Question No:

SECTION D

Answer **ONE** question from this section.

Clearly state which question you are answering.

All questions are of equal value.

This section assesses **Criterion 9**.

Question 25

Accident analysis and traffic-flow analysis are responsibilities taken on by associated government bodies to make our roads and highways safer.

What role could computer graphics have in the development of an accident analysis graphics team? Discuss the wide variety of role and skill sets required for individuals within the team.

Question 26

‘Building simulation is not a sharper axe, not even a chainsaw. It is a bulldozer that has driver’s seat high enough that you can always look above tree level.’ (Multi-CAD 2002)

A new breed of software applications called building simulators, are used to craft a resource database called the Virtual Building.

Explore the possibilities of such a database, and discuss how the roles of town planners, architects and engineers will be affected.

Question 27

Special effects have played an integral part in the entertainment industry since the advent of the movie camera.

- Give a brief history of the evolution of special effects leading up to the present.
- Discuss the advantages of special effects using the latest digital video technology.
- Predict some advances that we might see in the future.

