Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION AND COMMUNICATION TECHNOLOGY   **0417/12**

Paper 1 Theory   **October/November 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   Complete the following sentences using the most appropriate words from this list of word processing terms.

| bullet | centred | gutter | hanging | header |
| justified | landscape | orphan | portrait | widow |

(a) The orientation of a page that is wider than it is high is called

    Landscape .... [1]

(b) A symbol placed in front of each item in a list is called a

    Bullet .... [1]

(c) The indentation of a paragraph where all the lines except the first are indented is called

    Hanging .... [1]

(d) The last line of a paragraph that appears as the first line of the next page is called a

    Widow .... [1]

2   Database, presentation, spreadsheet and word processing software are used by a medical centre.

Tick (✓) the most appropriate piece of software to carry out the tasks shown.

	database (✓)	presentation (✓)	spreadsheet (✓)	word processing (✓)
Producing a letter to send out to patients				✓
Creating graphs to show numbers of people attending the medical centre			✓	
Creating queries from patients' details	✓			
Creating an interactive display of services offered		✓		

[4]

3   Smartphones use a Graphical User Interface (GUI).

(a) Give **three** benefits of using a GUI.

1 It is ver friendly and hence easy to use.

2 Easy to enter commands at it involves clicks

3 less chance of making mistakes as there no typing of commands

[3]

(b) Give **three** characteristics of a smartphone.

1 They allow connectivity by wi-fi or bluetooth.

2 They are operated by use of touch screen to input data.

3 They have a camera that is used to capture pictures.

[3]

4   Workers in an office log onto the office computer network using a password.

(a) Aaron is using his name as his password.

Give **two** reasons why this is **not** a good idea.

1 ...The password is easy to guess.
...- Password contains personal information

2 - The password is too short
... - It doesn't contain a mixture of uppercase,
lowercase, numbers and symbols.

[2]

(b) One method that hackers use to find people's passwords is to install key-logging spyware onto computers.

Give **two** methods that could be used to safely enter passwords even if key-logging spyware has been installed on a computer.

1 By using a drop-down list to select characters
instead of typing them.

2 Use of biometric passwords instead of typing
the passwords.

[2]

5   The secretary of a sports club is setting up a database of members to replace the current manual system. He will need to create a database structure.

(a) Describe the steps involved in setting up and testing the database structure before it can be used in the new system.

First load the database software and set up all the required tables. Ensure that you have set all the field names and the primary key set. Create the relationships among the tables in order to make sure they are working as one database. Thereafter make sure that all the right forms have been created, set up the queries needed and reports. Create a test plan using normal, abnormal and extreme data. [4]

When the new system is completed it needs to be implemented. The secretary of the sports club can implement it using direct changeover or parallel running.

(b) Describe the term parallel running, giving **one** benefit and **one** drawback of using this method of implementation.

Parallel running This is where both the old and the new system are running side by side.

Benefit Incase of a lapse in the new system, the old one can act as a back-up.

Drawback It very expensive as two systems are running side by side.

[3]

6   In June 2000 the London Millennium Bridge opened to the public but closed shortly afterwards for repairs. The bridge was swaying as people walked across it. Before bridges are built, computer models are produced and the models are tested.

Explain why computer models are used before building a bridge.

It will help to identify errors early with the model than experiencing this one with the final version. It is safer to run a computer model rather than risking human life. It will help in saving cost as fewer errors will be encountered with the final version. To be build and test the final version of the bridge would be very expensive and time consuming. [4]

7   A club has many members. The secretary of the club wants to keep details of the club members in a database.

(a) Describe the benefits and drawbacks of storing membership details on a computer database.

Benefits
- The searching process of a specific record is made faster and easier by use of computerised database.
- One can easily edit records.
- The data in the database can be backed up easily.
- Impromptu records can be generated instantly.
Drawbacks
- One needs IT skills to be able to set up and operate
- It's expensive to buy the software and to maintain.
- It's time consuming to train staff on how to use the software [6]

(b) The secretary collects data from the members on paper-based forms.

Describe **five** features of a well-designed paper-based data capture form.

1 The questions need to be logically arranged.

2 The font type used and size should be appropriate

3 The designer needs to provide an appropriate space for providing feedback.

4 The questions asked should be clear and understandable by the respondent.

5 Provide adequate white space and hence will help avoid alot of congestion.

[5]

8   In 2019 Cambridge recorded the highest temperature for July in the UK. The data was collected automatically using sensors by a weather station and sent to a computer.

Discuss the advantages and disadvantages of using sensors to collect data rather than humans collecting the data.

- Advantages
- The sensors read data more accurately than human.
- Sensors can read data 24/7 without getting tired.
- The sensor readings are taken at a more consistent time interval than when using human beings.
- Its safer to use sensors to gather data rather than humans where they might be risking their lives.
- Computers can analyze the data continuously as it is in computer form.

Disadvantages
- Sensors could be stolen and hence a loss to the company.
- If a sensor malfunctions then it could lead to incorrect readings.
- The set up cost and management of sensors is still high.
- They still require the intervention of human beings hence not 100% independent.

[8]

9 Many organisations store data in the cloud.

(a) Explain what is meant by the ICT term cloud.

This is an online storage platform where data is stored and accessed via the Internet. Access of data can be done by use of any device as long as it is connected to the Internet. They allow centralised data storage.

[3]

(b) Explain the issues of storing data in the cloud.

- Data is managed by a third party and therefore you have no control as an organisation.
- Data can be intercepted without the user's consent.
- If one forgets the authentication password, then one will not have access to the data.
- One needs to keep on paying a subscription fee which is expensive in the long run.
- It is very difficult to delete all copies of a file as it is in multiple locations and different servers as well.
- Incase an Internet connection is lost or not available then one will not be able to access the files.

[6]

As our use of the cloud increases, new ways of accessing it safely need to be developed.

(c) The use of typed passwords is being replaced by biometric methods.

Discuss the benefits and drawbacks of using biometric methods.

Benefits
- Difficult to forge biometric data hence secure.
- It's a faster way of accessing systems than typing the password.
- One must be physically there to authenticate hence secure.
- It's more secure as it uses unique (biometric) data than when typing password or using a token.

Drawbacks
- Biometrics may change and therefore data may need to be kept up-to-date
- Incase One is involved in an accident or can't be physically there then there's no sharing and access of data.
- The process of setting up and capturing biometric data is tedious and time consuming.
- Some user may feel that the biometric machine is unhygenic to use because of the sharing aspect. [8]
- Invasion of privacy as personal data is captured.

10 High street banks now offer customers access to internet banking when they are in the physical bank.

Discuss the advantages and disadvantages to the bank of using internet banking in this way.

Advantages
- There is the possibility of having more banking staff to help customers.
- The service is more faster hence leads to customer loyalty.
- Branches can stay open longer and offer other services.

Disadvantages
- The initial set up cost for hardware & software is very high hence expensive.
- System maintenance cost will be high as more inexpensive people are using the system.
- The employee number is likely to increase as staff members are needed to help internet banking customers. [6]

11 A village is built next to a river. During heavy rain the river floods and endangers the people living in the village. If the river is in danger of flooding, an email is sent to all members of the village.

(a) Explain why an email group is used when contacting the villagers.

- Its easier to type the group name rather than typing all the recipient's email addresses.
- There are less chances of omitting a recipient as all email addresses are in a group.
- It will save time rather than typing all the email addresses independently. [3]

Sensors are placed in the river to check the water level. If the water level in the river rises more than 5m above normal river levels, a flood barrier is raised to safeguard the village. The flood barrier remains raised until the water level drops to normal levels.

(b) Explain why the data from the sensors cannot be read directly by the computer and name the device that needs to be used so that the computer can read the data.

This is because a sensor reads physical properties that mean that data is in analogue form. A computer processor understands the binary digits and that mean that it will need an Analogue to Digital Convertor so that it converts from Analogue data to Digital data (0's and 1's) that computer can understand. [3]

(c) Describe how a microprocessor uses the data from the sensors to raise and lower the flood barrier.

- The sensor reads analogue data and then the ADC converts analogue to digital data.
- The microprocessor reads the data from the ADC
- The microprocessor compares the read value with the data stored (Pre-set value).
- If the current water level is greater than the pre-set value then the microprocessor sends a signal to the DAC to convert digital data to analogue data that will send signal to the actuator.
The actuator raises the flood barrier.
Otherwise if it was less than the preset value, nothing happens. [6]
- The process is Continuous.

12 A computer system uses a Graphical User Interface (GUI). *← WIMPS* *Windows Icons menus Pointers*

Write down **two** features of a GUI and for each give a reason why they are needed.

Feature 1 .... *Windows* ....

Reason 1 .... *It will allow the user to see what they are doing;* ....

Feature 2 .... *Icons* ....

Reason 2 .... *Pictorial representation of items when clicked it opens up a task or a program.* ....

[4]

13 Computers are being used in offices. *→ Effects of use of computers*

Describe how the use of computers has affected the work of employees and their working patterns.

be guided by working patterns to answer this question, i.e. part-timing, full-time, Compressed hours, Flexi-working.

- use of computers has led to the need for Flexi-working patterns, or even working from home.

- They have allowed people to work on part-time basis hence increase their output.

- The use of computers has led to some being redundant and hence they end up losing their jobs.

- Less people work in offices.

- Computers help office staff to be more productive

- It has led to an increase in the number of blue-collar jobs and technical operators (Technicians)

[6]

14   rtf and pdf are file types.

(a) Describe what is meant by an rtf and a pdf file type.

rtf .....Rich text file.....
.....Its a text file with generic text files.....

pdf .....Portable document format.....
.....Its a Standard image file.....

[2]

(b) Explain the differences between the two file types.

.....rtf can be read by most word processing editor.....
.....while with pdf their layout and formatting stay the.....
.....Same regardless of which device is accessing the file.....
.....Pdf take up less memory for the same size of document.....
.....as that of rtf......
.....Pdf are harder to edit ; rtf are editable.....   [3]

15   Proofreading is often confused with visual verification.

Describe the differences between proofreading and visual verification.

.....Proofreading is checking spelling and grammar errors whereas.....
.....visual verification does not check for errors.....
.....Visual verification refer to the original document whereas.....
.....proofreading does not need to refer to the original document.....   [2]