Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION AND COMMUNICATION TECHNOLOGY   **0417/11**

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. Any blank pages are indicated.

1 Circle **two** network devices.

Actuator   (Bridge)   Database   DVD

(Hub)   Linker   Monitor   Printer

[2]

2 Complete each sentence using the most appropriate item from the list. Your answers must be different in each case.

| ADC | an applet | hardware | HDD |
| a router | **a sensor** | software | SSD |

(a) The physical components of a computer are called

.... *hardware* .... [1]

(b) Programs and data are examples of

.... *Software* .... [1]

(c) A small application performing one or two simple functions is called

.... *an applet* .... [1]

(d) An input device used in measurement applications is called

.... *a sensor* .... [1]

3 Identify **two** devices which are used in control systems.

1 .... *Computer* ....

2 .... *Actuator* ....

Analogue to Digital Convertor/ADC or DAC

[2]

4 Many laptop computers use the cloud to store data. A technician has produced a report on his laptop computer but has stored the report on a memory stick rather than storing it on the cloud.

Describe **two** advantages of using a memory stick rather than the cloud to store data.

1 ...They are offline storage ;- no need to have Internet access...

....

2 ...One has more control over the stored data than.................................

...over the cloud..

[2]

5 Many bank cards now use contactless technology.

Describe the advantages and disadvantages of using these cards rather than cards that use chip and PIN.

......Advantages..

- The transactions are very quick than with chip and PIN

- There no incidence of shoulder surfing hence safer.

- It can be read from the pocket hence less chance of wear

......Disadvantages..

- Its less secure incase the card is lost someone can use it

- Cannot be used on large transactions..

- Does not use a PIN hence less secure...................................... [4]

6 Stylesheets are used in web pages.

(a) Explain the term stylesheets when used in web pages.

Stylesheet are used to describe the presentation of a document written in HTML. It is used to define how the page will look like.

[2]

(b) Explain the differences between attached stylesheets and inline style attributes.

- with an attached stylesheet, they are separate from the web page whereas inline style attributes, they are found /defined within each web page.
- Incase of editing the stylesheet, an attached stylesheet is edited in one file whereas inline style attributes are edited by changing each web page independently.

[4]

7 Two types of database are relational and flat file.

(a) Compare and contrast relational databases and flat file databases. Your answer must include similarities and differences.

Flat file — One table with all the records.

Relational — Many tables that are all organised and linked together.

Similarity

— They both use a primary key.

— They both store data in records and fields in the table.

— With both, one can create reports and extract queries.

Differences

— Relational   Flat

— It has many tables linked together   — It is only one table.

— It is complex to design   — It is a simple structure - 1 table

— It reduces data redundancy   — Data redundancy is common.

— Uses both primary and   — It uses primary key.

foreign keys

[8]

(b) Give, using an example, **one** reason why flat file databases are used in certain applications rather than relational databases.

Reason It's used in situations where theres need to use a single table and amount of data is small.

Example A table with a list of addresses.

[2]

8 When using computers people can suffer from Repetitive Strain Injury (RSI).

(a) Describe the term RSI. Include in your answer the causes of RSI.

This is where one has pains and aches on joints or fingers due to repetitive clicking or typing. It occurs as a result of repetitive activities.
Causes :- repetitive activities like clicking or typing
- repetitive movement.

[3]

(b) Identify **three** methods of reducing the effects of RSI.

1 Using an ergonomic keyboard/mouse.

2 Use of voice-detection software and for audio input to reduce typing and clicking.

3 Taking regular breaks from typing.
- Use of a wrist rest

[3]

9 Martin, who is a teacher, is creating a multimedia presentation to explain a topic to his students.

(a) He produces a master slide.

Write down **four** objects he could include in the master slide.

1 Text to explain

2 Images to display

3 Slide Footer/header.

4 Automatic Slide number.

[4]

(b) Martin wants to record a message for his students. His voice will be added to the presentation. He will also need to listen to his voice to make sure the sound is of good quality.

Name **two** devices that he will need.

1 ...... A microphone ....

2 ...... Speakers. ....

[2]

(c) Martin will need to use software to create different types of content before including them in the presentation.

Name **two** types of software that he might use and for each one, write down what he would use it for.

Software 1 ...... Word processing software . ...

......

Use ...... For Typing in text to be included in the presentation . ...

......

Software 2 ...... Photo editing software ......

......

Use ...... To prepare photos for inclusion in the presentation . ...

......

[4]

 [Turn over

10 A river authority is concerned about levels of pollution in a major river. The quality of the water in the river needs to be monitored using sensors.

(a) Name **three** sensors that could be used to measure the pollution in the river.

1 .....pH sensor.....

2 .....Light Sensor.....

3 .....Oxygen Sensor.....

[3]

(b) Discuss the advantages and disadvantages of using computers to measure the pollution in the river rather than humans measuring the pollution.

Advantages
- The computer will not forget to take readings
- It is safer to use computer than human beings as they might lose their lives
- They can work 24/7 without getting tired
- Its cheaper as fewer human beings are needed.
Disadvantages
- Incase of unusual events, the computer might not be able to respond unlike human who can think of an alternative.
- Computer and associated equipments are more likely to be stolen or damaged by vandals.
- They cannot operate by themselves fully and will still [6] need human intervention.
- The initial set up cost is high.

11 A system can be analysed using different methods.

Discuss the advantages and disadvantages of analysing a system by interviewing staff rather than using questionnaires.

Advantages

- During interviews one can re-phrase questions if they aren't clear or don't make sense.

- Probing questions may be used to further understand the system.

- One can see body language that lacks in questionnaires

- More detailed answers can be given that short questions found in a questionnaire.

Disadvantages

- They are not anonymous hence respondents might have the peal of being victimised.

- Interviews take alot of time to complete whereas a [6] set of questionnaires can be filled in a very short time.

- The answers in a questionnaire may be analysed quicker through optical mark readers than analysing interview responses.

12 Many company computer network systems use WiFi as a communication system to help prevent the issue of tripping over trailing cables.

(a) For each of the following physical safety issues describe **two** ways of helping to prevent them.

(I) Fire

Prevention 1 ...... Carbon dioxide fire extinguishers ......

Prevention 2 ...... Avoid overloading sockets. ......
...... - Have proper ventilation $ cooling systems. ......

[2]

(ii) Electrocution

Prevention 1 ...... Proper insulation of all wires. ......

Prevention 2 ...... Avoid drinks close to computers. ......

[2]

A common use of home computers is online gaming.

(b) Describe **three** eSafety measures which should be taken when playing games on the internet.

1 ...... Avoid using real names - use nick-name ......

2 ...... Turn on privacy setting. ......

3 ...... Don't give your personal data to other players. ......
...... - Block or report any cyber bullies. ......
- Use appropriate language always.

[3]

(c) In order to log onto online gaming a user ID and password is needed.

Explain what is meant by a user ID and password and why they are needed.

This is an authentication method where a user is required to enter their User ID and a corresponding password.

They are used to uniquely identify if the person claiming to be is the real one.

A password comprises of a string of characters that is known to the owner alone.

[4]

13 (a) Explain the need for copyright legislation when data is published on the internet.

A Copyright is an exclusive right given to the owner of artistic work or music towards copying and creation of Copy's. Someone else Cannot copy without your permission. Copyright usually originates with the creators of work, but can be sold, traded or be inherited by others. They are used to support the original producers of the software or artistic work so that they reap all the benefits from it.

[4]

(b) Describe methods that software producers use to prevent software copyright being broken.

– Use of product Keys :- Users are required to enter a unique number to verify that software is original.
– License agreements :- They are part of the software installation process and they inform the user exactly how they are legally allowed to use the product.
– Use of holograms :- are often used on the packaging of software and they indicate that the copy is genuine

[4]

(c) Emails are used by people to communicate with each other. Copyright and using acceptable language in the email are two of the constraints that affect the use of email.

(i) Describe **four** other constraints that may affect the use of email.

1 Netiquette - how to address people and the language to use - appropriate language.

2 Laws within a state - In some countries, emails are monitored and people are punished for what they write

3 Local guidelines set by an employer - The does and don'ts

4 Password protection does not allow people to see the contents.

[4]

(ii) Describe **two** rules of the use of acceptable language in emails.

1 Avoid use of capital letters all through as it implies that one is shouting.

2 Use professional salutations e.g Dear Sir/madam - Include a clear, and a direct subject line

[2]

14 The manager of a medical centre keeps the doctor's stock records in a database. The stock for any item is not allowed to fall below 15 items and the manager keeps a maximum of 100 items in stock.

The table shows examples of the stock.

Name_of_item	Serial_number	Number_in_stock	Name_of_supplier	Shelf_number
Medihoney	3081043612211	15	Capimed	0126
Sodium fusidate	1437210227870	60	Brooks Medical	0112
Crepe bandage	2541233164353	100	Capimed	0064
Crepe bandage	2834954736849	89	Cams Meds	0064

↑ to avoid number interchange   ↑ 4 character

As data is entered it needs to be verified and validated.

(a) Explain why verification is carried out.

It is used to check whether data has been copied correctly and that it matches the original document.

[2]

(b) Write down the field name from the table that would be the most appropriate for each of these validation checks. Each answer must be different.

Check digit ..... Serial Number

Length ..... Shelf_number

Type ..... Number_in_Stock.

[3]

(c) Name the most appropriate field from the table that could be used as a primary key in the database.

..... Serial_number ..... [1]

15 A customer is booking a seat on a theatre's online booking system. The customer reserves seats using the theatre's website and a debit card. The website displays the seats that are available and a database stores the customer details, the payment details and the seat details.

When the customer enters their debit card details for a seat, the theatre's computer communicates with the bank's computer.

(a) Describe **four** checks that the bank's computer will make on the customer's bank account.

1 Validity of the debit card number

2 Does the security code (CVV) entered match the one stored on the system.

3 Does the name entered matches that on the system.

4 Availability of funds in the bank account.

[4]

(b) Describe the processing carried out by the theatre's computer when making a booking.

- The computer receives input and checks the performance date and checks if the seats are available.
- It flags the seats to stop double booking as a temporary hold.
- It calculates the total cost to be paid, and reduces the number of available seats by numbers booked.
- The receipt is printed or an e-ticket sent to the customer.

[4]