FOR OFFICIAL USE

National Qualifications 2018

Mark

X735/77/01 Graphic Communication

THURSDAY, 10 MAY
1:00 PM – 3:00 PM

X7357701

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 ©

X7357701 01

Total marks — 80

Attempt ALL questions

MARKS | DO NOT WRITE IN THIS MARGIN

1. A cafe chain called 'Taco Health' is opening a new premises. A promotional event is being planned prior to the opening and a marketing company has been asked to produce a promotional video that features animated characters.

The purpose of the video is to communicate the following information:

- the main features of the interior design
- how customers use the cafe
- how employees prepare orders and serve the customers.

(a) Describe two advantages of using each of these techniques in creating the promotional video.

(i) Motion-capture **2**

(ii) Motion-tweening **2**

(iii) Transitions **2**

MARKS

DO NOT WRITE IN THIS MARGIN

(b) State a suitable file type for the video to be viewed on a mobile device. **1**

Samples of printed items used in the cafe will also be available to view at the promotional event. All of these items feature the company logo which includes both graphics and text. The printed items include the following:

- Menus printed on biodegradable plastic
- Window graphics with a height of 2500 mm
- Promotional posters that include a copper spot colour.

(c) Describe three issues the print technician must address to ensure quality and consistency of the brand across these different printed items. **3**

The promotional event will also highlight the importance of environmental considerations in the cafe's business model.

(d) Describe how the cafe's menu would be produced to minimise the impact on the environment, other than by using a biodegradable substrate. **2**

1. (continued)

MARKS DO NOT WRITE IN THIS MARGIN

A phone app will also be launched at the event. It will include the location of the new cafe, an online booking facility that includes a floor plan of the new store and a menu tool.

Refer to the **supplementary sheet for use with question 1 (e)** for images of the phone app.

Design elements and principles have been used in the design of the store location mapping tool shown in **Image 1**.

(e) (i) State the single design principle used to suggest the blue circle in **Image 1** is 'flashing'. **1**

(ii) Describe how the flashing blue circle enhances the user's experience of the mapping tool. **2**

MARKS

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A .DXF file format is used to display the floor plan of the new premises in **Image 2**.

(f) Explain, giving two reasons, why this file format was chosen. **2**

Raster file types were used in the app in both the mapping tool in **Image 1** and the menu tool in **Image 3**.

(g) (i) Describe an advantage of using this file type for the mapping tool. **1**

(ii) Describe an advantage of using this file type in the menu tool. You must give a different advantage to the one you have described above. **1**

[Turn over

2. A chemical engineering company called CENCHEM ENGINEERING INTERNATIONAL has several smaller companies within its corporate group, each with their own logo. Three examples of these are shown below.

Logo 1

Logo 2

Logo 3

(a) Explain, giving two reasons, why it is desirable for these companies to have logos with simple clear shapes and solid colour fills. **2**

There are similarities in the design of each of these logos.

(b) Describe how this has been achieved by making reference to specific design elements or principles, other than those relating to shape or colour. **3**

2. (continued)

MARKS

DO NOT WRITE IN THIS MARGIN

Each logo includes the registered trade mark symbol shown. ®

(c) Explain why it is necessary for companies to protect their logo designs in this way. **2**

CENCHEM ENGINEERING INTERNATIONAL has developed many forms of graphic communications which include both digital and printed media. The main company logo, shown below, appears in all communications.

(d) Describe four issues associated with replicating this logo across printed and digital media. **4**

2. (continued) **MARKS** DO NOT WRITE IN THIS MARGIN

Two examples of CENCHEM ENGINEERING INTERNATIONAL company graphics have been included on the supplementary sheet.

Refer to the **supplementary sheet for use with question 2 (e), Image 1 and Image 2**.

Image 1 An interactive advertisement from the company website aimed at recruiting new graduates.

Image 2 A printed leaflet aimed at communicating statistical information to the general public.

(e) (i) Describe, with reference to **Image 1**, how the following design elements and principles have contributed to the creation of a clear focal point in this design. **3**

Depth of field _____

_____

_____

_____

Shape _____

_____

_____

_____

Radial balance _____

_____

_____

_____

(ii) Explain why the use of a 'focal point' helps the advertisement communicate effectively with this target audience. **2**

_____

_____

_____

_____

_____

_____

2. (e) (continued)

MARKS DO NOT WRITE IN THIS MARGIN

(iii) Describe, with reference to **Image 2**, how the designer has used 'white space', 'grid structure' and 'unity' in the leaflet to communicate effectively with the target audience. **3**

White space _____

_____

_____

_____

_____

Grid structure _____

_____

_____

_____

_____

Unity _____

_____

_____

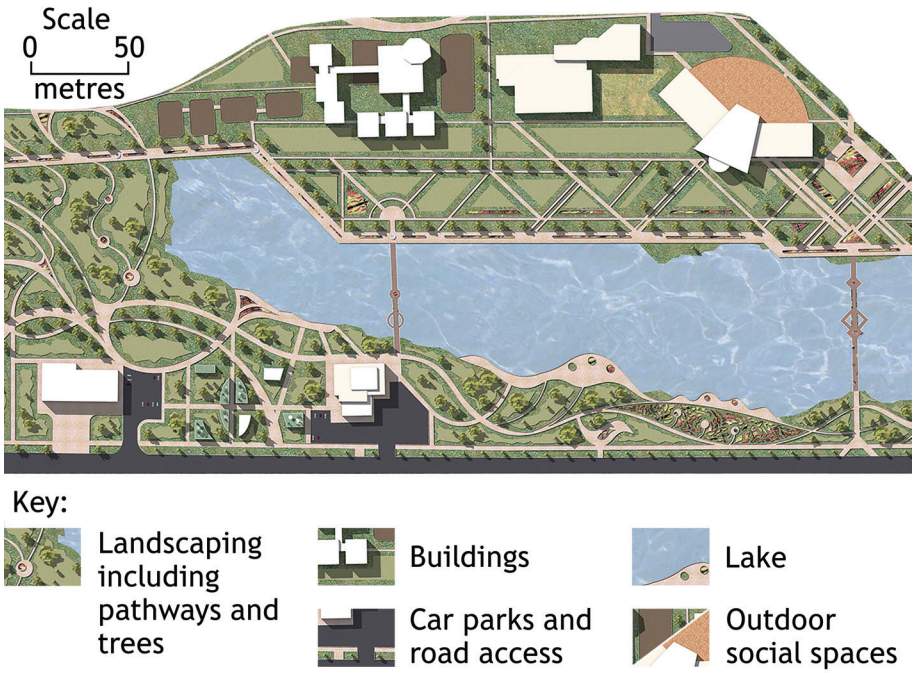
_____

_____

[Turn over

3. An architectural company has produced plans for a new office and leisure complex. The leisure complex will be available to office staff and local residents. In order to communicate effectively with this target audience an artist's impression of the site plan has been produced, shown in **Image 1**.

Image 1



(a) Explain why the artist's impression has been used to communicate the proposal to this target audience. **2**

A British Standards site plan of the same area is also required to help professionals working on the project.

(b) (i) State two features that would be included in a British Standards site plan that do not appear in the artist's impression. **2**

Feature 1 _____

Feature 2 _____

MARKS

DO NOT WRITE IN THIS MARGIN

(ii) Describe how a landscape architect would make use of the British Standards site plan during the project. **2**

An underground survey was carried out on the land before construction started. The results of this survey can be useful to various professionals in the building sector.

(c) (i) State two purposes of this type of survey. **2**

(ii) Describe how a structural engineer would make use of an underground survey. **2**

(iii) Describe how a conservation body would make use of this type of survey. **2**

DO NOT WRITE IN THIS MARGIN

3. (continued)

The phases in the development of the site are listed on a planning chart, such as a Gantt chart.

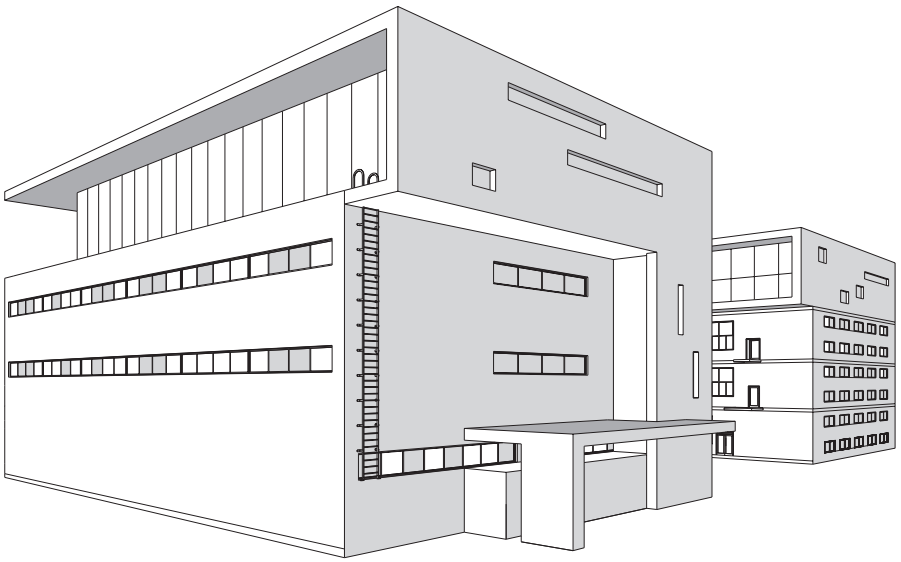
One phase is the excavation of the site, scheduled for completion before the foundations are laid. However a significant quantity of hazardous material was uncovered during this phase of the project that was not picked up by the underground survey.

(d) Explain the effects that this discovery would have on the planning chart and on the resource management of the project. **3**

[Turn over for next question

DO NOT WRITE ON THIS PAGE

4. A 3D computer model of a proposed office unit is shown below. It is to be used in a promotional document where it will be placed in a suitable environment.



(a) Name four different computer-aided illustration techniques and describe how they would enhance the model of the office unit after it has been placed in a suitable environment. **8**

Technique 1 _____

Description _____

_____

_____

Technique 2 _____

Description _____

_____

_____

Technique 3 _____

Description _____

_____

_____

4. (a) (continued)

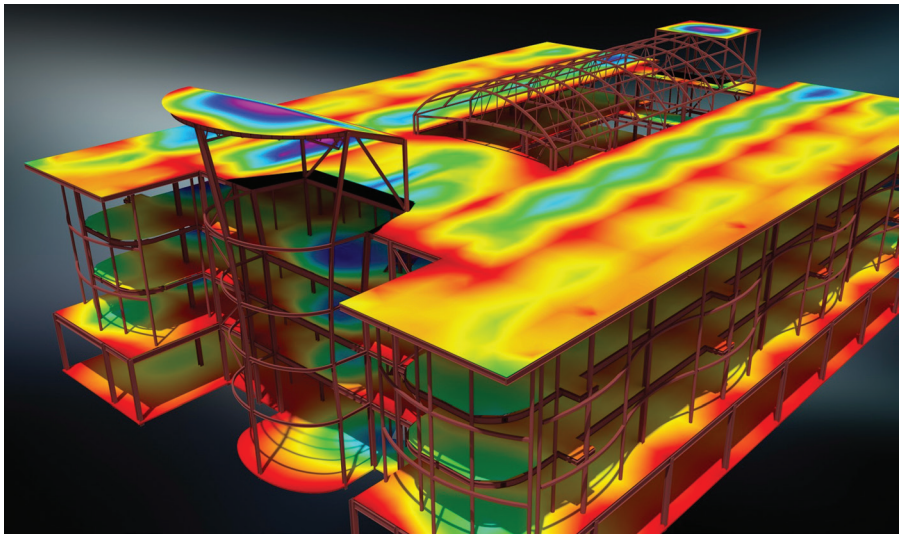
Technique 4 _____

Description _____

_____

_____

A structural engineer has been asked to test certain aspects of the design. A screen shot taken during the digital test is shown below.



(b) (i) State the digital testing method shown. **1**

_____

(ii) Describe how the test results could be used by the design and construction company. **2**

_____

_____

_____

_____

_____

_____

4. **(continued)**

DO NOT WRITE IN THIS MARGIN

Digital testing was also requested to simulate the spread of fire through the building.

Two screenshots, showing a sectional end elevation of the building, were taken during the testing and simulation. These are shown in **Image 1** and **Image 2** below.

The building has not been drawn to British Standards.

Image 1: Building 15 minutes after ignition.

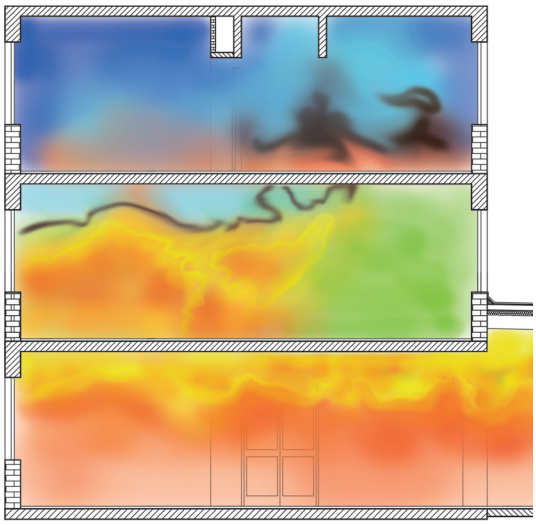
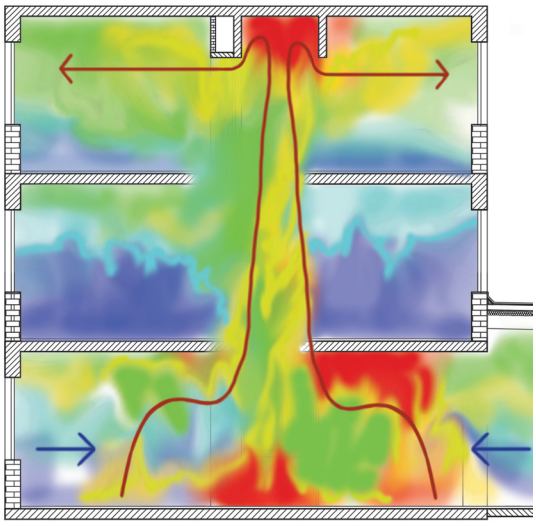


Image 2: Building 45 minutes after ignition.



4. (continued)

MARKS | DO NOT WRITE IN THIS MARGIN

(c) (i) Explain why CFD is the appropriate simulation method to show the spread of fire. **1**

(ii) Describe how the data generated by the CFD test could be used, other than in planning an evacuation. **1**

A fire evacuation route was determined after the company analysed the data from the digital test. A digital simulation was created of the evacuation taking place.

(d) Explain why the VRML file format was used to save the simulation of the evacuation. **2**

[Turn over

DO NOT WRITE IN THIS MARGIN

5. A coffee company is introducing a cafetiere service within its shops. The proposed design of the cafetiere is shown below in **Image 1**.

Image 1

The frame of the cafetiere, shown below, in **Image 2** consists of four vertical arms joined together at the base and by a ring at the top. Orthographic views of the frame are shown on the **supplementary sheet for use with question 5 (a)**.

Image 2

5. (continued)

Refer to the **supplementary sheet for use with question 5 (a)**.

(a) Describe the 3D CAD modelling techniques that would be used to create the frame. You may use sketches to support your answer. Dimensions do **not** need to be included in your response. **Ignore the metal ring and connection to the handle** (these are greyed out on the supplementary sheet). **6**

5. (a) (continued)

DO NOT WRITE IN THIS MARGIN

5. (continued)

MARKS

DO NOT WRITE IN THIS MARGIN

A model maker has been asked to produce a 3D printed prototype of the handle. This prototype will be used to test the comfort of the handle and how it is assembled to the cafetiere's frame.

(b) (i) State the name of the file type used to produce a 3D print of the handle. **1**

_____

(ii) Explain why 'model manipulation' and 'dimensional tolerances' must be considered before 3D printing the handle. **2**

Model manipulation _____

_____

_____

_____

Dimensional tolerances _____

_____

_____

_____

[Turn over for next question

5. (continued) **MARKS** DO NOT WRITE IN THIS MARGIN

Part of the cafetiere known as the filter spring is shown below. It is designed to keep the filter in touch with the inside of the glass jug.

Refer to the **supplementary sheet for use with question 5 (c).**

(c) Describe the 3D CAD modelling techniques that would be used to create the filter spring. You may use sketches to support your answer. **3**

[END OF QUESTION PAPER]

MARKS | DO NOT WRITE IN THIS MARGIN

ADDITIONAL SPACE FOR ANSWERS AND ROUGH WORK

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ADDITIONAL SPACE FOR ANSWERS AND ROUGH WORK

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