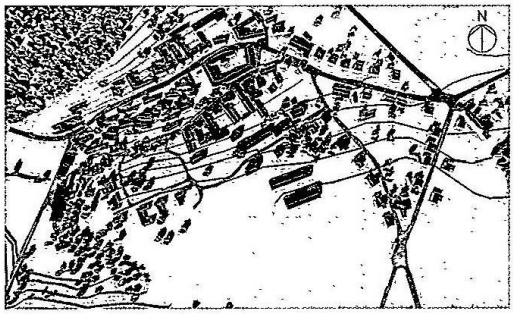
Candidate 3 evidence

SECTION 1 — 50 marks

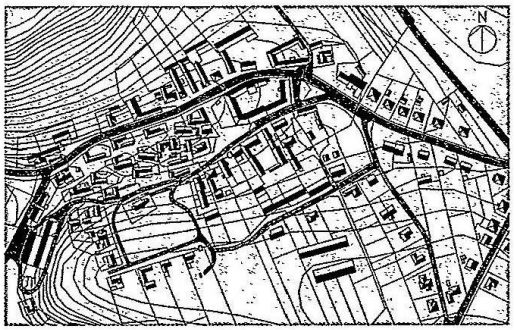
Attempt ALL questions

1. A planning proposal for a large housing development has been submitted by an architect to the local council.

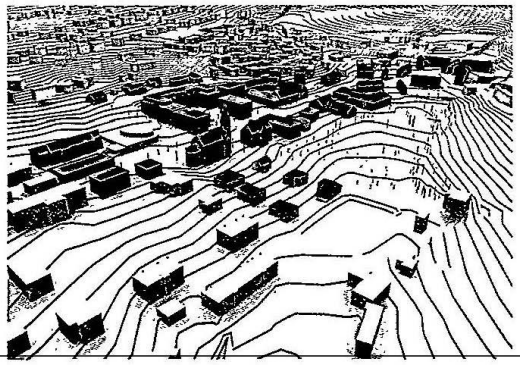
   A variety of graphics of the development are shown below.



Graphic 1



Graphic 2



Graphic 3

1. (continued)

(a) Describe, with reference to graphics 1–3, how these would be used by:

(i) the housing developer;

Graphics 2-3 shows the placement of the houses. The use of red colour shows what the houses are. Shows how large the area is and shows the contour lines shows where the trees are placed.

(ii) the house buyer.

Graphics 2- Shows the area Surrounding the house and plot sizes of the house. Graphics 3 shows how 3D representation of the house and where it is placed.

Before planning can be granted a public consultation must take place for local residents. The company produced a range of graphic communications to showcase the housing development, these included:

- 2D pictorial drawings
- 3D printed scale model of the development
- Animations.

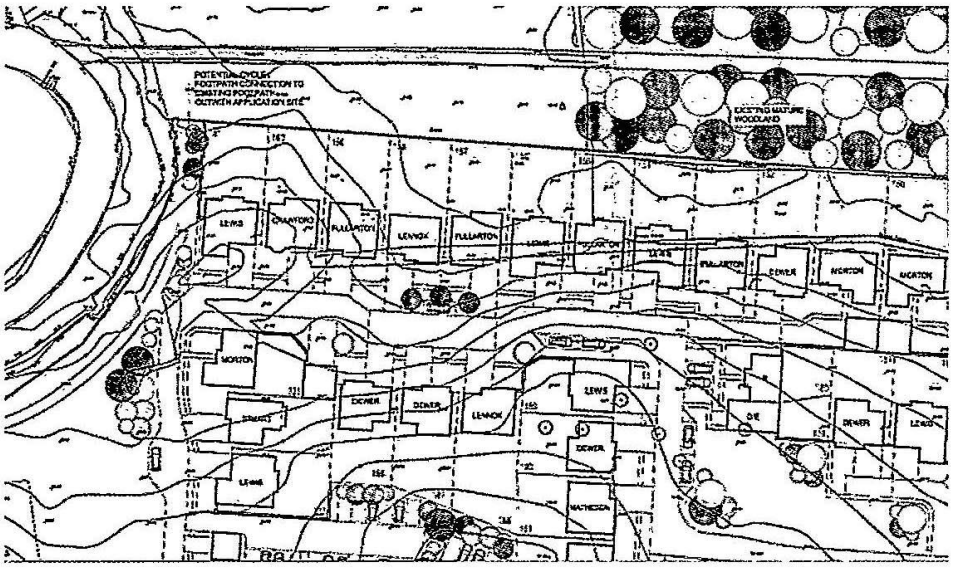
(b) Describe **two** ways in which these graphic communications could help the housing company achieve a positive public image.

3D model will give the public an insight of how the area will look. It will help them visualise it. Animations can shows the before and after and can show how the area will look with cars and people.

2D pictorial drawings will show how much area is being used and the size of each plot. [Turn over

1. (continued)

A topographical survey was produced for the area. An example of this type of graphic is shown below.

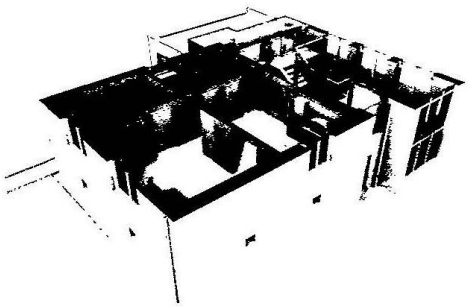


(c) Describe **two** reasons why this type of graphic is of value to the architect.

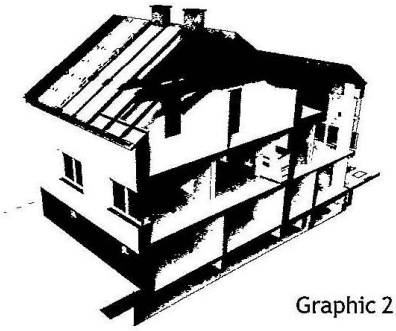
It gives an over view of the area and shows the size of plot for each house. The use of green shows where trees are and where they are going to be placed. The use of contour lines shows the incline of the land.

1. **(continued)**

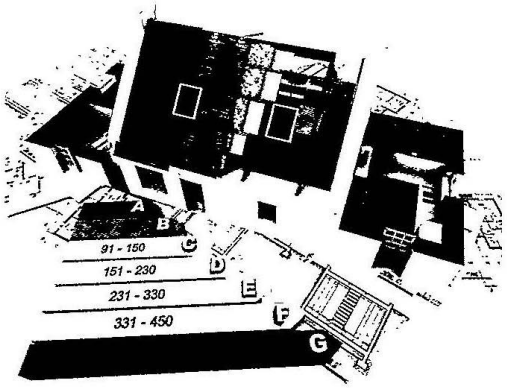
Various graphics of houses in the development are shown.



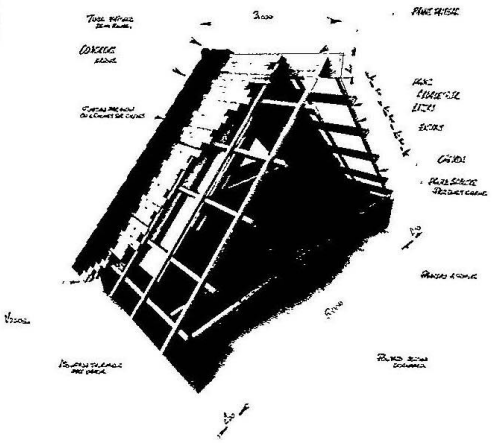
Graphic 1



Graphic 2



Graphic 3



Graphic 4

Graphic 5

1. (continued)

(d) Describe, with reference to the graphics 1 to 5, what information can be gained that would be relevant to:

(i) the construction trades;

Graphic 4 - Shows builders the dimension of the house and different material which is being used. Graphics 3 - Shows how the finished product is supposed to look. Graphics 4 shows the different material of the house and order they are meant to be placed.

(ii) the company sales team.

Graphic 3 - Sales team can advertise how energy efficient the house is and by showing cut open it reveals the different materials which has been used to make it efficient.

GRAPHIC 5 - Shows the consumer the finished product. Helps visualise how it will look.

The housing market is very competitive. Promotion of new developments is a high priority for the company.

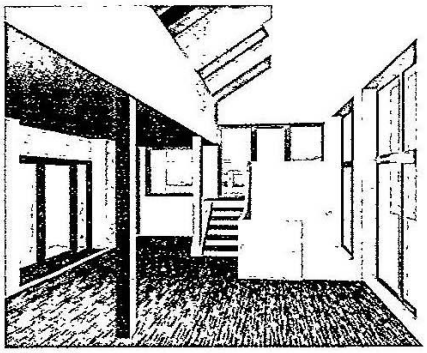
(e) Explain **two** ways in which internet based **graphic communications** could be beneficial to the housing company.

Can be accessed through multiple platforms like phones, computers tablets etc. Can be accessed at any time, 24/7. Company can send the graphics via email to show clients the proposed build.

Saves materials as company doesn't have to print off. Its Eco friendly.

1. (continued)

A fly-through of the available house styles and a virtual tour of the housing development are available for the target market to view.



(f) State **two** advantages of using motion tweening in this style of graphic communication.

It is cost effective. It saves time as you put in the start frame and the end frame and the software fills in the in between.

When the architect runs the fly-through a problem is encountered. When entering the building the animation plunges into darkness.

(g) Describe how the lighting in the animation could be changed to rectify this problem.

Could use IBL and set the graphic in a lighting from the real world.

1. **(continued)**

The company's Graphic Designer creates graphic representations of how the houses may look prior to construction.

(h) Explain the use of the different illustration techniques used on the promotional work for the graphics shown.

(i) Graphic 1

Technique 1

IBL adds in the shadow to create a realistic look. It shows the detail of the roof and the house against the real world background.

Technique 2

Colour has been used to show the colour of the finished product.

(ii) Graphic 2

Technique 1

IBL shows the visual image of the house in real world lighting.

Technique 2

Lighting shows how the house looks in different times.

Shows the proposed look.

2. A caravan manufacturer is releasing their new range of caravans in time for the spring season. A computer model is produced of the caravan shell prior to manufacture.

(a) Describe the process of converting a 3D computer model into a 3D printed model.

Model has to be converted to an STL file. STEP file then has to be uploaded on the the CNC software to print the model. CNC software will map out the process and rectify any problems then it will print.

(b) Explain, other than digital testing methods, a benefit of producing the 3D printed model for:

(i) the caravan designer;

The designer can test the how the caravan looks in different lighting. Can look for any faults on the caravan has. Designer can see the finished product and can edit the caravan by trying different colour material etc.

(ii) the caravan manufacturer.

They can test the caravan for any faults. They can see if there is any defect in the first product and can rectify this by altering the tool path. They can test the caravan in different environments to see how much impact it can take.

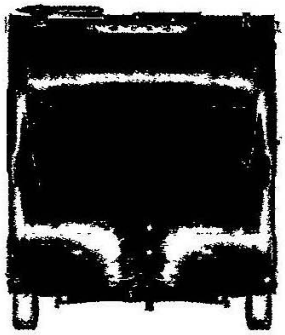
2. (continued)

(c) State two digital testing methods that could have been applied to the 3D computer models.

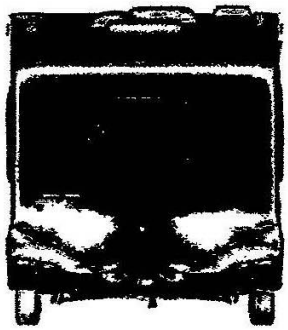
CFD (computerd Finite ~~Element~~ Dynamics)

FEA (Finite element analysis)

The results of the digital testing are shown below. The images show the forces that act upon the caravan while in transit. The red areas show the greatest drag forces.



New Caravan Model



Competitor Model

(d) Explain **two** advantages of this type of information to the target market.

- It shows the stress acting on the Caravan. It also shows how much force it can take.
- They can edit the product to reduce stress.
- It is a cost effective way as it does not require a prototype being made which will save material.
- The digital method will show more accurate results than manually testing it.
- It shows consumers how much force the caravan can handle.

[Turn over

2. (continued)

Rendered 3D computer models of the caravan interior and exterior were included in the promotional material.

(e) Describe what information could be gathered from the rendered images which may be of interest to the target market.

- It will help visualise how the final product will look like.
- It can show the different materials and colours which have been used in the caravan
- It will show how it will look in different lighting conditions in different ~~years~~ seasons of the year.
- Shows the caravan in lighting of the real world.

2. (continued)

Digital advertising is becoming an increasing part of promoting and selling products. The website designers intend to use VRML within the website to promote the new caravans internal **and** external details.

(f) Explain **two** advantages of using this format over other graphic media files.

You don't need a special software package to open it. It is compatible with every software

It is cost effective as people don't have to buy a special software

It has a small file size and can be easily shared.

(g) Describe how using a VRML format may increase interest for the product and create sales for the company.

It can be viewed by anyone and be accessed 24/7 over the internet. Consumers can open multiple pages of the product to see it.

It can be sent via email to consumers due to it's small file size.

3. A major publicity drive is being conducted by the Blood Transfusion Service to raise awareness of the importance of Giving Blood in Scotland. They plan to organise a range of 5K and 10K races across the country.

Graphic Designers have been tasked to design and produce a range of graphic communications to promote the event.

The event "Blood Run" logo has been produced as a vector graphic, to be used in the online and printed advertising.

(a) Describe **three** advantages of vector images compared to raster images.

- Vecter images ~~have~~ have much smaller file size compared to raster images.
- Vecter images can be edited and modified without losing quality (which means it can be edited and ~~left~~ the image will still be the same quality. ~~be opened up~~
- Vecter images can zoom in curves and not lose quality of the image and curve.

The colours used within the promotional work must incorporate the colours used in the existing Give Blood logo.

(b) Explain how the Graphic Designers can ensure an exact colour match is achieved.

They can use the exact same RGB or cmyk values to get the same colour. or if it is pantone colour only the company can use the same colour and can access it to get the exact colour match.

3. **(continued)**

When the client viewed the pre-production print of the flyer, they were disappointed with the paper and quality of product.

(c) Describe **two** changes that could be made to the paper to improve the quality before going to final print.

- It can be converted to CMYK colours which is used for printing. It is an RGB value as it is on the computer.
- They can send the client a digital copy of the flyer to see if they like it. This saves material and time.
- By sending it to client, the client can tell the designer to make changes to the flyer if he does not like certain parts.

[Turn over

3. **(continued)**

The process Offset Lithography was used to produce promotional work for the event.

3. (continued)

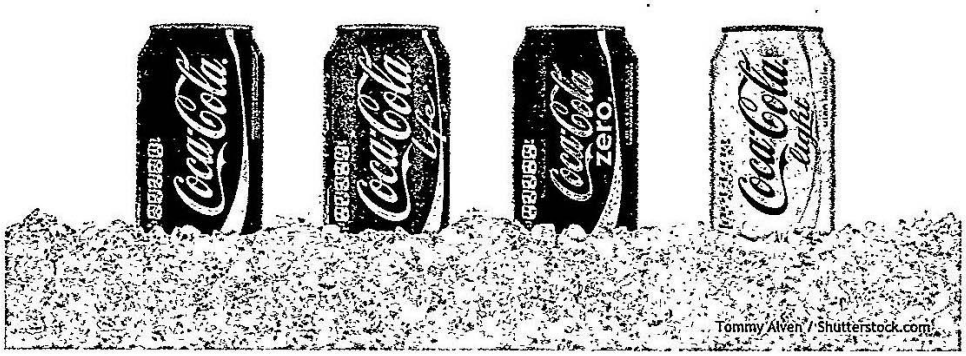
(d) Describe how the process would be used to produce the flyer shown opposite.

The flyer was made on the computer which is in RGB values. The RGB values was converted to CMYK colours which is used for printing. CMYK colours mixed gives black. The paper gets coated with one ~~clear~~ colour then goes through to get coated with another colour etc. This produces a quality ~~xxx~~ flyer.

SECTION 2 — 30 marks MA

Attempt ALL questions

4. A selection of current soft drinks products are shown below.



The Coca Cola typeface and white wavy line are common features used in this product range.

(a) Describe the effect these common features have in maintaining a brand identity.

The [redacted] continuity of the logo helps connect the drinks together. The use of the same font helps consumers to identify the brand name. The similar layout of the drinks also helps connect the ~~drinks~~ drinks and allows consumers to identify the brand.

4. **(continued)**

Companies such as Coca Cola invest significant sums of money to ensure that their brands are protected.

(b) Explain, giving **three** reasons, why companies protect their intellectual property rights.

- Prevent other companies from stealing brand names and colors.
- Prevent copies of the drink being made.
- The colours of the brand gives brand recognition. Allows consumer to identify the brand.

4. (continued)

The company uses a variety of advertising to showcase their products.

(c) Explain, with reference to the graphics shown on the **Supplementary Sheet for use with Question 4 (c)**, how the company have considered target market, colour and social responsibilities.

Target market The company has added their iconic logo in each of the graphics. This helps to connect the images and continuity of the logo helps the consumers to identify the brand name.

The use of adding in people and the planet helps to catch the attention of the consumers as it shows that company cares about people and their social life and show they are eco-friendly.

Colour

The use of colour in Graphic 3 helps catch the consumers attention as it refers to life. It shows that the company is eco-friendly and care about the environment.

Graphics 2 - the colour black suggests it is ~~Sweetening not people who va~~

Social responsibilities ~~Release~~ Graphics 1 - Shows the ~~the~~ consumer that ~~and company~~ the drink connects people and that people like it.

Graphics 3 - ~~Show~~ Shows ~~that~~ that the company cares about the same things as people care about.

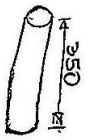
5. A range of pictorial and orthographic views of a new design for a trailer jockey wheel assembly are shown on the **Supplementary Sheets for use with Question 5.**

(a) Describe the 3D CAD modelling techniques used to create component "A" **in the most efficient and economical way.** Make reference to the dimensions from the drawings in your answer.

You may use sketches within your answer.

SKETCH - Sketch a circle of Ø30mm

3D MODEL - EXTRUDE THE SOLID CIRCLE BY 350MM

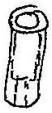


SKETCH - A circle on the top of the cylinder of Ø10

3D MODEL - CUT EXTRUD THE Ø10 CIRCLE BY 150MM and add a Screw thread.

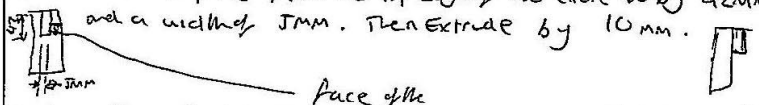
SKETCH ON the opposite face of the cylinder, the bottom of it and Sketch another circle of Ø30

3D MODEL - CUT EXTRUDE THE circle by 200MM



Add a plane in the center of the circle offset it by 34MM to edge of circle Plane. Plane then 3 point a rectangle

Sketch on the plane from the top edge of the circle to by 42MM and a width of 5MM. Then Extrude by 10mm.



Add a plane from the new rectangle and offset it by 11MM. on the new plane sketch a rectangle of 42MM width and 149MM length of R20mm. Extrude it by 5MM and sketch a Semi-Circle on the same plane and extrude that by 5MM.

on the center of the semi-circle sketch a circle of Ø20 and Extrud cut not by 5MM.

Mirror the part on to the other side of circle.

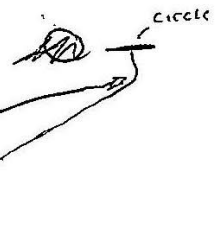
Page 22

5. (continued)

(b) Describe the 3D CAD modelling techniques used to create component "B" **in the most efficient and economical way.** Make reference to the dimensions from the drawings in your answer.

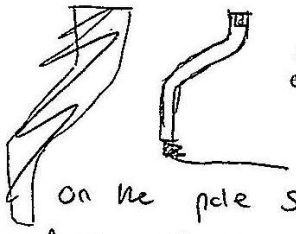
You may use sketches within your answer.

Sketch circle of Ø15 Ø15 then use Sweep tool. to get the shape of the pole. The sweep length is 125MM.



The curves of the sweep are R225MM

use circular reduce to get the shape of pole



Sketch circle on Ø15 circle of Ø10 and Cut Extrude by 10 MM and add a thread on to the Ø10 circle

On the pole Sketch a circle on the opposite face. Sketch a circle of Ø30 and Solid Extrude by 28MM.

on the 28MM circle sketch a new circle of Ø22.6 then Extrude by 2MM

on the new circle Sketch a circle of Ø30 and Extrude by 5MM

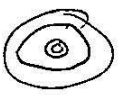
on the Ø30 circle Sketch a circle Ø10 and Extrude by 100 MM. After that add a thread on the Ø10 circle

5. (continued)

(c) Describe **the most efficient and economical way** of creating component "C". Make reference to 3D CAD modelling techniques and to the dimensions from the drawings in your answer.

You may use sketches within your answer.

Sketch 4 consetric circles of Ø220, Ø190, Ø 120 and ~~Ø~~ Ø80 and



Extrude by 55 mm

Sketch circle of Ø190 and Extrude by 3.5mm on Each side of circle.

Circular array was used to convey the pattern of the thread of the ~~Rate~~ rice.

5. (continued)

(d) Describe the 3D CAD modelling constraints that would be used to assemble the hex-bolt to the handle.

Constrain the face of the M10 of the Hex bolt to the inside of the ~~bottom~~ M10 hole in the handle. This should make a flush fitting.