



CANDIDATE  
NAME

CENTRE  
NUMBER

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NUMBER

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## 0417/11

May/June 2022

**2 hours**

You must answer on the question paper.

No additional materials are needed.

- 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.

- 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

..... [1]

(b) Programs and data are examples of

..... [1]

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

..... [1]

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

..... [1]

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

1 .....

2 .....

[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 .....

.....

2 .....

.....

[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.

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[4]

**6** Stylesheets are used in web pages.

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

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[2]

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

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[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.

This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page, providing a template for handwriting practice or general writing. There are no margins, text, or other markings on the page.

[8]

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

Reason .....

Example .....

[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.

.....

.....

.....

.....

.....

.....

[3]

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

1 .....

.....

2 .....

.....

3 .....

.....

[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 .....

2 .....

3 .....

4 .....

[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 .....

2 .....

[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 .....

.....

Use .....

.....

Software 2 .....

.....

Use .....

.....

[4]

- 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 .....

2 .....

3 .....

[3]

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

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[6]



**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.

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[6]

- 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 .....

.....

Prevention 2 .....

.....

[2]

**(ii)** Electrocutation

Prevention 1 .....

.....

Prevention 2 .....

.....

[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 .....

.....

2 .....

.....

3 .....

.....

[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.

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[4]

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

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[4]

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

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[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 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

[4]

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

1 .....

.....

2 .....

.....

[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

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

- (a)** Explain why verification is carried out.

.....

.....

.....

..... [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 .....

Length .....

Type .....

[3]

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

..... [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 .....

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2 .....

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3 .....

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4 .....

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[4]

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

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[4]

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# Cambridge IGCSE™

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INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11

Paper 1 Theory

May/June 2022

MARK SCHEME

Maximum Mark: 100

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<p><b>Published</b></p>
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This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2022 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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This document consists of **14** printed pages.

**PUBLISHED****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	Hub Bridge	2

Question	Answer	Marks
2(a)	hardware	1
2(b)	software	1
2(c)	an applet	1
2(d)	a sensor	1

Question	Answer	Marks
3	<b>Two</b> from: Computer Analogue to digital convertor/ADC Digital to Analogue convertor/DAC Actuator	2

Question	Answer	Marks
4	<b>Two</b> from: Does not need access to the internet Fewer issues storing the data as the connection could drop during storage if the cloud is used More control over the stored data	2

Question	Answer	Marks
5	<p><b>Four from:</b></p> <p><b>Advantages</b></p> <p>Less wear on the card as it is not used in a device</p> <p>Transaction is quicker</p> <p>Can be read from a pocket</p> <p>No shoulder surfing</p> <p><b>Disadvantages</b></p> <p>Transaction can be read by hacker's device</p> <p>Does not use a PIN therefore money can be taken if lost</p> <p>Limit on spending on the card</p> <p>If lost the card could be used by anyone so is less secure</p> <p><b>To gain full marks the description must have correct answers for both advantages and disadvantages</b></p>	4

Question	Answer	Marks
6(a)	<p>Used to describe the presentation of a document written in HTML</p> <p>Enables the separation of presentation and content</p> <p>Part of the presentation layer</p>	2
6(b)	<p><b>Four from:</b></p> <p>Attached stylesheets are separate from the web page whereas Inline style attributes are within each web page</p> <p>An attached stylesheet is edited in one file whereas Inline style attributes are edited by changing each web page</p> <p>Attached stylesheet link has to go into the head section of the web page whereas Inline style attributes can be anywhere in the web page</p> <p>Inline style attributes can be within HTML tags</p> <p>Attached stylesheets can be applied to multiple pages whereas Inline style attributes only apply to individual web pages</p> <p>Inline style attributes can be used to override the attached stylesheet</p>	4

Question	Answer	Marks
7(a)	<p><b>Eight</b> from:</p> <p><b>Similarity</b></p> <p>Both use a primary key Both can create searches/reports Both store data in records and fields in the table Both use indexes</p> <p><b>Differences</b></p> <p>Flat file database is a plain text file Flat file is a simple structure Flat file uses one table Relational database has linked tables/relationships Relational database allows searches/reports to be created over multiple tables Relational database allows cross referencing between tables Relational database records are easier to add Relational databases are more powerful Relational database reduces duplicate data Relational database uses foreign keys</p> <p><b>To gain full marks there must be correct answers for both similarities and differences</b></p>	<b>8</b>
7(b)	<p><b>One</b> from:</p> <p>The data is in a list There is only a small amount of data A single table is to be used</p> <p><b>One</b> mark:</p> <p>Example of a list such as name, address/CSV files</p>	<b>2</b>

Question	Answer	Marks
8(a)	<p><b>One</b> from: Aches and pains in the hands and fingers Painful swelling of the wrist and fingers</p> <p><b>Two</b> from: Caused by repetitive movements Caused by holding a mouse and clicking the buttons repetitively Caused by constant typing on a keyboard Caused by sitting in a poor posture for a long period of time</p>	3
8(b)	<p><b>Three</b> from: Use of a wrist rest Use of a mouse rest Take regular breaks Exercise the hand and fingers Use an ergonomic keyboard/ergonomic mouse Arrange workspace so that it is not cramped Using an ergonomic chair</p>	3

Question	Answer	Marks
9(a)	<p><b>Four</b> from: Text Images Logos Slide footer/header Automatic slide number Link/button to other slide/file/web page Lines for layout <u>Animation/video/sound</u></p>	4
9(b)	<p><b>Two</b> from: Microphone Headphones/speakers Sound card</p>	2

Question	Answer	Marks
9(c)	Matched pairs: <b>Word processing</b> Type/enter the text for the presentation <b>Image editing software/graphics package/photo editing</b> To prepare images for inclusion in the presentation <b>Sound editing software</b> To record the message for the presentation <b>Video editing software</b> To change the video of Martin <b>Spreadsheet</b> To create a chart/graph	<b>4</b>

Question	Answer	Marks
10(a)	<b>Three</b> from: Oxygen Light pH Turbidity	<b>3</b>



Question	Answer	Marks
10(b)	<p><b>Six from:</b></p> <p><b>Advantages</b></p> <p>More accurate results produced</p> <p>Computer does not forget to take a reading</p> <p>Results are processed automatically</p> <p>Readings can be taken at more points as many humans are needed</p> <p>Readings can be taken that would be impossible for humans</p> <p>Data can be analysed continuously</p> <p>Readings can be taken more frequently</p> <p>Safer than using humans</p> <p>Better response time</p> <p>Can work 24/7</p> <p>Can be placed in remote areas where humans could not work</p> <p>Fewer humans required therefore reducing the cost</p> <p><b>Disadvantages</b></p> <p>Computer responds less to unusual circumstances</p> <p>Computer equipment can be more susceptible to atmospheric conditions</p> <p>Computer equipment is more likely to be damaged or stolen by vandals</p> <p><b>To gain full marks the discussion must have correct answers for both advantages and disadvantages</b></p>	<b>6</b>

Question	Answer	Marks
11	<p><b>Interviews</b></p> <p><b>Advantages</b></p> <p>Questions can be explained if they are misunderstood this cannot happen with questionnaires</p> <p>Questions can be asked relating to the answers given previously</p> <p>More detailed answers can be given</p> <p>More complex questions can be asked</p> <p>Questions can be changed to suit the person being interviewed</p> <p>The person being interviewed tends to answer all the questions</p> <p>Can see body language</p> <p><b>Disadvantages</b></p> <p>They are not anonymous whereas questionnaires are</p> <p>Takes far longer to complete than a questionnaire</p> <p>The interviewer and interviewee must be available at the same time</p> <p>More expensive as the interviewer has to be hired and interviewee needs time off</p> <p>Answers may not be honest//more honest with a questionnaire as the person is anonymous</p> <p>Answers may be skewed by the interviewer</p> <p>Answers in a questionnaire can be analysed quicker through OMR</p> <p>Questionnaires tend to be sent to more people</p> <p><b>To gain full marks the discussion must have correct answers for both interviews and questionnaires</b></p>	6

Question	Answer	Marks
12(a)(i)	<p><b>Fire</b></p> <p><b>Two</b> from:</p> <p>CO<sub>2</sub> fire extinguisher</p> <p>Don't overload sockets</p> <p>Have fans/cooling system</p> <p>Use Residual Circuit Breaker/RCB</p>	2
12(a)(ii)	<p><b>Electrocution</b></p> <p>Don't bring drinks close to computers</p> <p>Cover/insulate live/bare wires</p>	2

Question	Answer	Marks
12(b)	<b>Three</b> from: Report/block cyberbullies Respect other players Check game ratings for age Reduce the amount of time spent gaming Be careful of in-app purchases Turn on privacy settings Don't use your real name//use a nick name Don't give away personal information	<b>3</b>
12(c)	Max <b>two</b> from: Part of the authentication system Needed to improve security  Max <b>three</b> from: Combined they are unique User ID is an identifier for the user Password is a string of characters Passwords verify the user in the authentication process	<b>4</b>

Question	Answer	Marks
13(a)	<b>Four</b> from: Copyright is the legal and exclusive right to copy, or permit to be copied, some specific work If you own the copyright on the content of a web page someone else cannot make a copy of it without your permission Copyright usually originates with the creator of a work, but can be sold, traded, or inherited by others If you blog, take photographs, publish music, or otherwise produce copyrightable content, you legally own that content Whether you want to let other people use it or not is your decision If you want to use other people's content, you have to understand permissions and licensing, what is legal and what isn't//Read Terms and Conditions Supports the original producers of the software/content	<b>4</b>

Question	Answer	Marks
13(b)	<p><b>Serial numbers/product keys</b> When software is being installed, users are often asked to enter a unique number which proves the software is original Serial numbers and product keys are supplied with the original copy of the software</p> <p><b>Holograms</b> Holograms are often used on the packaging of software and they indicate that the copy is genuine Software without a hologram on the packaging is usually an illegal copy as they are too difficult and costly for pirates to implement</p> <p><b>Licence agreements</b> Licence agreements are part of the software installation process and they inform the user exactly how they are legally allowed to use the product Users are required to 'agree to terms of use' before they can complete the installation Any breach of this can mean prosecution and fines</p> <p><b>One mark for naming the method then one mark for each reason</b> <b>To gain full marks candidates must have at least one description in addition to naming the methods</b></p>	<b>4</b>
13(c)(i)	<p><b>Four from:</b> The laws within a country//In some countries emails are monitored and people are punished for what they write Using emails for marketing purposes//Laws differ in different countries Netiquette Local guidelines set by an employer The need for security//Some countries monitor keywords in emails Password protection does not allow people to see the contents Cultural offences</p>	<b>4</b>

Question	Answer	Marks
13(c)(ii)	<b>Two</b> from for example: Include a clear, direct subject line Use a professional email address Use professional salutations Use exclamation points sparingly Be cautious with humour/sarcasm/slang Proofread the message before you click send Do not use capital letters as it implies shouting Do not use swear/offensive words Do not use defamatory comments Protect others privacy	<b>2</b>

Question	Answer	Marks
14(a)	Checks the data entered/transferred/copied correctly Matches the original document	<b>2</b>
14(b)	Check digit: Serial_number Length: Shelf_number Type: Number_in_stock//Name_of_supplier//Name_of_item	<b>3</b>
14(c)	Serial_number	<b>1</b>

Question	Answer	Marks
15(a)	<b>Four</b> from: Is debit card number valid/exists Does name entered match that on system Is expiry/start date valid/matches date stored on system Does security code/CVV entered match that stored on system Is there available credit/funds in the bank account Checks for unusual spending patterns Is card blocked/reported stolen/lost	<b>4</b>

Question	Answer	Marks
15(b)	<b>Four</b> from: Computer looks up the date of performance/performance reference number Matching record is retrieved Checks/Searches if the seats are available Flags the seats to stop double booking as temporary hold Reduced number of available seats by the number booked//seats flagged as fully booked Calculate cost of seats Prints ticket/generates e-ticket E-ticket/ticket sent to customer Receipt is printed/Verification email sent Data is checked for accuracy If booking not completed, then temporarily hold flag is removed from the seat Reduce number of seats available once the booking is complete	<b>4</b>