Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION AND COMMUNICATION TECHNOLOGY　　　　　**0417/12**

Paper 1 Theory　　　　　　　　　　　　　　　　　　　　**May/June 2022**

2 hours

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS
- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use an HB pencil for any diagrams, graphs or rough working.

INFORMATION
- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].
- No marks will be awarded for using brand names of software packages or hardware.

This document has **16** pages.

1   Circle **two** input devices.

3D printer   Actuator   CD ROM   (Digital camera)

(Keyboard)   Linker   Monitor   Speaker

[2]

2   A computer-controlled glasshouse is used to grow plants.

Identify **two** output devices used in this glasshouse.

1 ....Heater...

2 ....Actuator...

[2]

3   Network devices are used in computer systems.

Complete each sentence by identifying the most appropriate network device.

(a) The network device that is used to transmit the data along an analogue telephone line is a

...................Modem.. [1]

(b) The network device that connects a LAN to a WAN is a

...................Router.. [1]

(c) The network device that allows data to be directed to a specific computer on a LAN is a

...................Switch.. [1]

(d) The internal network device that allows a computer to connect to a LAN is a

...................Network Interface Card.. [1]

4   Many word processing packages have a number of formatting features.

The paragraph below shows some of the formatting features that can be used.

↙ Bold

The Northshire Steam Railway (**NSR**) today approved the events programme for the Summer Steam Festival (**SSF**) 2022 to be held between June and August in <u>Norton</u> which will see five new steam engines join the existing twenty eight steam trains they have in stock. A special attraction for the Festival will be the *Teal Steam Crane*.

highlight   *italic*   *Underline*

(a) Write down **four** of the formatting features that have been used in the paragraph shown.

1 .....Bold...

2 .....Highlight...

3 .....Underline..

4 .....Italic...

[4]

(b) The logo for the Summer Steam Festival is shown and labelled A. The organisers of the event are planning to create a second logo for all their correspondence. This is shown and labelled B.
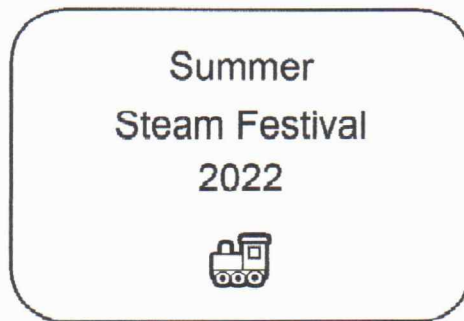
A

B

Describe the steps that have been used to transform logo A into logo B.

- Click on logo A ; This should be in an appropriate software like word processing.
- Click on the sides to reduce the size of the logo.
- Click on the logo and select fill color, fill it with black and change the text colour to white.
- reduce the font size to a smaller font.
- reduce the image size by clicking on it then reducing its size. [4]

5 A library is considering the way it issues books. The librarians are planning to use RFID rather than bar codes.

Describe the advantages of using RFID rather than bar codes.

- RFID are very fast to read as they don't need the scanning process as the one for bar codes.
- The scanning of RFID is more accurate than that of bar codes.
- They don't need line of sight to read as bar codes need and hence if one bar code is blocked it can't be read.
- RFID tags can be rewritten and hence can be re-used again.
- RFID will read the data even if the reader is a distance away [4]

6 Laptop computers use Solid State Drives (SSD) rather than Hard Disc Drives (HDD).

Describe **two** disadvantages of using an SSD rather than an HDD in a laptop computer.

1 Its more expensive to acquire an SSD than with a HDD.

2 They tend to have a more limited number of read and writes.

[2]

7   A patient has an injury and the doctor treating him needs to find out information about the patient. Most of the data he needs to collect is personal data.

The data collected is protected by data protection legislation. Most data protection acts include the principle that data should be kept confidential and secure.

(a) List **four** other principles of a typical data protection act.   — *From the data protection act*

1 *Data should be fairly and lawfully processed.*

2 *Data should be used for the purpose it was meant to*

3 *Data should be processed in accordance with the data subject's rights.*

4 *Data should be accurate and kept up to date.*

– Parental consent is required for processing data for minors.

[4]

(b) Explain what is meant by personal data. Include **two** examples of personal data in your answer.

Explanation *This is data that is relating to an individual/or a person that can be used to identify that person.*

Example 1 *Names, address, phone number*

Example 2 *Date of Birth, Gender.*

[3]

(c) Explain why personal data should be kept confidential and secure.

This is because the personal data is used to identify a specific individual and hence data needs to be Kept secure. It links directly to the person. Incase an individual has access to the data then one can plan something malicious, abduction of the minor, etc. - Its private and comprises of sensitive data and if not kept confidential and secure it could lead to the chance of users suffering physical harm.

[4]

8 Uniform Resource Locators (URL) are used to locate websites and resources. A teacher needs to find a teaching guide from Cambridge Assessment International Education. To download the teaching guide she types in:

https://www.cambridgeinternational.org/igcse-ICT-0417/2193733.pdf

(a) Write down only the part of the URL which shows the file name of the teaching guide.

2193733. Pdf

[1]

(b) Write down only the part of the URL which is the folder where the teaching guide is stored.

igcse-ICT-0417

[1]

(c) Write down only the part of the URL which is the domain name.

www. Cambridgeinternational.org

[1]

(d) Explain what is meant by https.

It is a secure protocol.
Hyper text transfer protocol secure.

[1]

9 A student is creating a spreadsheet of airports for a project.

	A	B	C	D	E	F	G
1	Code	Name	Country			Airport Name	
2	LHR	London Heathrow	UK			MIL	Milan
3	ROM	Rome	Italy			Airport Country	
4	PAR	Paris	France			MIL	Italy
5	MIL	Milan	Italy				
6	SNN	Shannon	Ireland				
7	STO	Stockholm	Sweden				
8	LBA	Leeds and Bradford	UK				
9	GVA	Geneva	Switzerland				
10							

The formula in G2 is:

=VLOOKUP(F2,A2:B9,2,0)

(a) Explain, in detail, what the formula in G2 does.

Vlookup is an excel function.
F2 - is the lookup value.
A2:B9 - Its the range where it will lookup the value
2 - It finds the value and return column two
which is the name of airport.
0 - means it finds the exact match. [4]

(b) Before the spreadsheet can be used, data needs to be entered to test the spreadsheet.

There are three types of test data: normal, abnormal and extreme.

Explain what is meant by these three types of test data.

Normal It is data that is within the acceptable range.

Abnormal Data that is outside the boundary e.g a negative number when dealing with positive.

Extreme Data on the edge of acceptability.

[3]

(c) Explain, using examples, the differences between a function and a formula.

a Function = =Sum(A2 : A9)

Formula = (A2 + A3 + A4 + ----- A9)

- A formula is an equation whereas a function is a statement written by the user by use of an inbuilt/predefined formula

- A function is a named piece of code designed to calculate specific values

  A function is an in-built operation.

- A formula is a equation designed by a user in Excel while a Function is a predefined calculation in the spreadsheet application.

[6]

(d) The completed file could have been created using a database.

Describe **two** reasons why databases are used in certain applications rather than spreadsheets.

1 In a database, it can comprise of various table that are all linked together by use of relationships.

2 Data is easier to manage in a database and also easier to create reports, forms and extract queries.

[2]

10 The prolonged use of computers can cause several health problems particularly when sitting down and using monitors.

Discuss the strategies that you have developed to minimise health risks which only relate to sitting down and using a monitor.

Sitting down:
- Use of ergonomic chairs to reduce back and neck problems
- Adopting a good sitting posture to help reduce back problems
- Ensuring that I use a footrest to reduce Dip vein Thrombosis
- I take regular breaks while working to stretch muscles.

Use of monitor:
- Use of an anti-glare screen to reduce eye strain
- I use a flat screen monitor rather than a CRT to reduce eye strain and headache issues.
- I use a monitor that tilts and adjustable well so that I don't strain my neck.
- I ensure the brightness of my room is equal to the screen brightness to prevent eye strain.
- Enabling the blue light filter to prevent eye strain.   [8]

11 A car manufacturing company uses computer-controlled robots to manufacture its cars.

Discuss the advantages and disadvantages to the company of using computer-controlled robots rather than using humans to manufacture the cars.

Advantages

- Robots can work in hazardous environment which might be risky to human being.
- They can work 24/7 without requiring any rest
- They need fewer people to operate hence reduces the operational cost.
- There's higher productivity and production of cars is more consistent than when using human beings.

Disadvantages

- Its very expensive to set up and manage robots.
- They require one to have a back up system just incase they fail which is very expensive. [6]
- They need constant Observation which increases the cost of maintenance crews.

12 Different methods can be used to analyse a system.

Discuss the benefits and drawbacks of analysing a system by observing staff rather than looking at the current systems documentation.

Advantages of Observation
- Its first hand data where can see by themselves.
- Some process are hard to document and hence when one looks at it it makes alot of sense.
- It is a cheaper way as it does not take the worker away from work to go and analyse documents.
Drawbacks
- The quality and accuracy of information is highly dependent on the skill of the observer.
- It takes time to do an observation and then analyse findings.
- People might pretend as they are being observed hence might not bring forth the exactness of the system. **[6]**

13 A librarian in a college department library is entering data into a student borrowers' file. As the data is entered it needs to be verified.

(a) Describe the **two** types of verification.

1 Double data entry
A person types the data and then retypes it again from the original copy.

2 Visual Check.
A person enters the data and then it is read through and corrected as needed using the original copy.

[4]

(b) Explain, using examples, why it is necessary to carry out validation as well as verification for this system.

- This is because not all errors are determined by validation, therefore verification is key as well to confirm if data was copied correctly.
- Not all errors can be automatically checked by the computer, a visual check for instance is important. An example of validation could be a format check to check date returned; or number of books borrowed, using a range check; verification could be a visual check [4] to confirm the date indicated is the same captured by the system

14 Spam is associated with ICT systems.

(a) Explain what is meant by the term spam.

This is where unsolicited mails are sent to users. They are unwanted and flood a user's mail box. They could be advertising mails or others have malware and hence the need to filter them. [2]

(b) Describe the ways that a user can recognise spam and methods to help prevent it.

How to recognise spam emails:
- They are stored in the SPAM folder
- It comprises of a set of repeated emails from the same sender.
- The emails demands for a quick response to giving of personal information
- The email address comprises of funny names, numbers, etc.
How to prevent;
- by use of a spam filter
- Avoid responding to spam emails.
- Avoid giving consent to company's to send promotional texts while interracting with them. [6]
- Do not store email address online

15 (a) Explain what is meant by cloud storage and how it is used.

This is the Storage system where the servers are remote and access to them can only be possible if one has Internet access.

Data is stored remotely by third parties who offer storage services at a fee.

How it is used;

- One needs to have Internet access to be able to store and also access the data.

- Access can be done using any device whether a laptop or a phone as long as it is connected to Internet

- Cloud storage automatically backs up data and incase one server fails there are others that act as back-up. [6]

(b) Describe **two** issues related to the security of data in the cloud.

1 One has loss of control to their data as one is reliant on the service provider.

2 It is easier to hack as data is available always. Its more difficult to delete all copies of the data.

[2]

16 A company uses corporate house style within the headers and footers in its documents.

(a) Explain what is meant by corporate house style.

It is a set of rules that an organisation follows when creating documents. House style states how all documents and written communication should be formatted. It promotes consistency across all documents in the portfolio of the company. [2]

(b) Explain why headers and footers are needed.

They are used to display descriptive information on every page.
They are used for repeated items that are needed to appear on every page. [2]