Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/13**

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 the list.

centred	a footer	a gutter	a header	indented
justified	landscape	an orphan	portrait	a widow

(a) The orientation of a page that is taller than it is wide is called

.... [1]

(b) An area at the bottom of a page is called

.... [1]

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

.... [1]

(d) Text that is aligned horizontally in the middle of a line is called

.... [1]

2 A computer controlled glasshouse is used to grow plants.

State **three** sensors that could be used in the glasshouse.

1 ....

2 ....

3 ....

[3]

3 Circle **two** features of multimedia presentations which would **not** be found in a word processed document.

bullets	images	numbers	photographs
sound	tables	text	video

[2]

4 A person contacts an online medical website that uses an expert system to allow users to self-diagnose illnesses.

   (a) Write down the component within the expert system that matches the definition given.

      (i) This component contains a database of facts.

      ....

      .... [1]

      (ii) This component carries out the reasoning of the expert system.

      ....

      .... [1]

      (iii) This component allows the person to interact with the system.

      ....

      .... [1]

   (b) Describe how an expert system is used to diagnose an illness.

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      .... [6]

5   A restaurant uses a number of different types of software. These include control, measurement, spreadsheet and word processing software.

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

	Control (✓)	Measurement (✓)	Spreadsheet (✓)	Word processing (✓)
Producing menus for the restaurant				
Calculating the cost of each of the meals				
Automatically turning on the fans when the room gets too hot				
Monitoring the temperature in the restaurant				

[4]

The restaurant owner is planning to upgrade the software used to book reservations. He has employed a systems analyst who is analysing the current system. The systems analyst can either send out questionnaires for staff to answer or observe staff working with the current system.

(b) Discuss the advantages and disadvantages of using questionnaires that staff answer rather than observing staff to gather information about the current system.

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.... [6]

6 A web page can contain images saved as png or gif file types.

(a) State what is meant by png and gif file types.

png ....

....

gif ....

....

[2]

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

....

....

....

....

....

.... [3]

7 A school librarian is setting up a database of all the revision books he has in stock. The school library sells revision books to students. The books range in value from $1 to $10 and are available either in electronic book type (E) or physical book type (P).

(a) The librarian is planning to set up a number of different types of validation rule for the fields to check data entry. Write down the most appropriate field name from the table that could be used with each of the validation rules. Your answers must be different in each case.

Name_of_book	Department	ISBN	Book_type	Cost
Modern History	HIS	0140621393432	P	$5.20
GCSE ICT	ICT	0006132237	E	$1
A Level Calculus	MAT	0006153516	E	$1
Human Biology	SCI	0006511376	E	$2.30

Presence ....

Lookup ....

Range ....

Length ....

[4]

The librarian needs to set up a primary key field.

(b) Write down the most appropriate field name from the table that could be used as a primary key field.

.... [1]

Most of the revision books are available in electronic book type as digital versions of the printed books. These are stored as interactive PDF files.

(c) Describe the benefits and drawbacks of using the digital versions.

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.... [6]

8   An organisation has changed the way in which members of staff can enter the building. Previously they typed in a four-digit code on a key pad; now they use a device that reads a handprint.

   (a) Discuss the effectiveness of using a handprint to enter the building rather than keying in a code.

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   .... [8]

   Handprint scans are an example of a biometric method to enter a building.

   (b) Give **two** other examples of biometric methods that could be used in this scenario.

   1 ....

   2 ....

   [2]

9 The use of email has replaced many forms of communication.

Describe the constraints that you need to consider when writing and sending an email.

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.... [6]

10 (a) For each of the following types of backing storage give **one** example of its associated media. Your answers must be different in each case.

Optical ....

....

Magnetic ....

....

Solid state ....

....

[3]

(b) Describe **three** differences between optical and magnetic backing storage.

1 ....

....

2 ....

....

3 ....

....

[3]

11 A student is carrying out some research for school.

(a) Explain **two** ways she could search for information on the World Wide Web (WWW).

1 ....

....

2 ....

....

[2]

(b) Explain the differences between the internet and the World Wide Web (WWW).

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.... [4]

12 The internet contains three web development layers. One layer is the content layer. This layer is used to enter the content of a web page structure.

(a) Name and describe the other **two** web development layers.

Layer ....

Description ....

....

Layer ....

Description ....

....

[4]

(b) Explain why tables can be used to structure elements within a web page.

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....

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.... [3]

13 A teacher is concerned that students are playing online computer games at home without considering eSafety. The teacher is going to create a set of rules that he feels they should be following.

Write down a list of eSafety rules that he could include.

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.... [6]

14 Explain why page, section and column breaks are used in documents.

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.... [3]

[Turn over

15 An employee is carrying out work for her company at home. The work she is doing is confidential. She has been advised by her company to use encryption. She wishes to transfer some of this work to the office.

(a) Discuss **two** different methods she could use to transfer this work to the office. Include in your answer the advantages and disadvantages of each method.

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.... [6]

(b) Describe what is meant by the term encryption and why it is used.

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.... [3]

(c) Tick (✓) the most appropriate working pattern to match the following statements.

	Compressed hours (✓)	Flexible hours (✓)	Job sharing (✓)	Part-time working (✓)
An employee works a full day but negotiates with the employer the start and end times				
An employee works the same number of hours as a full week but in fewer days				
An employee works for fewer hours than a full-time employee				

[3]

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Published

This document consists of **9** printed pages.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	portrait	1
1(b)	a footer	1
1(c)	an orphan	1
1(d)	centred	1

Question	Answer	Marks
2	**Three** from: Light Temperature Humidity/moisture pH CO_2	3

Question	Answer	Marks
3	Sound Video	2

Question	Answer	Marks
4(a)(i)	Knowledge base	1
4(a)(ii)	Inference engine	1
4(a)(iii)	Interactive user interface	1
4(b)	**Six** from: An Interactive user interface appears The expert system asks questions about the illness Yes and No type answers to the questions Answers lead to other questions The inference engine searches… …the knowledge base… …uses the rules base Probabilities/possibilities of diagnoses and treatments are displayed Displays the ways it achieved the solutions/conclusions	6

Question	Answer	Marks
5(a)	<table><tr><td></td><td>**Control (✓)**</td><td>**Measure ment (✓)**</td><td>**Spread sheet (✓)**</td><td>**Wordproc essing (✓)**</td></tr><tr><td>Producing menus for the restaurant</td><td></td><td></td><td></td><td>✓</td></tr><tr><td>Calculating the cost of each of the meals</td><td></td><td></td><td>✓</td><td></td></tr><tr><td>Automatically turning on the fans when the room gets too hot</td><td>✓</td><td></td><td></td><td></td></tr><tr><td>Monitoring the temperature in the restaurant</td><td></td><td>✓</td><td></td><td></td></tr></table>	4
5(b)	**Six** from: **Advantages** Answers are more honest as they are anonymous Staff can remain anonymous whereas the observation cannot be anonymous Can be sent to all the staff at the same time whereas the observer may only see one part of the operation Questionnaires can be filled in at any time whereas observations can only be carried out when the restaurant is working Analysis of questionnaire can be carried out automatically whereas observations the observer must produce notes Observer may miss elements whereas questionnaires are filled in by the users **Disadvantages** Users do not always complete the questionnaire and hand it back but observation watches users working Work rate can be influenced by being observed but this does not apply to questionnaires More chances of incorrect data if question not understood The observer can see exactly how the system works well and not so well whereas a questionnaire takes the users viewpoint **To gain full marks the discussion must have correct answers for both advantages and disadvantages**	6

Question	Answer	Marks
6(a)	**png** **One** from: Raster/full colour digital photos Images with a transparent background **gif** Moving/animated image	**2**
6(b)	**Three** from: Same images saved as a GIF loads/reads faster than PNG GIF uses limited colours (256) whereas PNG uses a bitmap of colours GIF can have moving and static images whereas PNG only have static images PNG can have transparent background PNG is compressed PNG is lossless	**3**

Question	Answer	Marks
7(a)	Presence **ISBN** Lookup **Book_type** Range **Cost** Length **Department**	**4**
7(b)	ISBN	**1**
7(c)	**Six** from: **Benefits** Digital therefore can easily be used in other documents/software Instant access on many devices More accessible for disabled Quicker to search digital books **Drawbacks** Health issues with using a computer to read the book Cannot be written in braille May require extra software/reader Never own the book as it is only data Need to purchase a device to read them Needs the internet to download the book **To gain full marks the description must have correct answers for both benefits and drawbacks**	**6**

Question	Answer	Marks
8(a)	**Eight** from: **Positives** Data can be read/identified faster Data can be read/identified by electronic comparison therefore relative higher level of accuracy Increases security as the hand is unique whereas a four-digit code easier to guess Can't forget your handprint, unlike a code The person must be present to enter the building **Negatives** If the hand is damaged, then may not work More difficult to change biometric data Only works with one hand therefore difficult for right-handed people Recognition could be slower as system is more complex Harder to set up the biometric system Takes longer to add new people/change biometric data to the system Biometrics can use a lot of memory to store the data Intrusive as personal details must be stored in biometrics More likely to be affected by the environment **To gain full marks the discussion must have correct answers for both positives and negatives**	**8**
8(b)	**Two** from: Fingerprint Vein geometry Retina Iris Face	**2**

Question	Answer	Marks
9	**Six** from: Abide by the laws within the country that affect the general use of emails Use acceptable language Abide by copyright Follow local guidelines set by an employer/schools Use appropriate security Follow netiquette Respect other people/s/own privacy Be aware of the need for password protection Be aware that email accounts can be Illegally accessed	**6**

Question	Answer	Marks
10(a)	**Optical** CD ROM/DVD ROM, CD R/DVD R, CD RW/DVD RW, DVD RAM, Blu-ray discs/CD/DVD **Magnetic** Fixed/portable/removable hard disks/magnetic tape. **Solid state** Memory stick/flash card	3
10(b)	**Three** from: Optical data is stored using laser whereas Magnetic data is stored using magnetic fields Optical disc storage is serial whereas Magnetic disk storage is direct/sectors and tracks Magnetic storage is affected by magnetic fields whereas Optical storage is not Magnetic media tends to store more data than optical media Optical storage is more robust Optical has a faster data access/transfer speed	3

Question	Answer	Marks
11(a)	**Two** from: Type in a web address Use a search engine Type what you need on the search bar	2
11(b)	**Four** from: **The internet** Network of Networks//WAN It is the infrastructure Contains email, FTP **The World Wide Web** Collection of websites Accessed from the internet Service of the internet **To gain full marks the explanation must have correct answers for both the internet and World Wide Web**	4

Question	Answer	Marks
12(a)	Presentation Defines the format of a web page/individual elements through styling Behaviour To enter scripting language to a web page/individual element	**4**
12(b)	**Three** from: Allows greater control over page layout Positions elements/data on the page Conveys relationships between items Displays data	**3**

Question	Answer	Marks
13	**Six** from: *Examples* Do not give away personal information Do not use your real name as your username Do not use your face image as your avatar If you receive messages from unwanted users block and report them Do not meet unknown users in real life//use a chaperone Do not give financial information to other users If you receive unwanted and abusive messages report the sender of the messages When sending messages always us appropriate language Think before you reply to a message	**6**

Question	Answer	Marks
14	**Three** from: To adjust pagination To avoid orphans/widows To improve layout on the page To allow for the change of orientation of pages in the document To enable to start a new chapter on a new page	**3**

Question	Answer	Marks
15(a)	*Use of the Cloud* The cloud does not require a physical device Storage size is not an issue with the cloud Cloud is operated by a third party therefore security could be an issue Require a stable internet to access to upload and download the data *Portable device: pen drive/Hard drive* The device uses USB port therefore it is easy to plug in Does not require access to the internet to access the data May be lost/damaged in transit Magnetic drives can be affected by strong magnets/x rays Limited number of read/writes *Email as an attachment* Do not require physical device Require access to the email account both at home and in the office The memory size could be an issue Requires the use of the internet	6
15(b)	Max **two** from: Scrambling data Changing plain text into cipher Encryption converts text into a meaningless form Max **two** from: To prevent data/information from being understandable to people who access/intercept the data Protects data	3

15(c)		Compressed hours (✓)	Flexible hours (✓)	Job sharing (✓)	Part-time working (✓)
	An employee works a full day but negotiates with the employer the start and end times		✓		
	An employee works the same time as a full week but in fewer days	✓			
	An employee works for fewer hours than a full-time employee				✓

Marks for 15(c): **3**