FOR OFFICIAL USE

National Qualifications 2022 MODIFIED

Mark

X835/77/01 Graphic Communication

MONDAY, 16 MAY
1:15 PM – 3:15 PM

X8357701

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Number of seat

Date of birth
Day Month Year

Scottish candidate number

Total marks — 80

Attempt ALL questions.

All dimensions are in mm.

All technical sketches and drawings use third angle projection.

You may use rulers, compasses or trammels for measuring.

In all questions you may use sketches and annotations to support your answer if you wish.

Write your answers clearly in the spaces provided in this booklet. Additional space for answers is provided at the end of this booklet. If you use this space you must clearly identify the question number you are attempting.

Use **blue** or **black** ink.

Before leaving the examination room you must give this booklet to the Invigilator; if you do not, you may lose all the marks for this paper.

SQA ©

X835770101

Total marks — 80

Attempt ALL questions

DO NOT WRITE IN THIS MARGIN

1. An invitation to the 50th anniversary of the Golden Camera film and television awards is shown below.

front of invitation

back of invitation

This is an extract of the invitation design brief:

The invitation must be made eye-catching through the use of contrast, exude luxury and link clearly with the 50th anniversary celebration. The design should show that the event is relevant to the modern era but pay homage to the golden age of film. The black silhouette is to be embossed with the brand logo and the gold areas should include matt, gloss and textured finishes.

1. (continued)

(a) Describe four ways the invitation meets the design brief. **4**

(b) Explain why it is important that each of the following graphics technologies are specified for printing the invitation:

- Pantone reference
- calendaring
- duplexing
- paper weight. **4**

2. A 3D CAD model of a reusable cup is shown below. It consists of a cup, a lid and a detachable straw.

Refer to **supplementary sheet 1 for use with question 2 (a)**.

(a) Describe the 3D CAD modelling techniques used to create the **straw**.
Refer to the dimensions in your answer.
You may use sketches to support your answer. **8**

DO NOT WRITE IN THIS MARGIN

2. (a) (continued)

2. (continued)

Morphing (freeform modelling) was used to create a series of **grip indentations** on the cup.

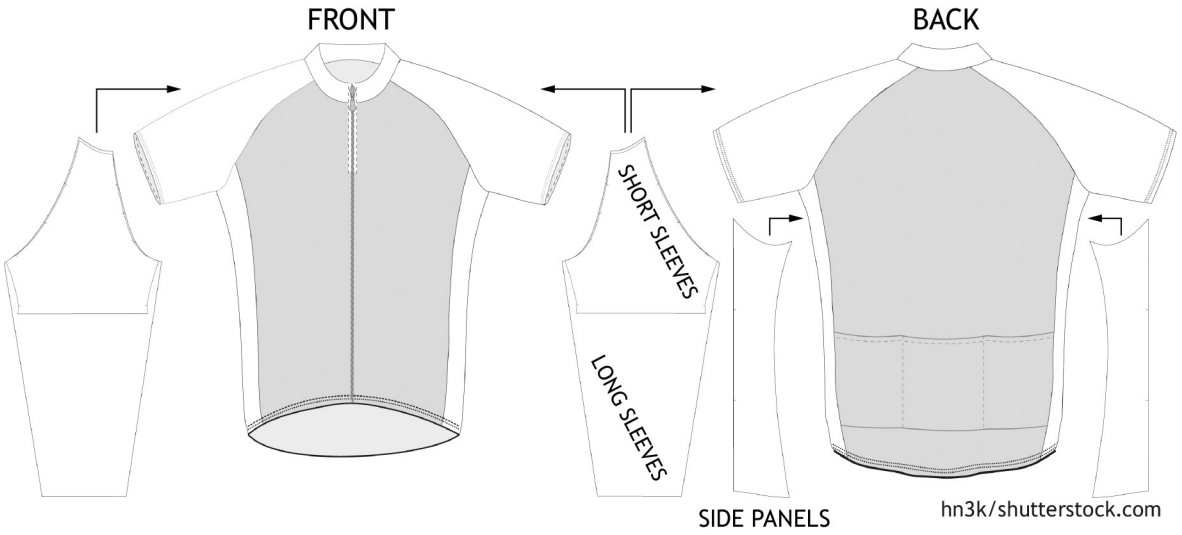
Refer to stages 1 to 4 shown on **supplementary sheet 2 for use with question 2 (b)**.

(b) Describe, using morphing (freeform modelling) techniques, how the **grip indentations** on the cup were created.

You may use sketches to support your answer. **4**

3. A sportswear company manufactures cycle jerseys which can be customised.
Two examples of cycle jerseys on their website are shown below.

CYCLING SHIRT: SHORT AND LONG SLEEVES



(a) Describe, giving one reason, why the cycle jerseys on the website include surface developments. **1**

(b) Explain two differences between ppi and dpi when working with digital and printed media. **2**

[Turn over

3. (continued)

MARKS DO NOT WRITE IN THIS MARGIN

Refer to **supplementary sheet for use with question 3 (c) and 3 (d)**.

(c) Explain the importance of the artwork guidelines to the company.

You should consider image resolution, file types, colour space, and using CAD/CAM to cut the jersey.

Do not refer to the print process in your response. **8**

3. (continued)

Refer to **supplementary sheet 3 for use with question 3 (c) and 3 (d)**.

The company considered various printing options for the cycle jersey but there were a number of disadvantages of using screen printing.

(d) Explain, considering the information in the artwork guidelines, why screen printing is not suitable for this purpose. **3**

The company is going to produce a promotional video of the manufacturing process. Various graphic media file formats are being considered.

(e) Describe one advantage of each of the following graphic media file formats.

You must give a different advantage for each graphic media file format. **2**

mpeg

3gp

[Turn over

4. A commercial interior design company has designed the office shown below.

MARKS | DO NOT WRITE IN THIS MARGIN

One of the company's designers produced the 3D model shown in **Image 1**.

Image 1

The designer then applied illustration techniques to the 3D model shown in **Image 2**.

Image 2

(a) Identify three different illustration techniques, other than applied lighting and HDRI, and describe how they have been used to enhance **Image 2**. **6**

Technique 1 _____

Description _____

_____

_____

4. (a) (continued)

Technique 2 _____

Description _____

_____

_____

Technique 3 _____

Description _____

_____

_____

(b) Describe two advantages of using HDRI techniques to enhance **Image 2**. **2**

_____

_____

_____

_____

(c) Identify three types of lighting applied in **Image 2** and explain why each has been used. **6**

Lighting type 1 _____

Explanation _____

_____

Lighting type 2 _____

Explanation _____

_____

Lighting type 3 _____

Explanation _____

_____

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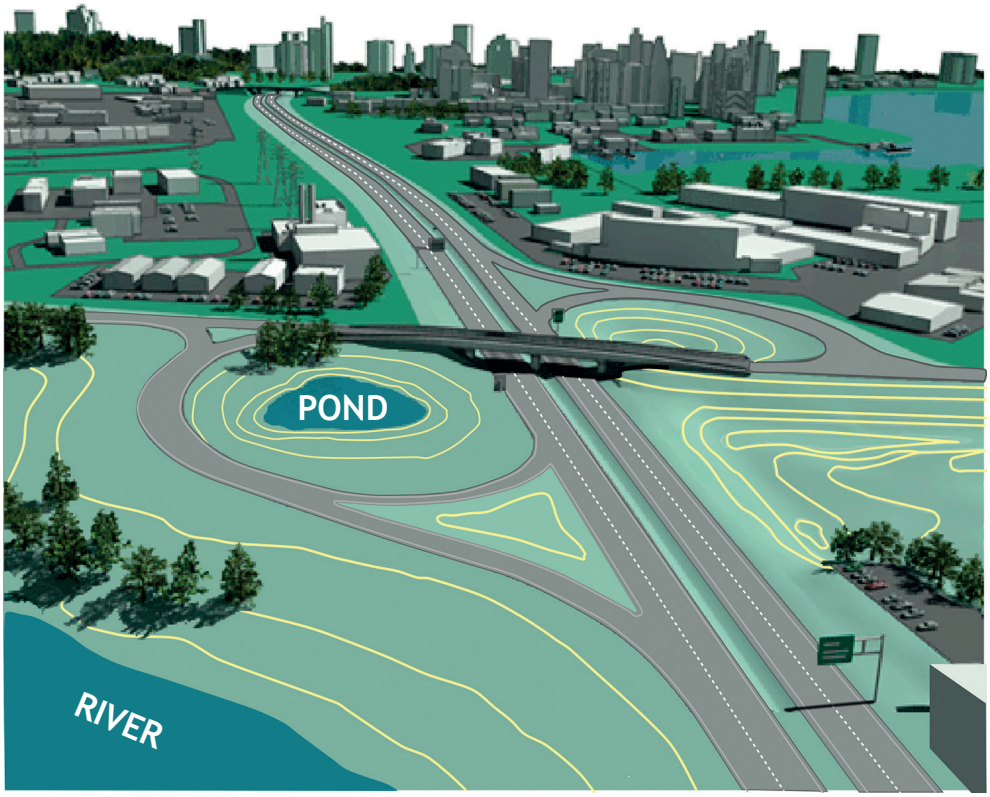
5. A construction company is designing and building the road junction shown in the graphic below.



5. (continued)

A structural engineer carried out an FEA test on a computer model on the bridge within the junction.

(a) Describe two ways a structural engineer would use the FEA test results. **2**

(b) A model maker used information from a topographical survey carried out on the area around the junction.

Explain why the topographical survey would provide useful information to a model maker. **2**

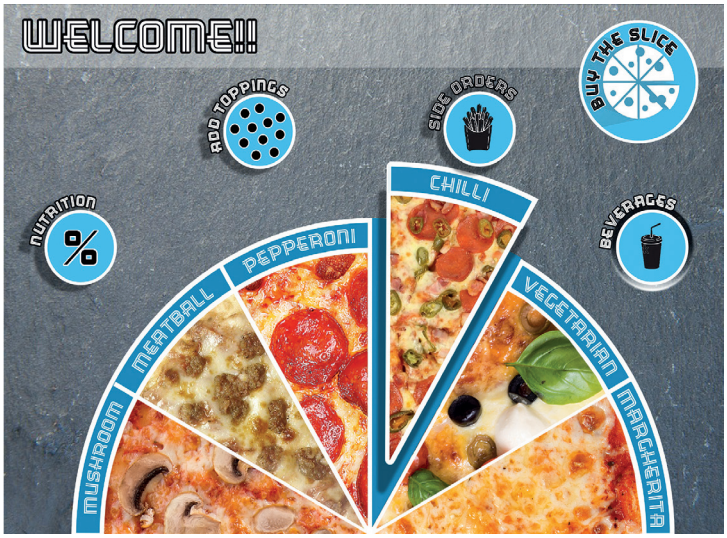
(c) An animator created two simulations of traffic flow. The first simulation shows the current traffic flow. The second simulation shows the anticipated traffic flow after the junction is complete.

Explain, giving three reasons, why motion tweening was used to animate the vehicles used in the traffic flow simulation. **3**

6. A pizza company are introducing interactive screens for ordering instore as shown below.

interactive screen before use

company logo



interactive screen during use

(a) Explain why the interactive screen has been designed to be easy to navigate. **3**

6. (continued)

(b) Describe how the designer has used focal point, silhouette and negative space in the design of the company logo. **3**

[Turn over

6. **(continued)**

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Two images from the interactive screen are shown below.

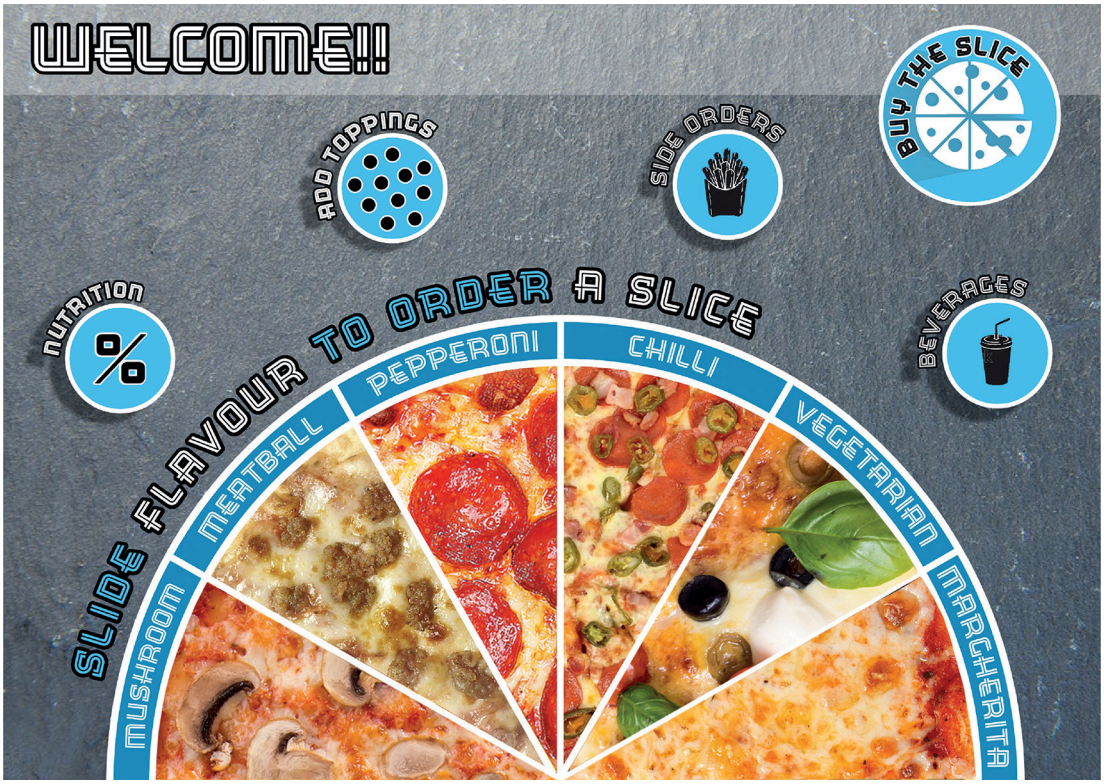

Image A Interactive screen before use

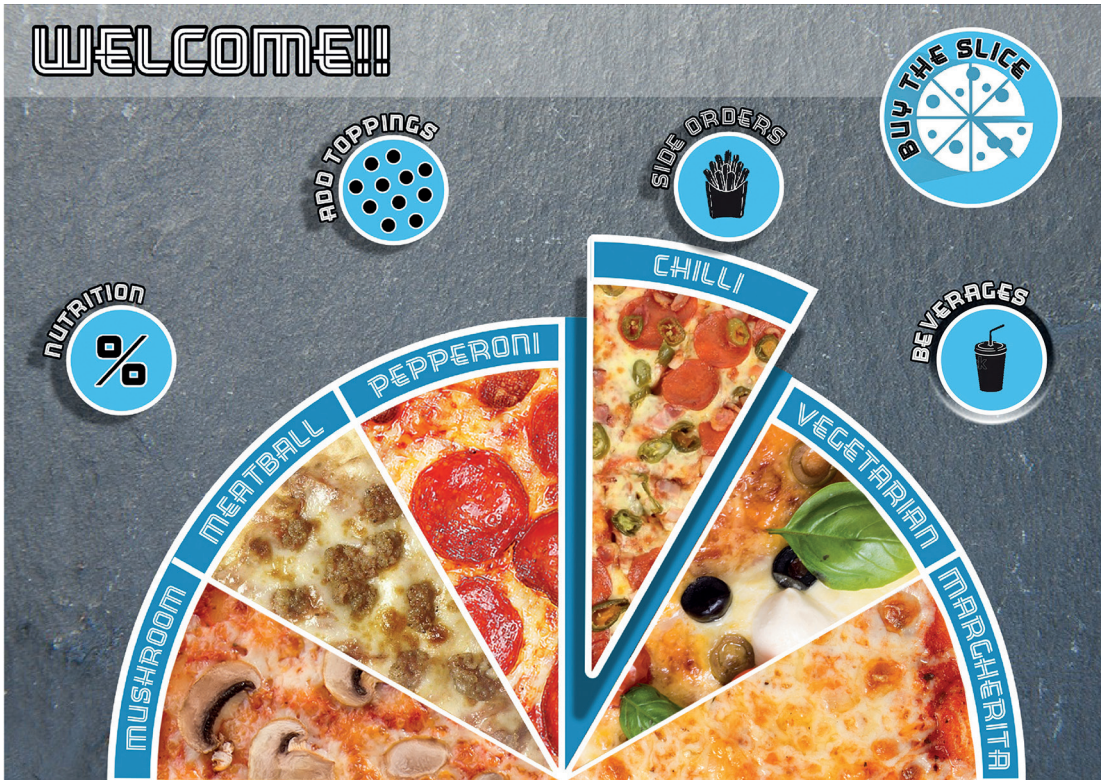

Image B Interactive screen during use

6. (continued)

(c) Describe two ways each of the following design elements and principles enhances the interactive screen.

(i) Radial balance **2**

(ii) Texture **2**

(d) Describe, using the correct graphic terms, the animation techniques and video edits that will change **Image A** to **Image B**. **2**

[Turn over

7. A 3D CAD model of a prototype kayak is shown below.

Refer to **supplementary sheet 4 for use with question 7.**

A CAD technician has created technical graphics for a kayak manufacturing company but has made errors applying British Standards.

(a) Describe three British Standards errors in the kayak technical graphics on **supplementary sheet 4.** **3**

7. (continued)

MARKS DO NOT WRITE IN THIS MARGIN

(b) (i) Describe how a 2D CAD sketch constraint was used to create the rope attachment point.

Refer to the dimensions in your answer.

You may use sketches to support your answer. **2**

The cockpit coaming feature has a fillet that changes from 2 to 6 mm and back again.

(ii) Describe the 3D CAD modelling technique used to create this feature and how it was applied.

Refer to the dimensions in your answer.

You may use sketches to support your answer. **2**

7. (continued)

The manufacturing company has written about the prototype kayak in its literature.

> The prototype kayak was put through a rigorous series of tests. Using our state-of-the-art technology, we were able to show the kayak's improved performance and the kayaker's full range of movement when they descended our specially designed course.

The company used a range of graphic technologies in the design and testing of the prototype kayak.

(c) (i) Describe how CFD digital testing could be used in the design of the prototype kayak. **2**

(ii) Describe how motion capture technology was used by the manufacturing company. **2**

[END OF QUESTION PAPER]

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ADDITIONAL SPACE FOR ANSWERS

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ADDITIONAL SPACE FOR ANSWERS

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