



CANDIDATE
NAME

CENTRE
NUMBER

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NUMBER

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0417/12

Paper 1 Theory

February/March 2023

1 hour 30 minutes

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 80.
- 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 **12** pages.

- 1 (a) Explain what is meant by the term software.

.....
.....

[1]

- (b) State the **two** types of software used by computers.

1
2

[2]

- 2 Tick (✓) the device which produces hard copy.

A Buzzer	<input type="checkbox"/>
B Laser printer	<input type="checkbox"/>
C Touch screen	<input type="checkbox"/>
D Webcam	<input type="checkbox"/>

[1]

- 3 State **three** items that should be included in the technical documentation of a computer system.

1
2
3

[3]

4 Young people use the internet for research and communication.

(a) Search engines can be used to research information on the internet.

Describe **three** benefits of using a search engine to find information.

- 1
- 2
- 3

[3]

(b) Social media can be used to communicate with friends.

Give **four** precautions that young people should take when using social media.

- 1
- 2
- 3
- 4

[4]

- 5** The number of people using online shopping has increased. This has led to an increase in the number of journeys for the delivery drivers.

Describe how an expert system can be used to produce the best route for the delivery of items.

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

[6]

- 6** Bluetooth is a method of wireless communication.

State **two** devices found in the home which could be connected via Bluetooth.

1

2

[2]

7 Describe the characteristics of a primary key and a foreign key.

(a) Primary key

.....

.....

.....

..... [2]

(b) Foreign key

.....

.....

.....

..... [2]

8 Many devices in the home can connect to the internet. These are called smart devices.

Describe **four** benefits of using these smart devices.

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..... [4]

9 A web page can contain three web development layers. One of these is the content layer.

(a) State **one** use of the content layer.

.....
.....

[1]

(b) Identify the other **two** web development layers and give a use for each.

1

Use

.....

2

Use

.....

[4]

10 Some computers have touch screens.

Describe **three** benefits of using a touch screen.

1

.....

2

.....

3

.....

[3]

11 A student has downloaded a file which contains a virus.

(a) Describe the possible effects on his computer system if he opens the file.

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.....
.....
.....

[2]

(b) Explain how the student could prevent the computer from being infected by viruses.

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.....
.....

[3]

(c) Some files containing viruses have to be quarantined as they cannot be deleted.

(i) State the type of files that may have to be quarantined rather than deleted.

.....

[1]

(ii) Explain how the software detects and quarantines the file.

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.....
.....
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.....

[3]

12 A tennis coach is creating a presentation to explain to teenagers the basics of playing tennis.

- (a)** Describe the design features that must be included to make the presentation appeal to the teenagers.

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.....

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.....

[4]

- (b)** The designer needs to be aware of copyright legislation when creating the presentation.
Explain the need for copyright legislation.

.....

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.....

.....

[2]

13 People can watch a movie either by streaming or from a Blu-ray disc.

Give **two** advantages of watching the movie by streaming rather than from a Blu-ray disc.

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[2]

- 14** Compare RAM and ROM. Your answer must include similarities and differences.

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[4]

- 15** Tawara Stores is a small company that does not make much profit. The managing director is deciding whether to implement a new IT system using direct changeover or parallel running.

Describe the advantages and disadvantages of using direct changeover compared with parallel running in this scenario.

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[6]

- 16** A school car park is controlled by a barrier. When teachers enter the car park their number plate is read and the barrier is raised automatically.

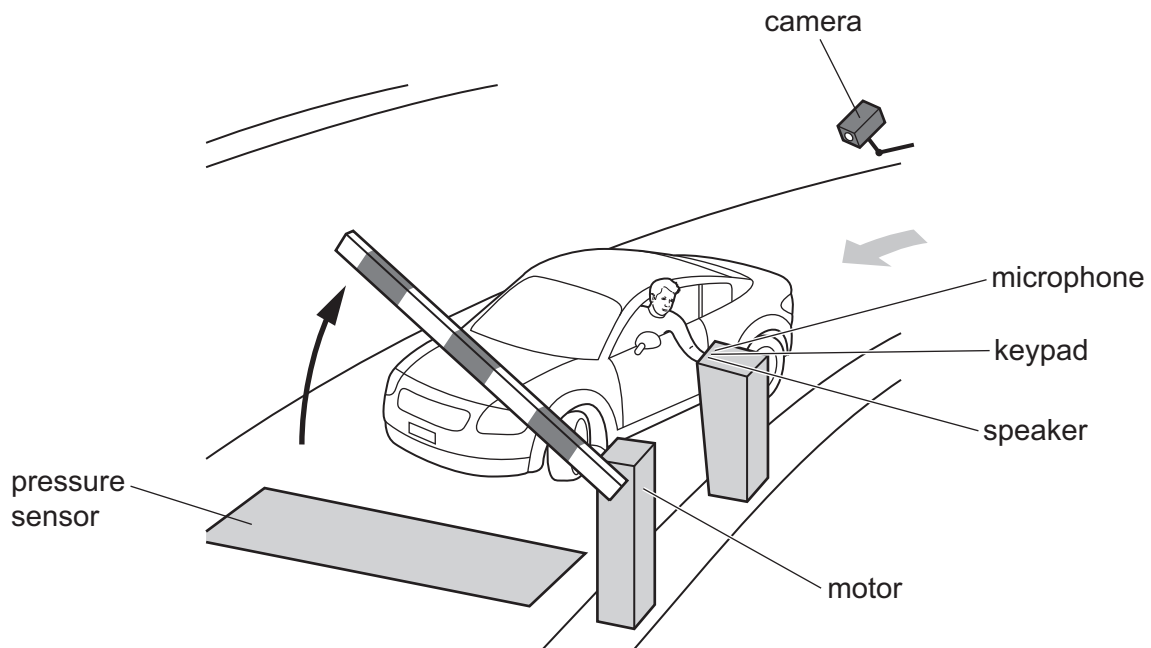


Fig. 16.1

- (a)** Visitors can use the keypad as an input device to enter a code which allows the barrier to be raised.

Identify **three** other input devices shown in Fig. 16.1.

- 1
- 2
- 3

[3]

- (b) Automated Number Plate Recognition (ANPR) is used to read and check the number plate of the vehicle.

Discuss the benefits and drawbacks of using an ANPR system.

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[6]

Please turn over for Question 17.

17 Verification and validation are used to check data.

(a) Identify and describe **two** methods of verification.

Method 1

Description

.....

.....

Method 2

Description

.....

.....

[4]

(b) Explain the following validation checks.

(i) Presence check

.....

..... [1]

(ii) Type check

.....

..... [1]

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Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY

0417/12

Paper 1 Theory

February/March 2023

MARK SCHEME

Maximum Mark: 80

Published

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 February/March 2023 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This document consists of **8** 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)	One from: Software are programs/apps used by a computer Software is used to control the operation of a computer Software are programs/apps for processing of electronic data	1
1(b)	Applications System	2

Question	Answer	Marks
2	B Laser printer	1

Question	Answer	Marks
3	Three from: Purpose of the system/program/software Limitations of the system Program listing/coding Program language used Program flowcharts/algorithms System flowchart Hardware requirements Software requirements File structures List of variables Input format Output format Sample runs/test runs Validation routines/rules	3

Question	Answer	Marks
4(a)	Fast to find the information needed More relevant websites are at the top of the list The amount of information found is reduced making it easier to find relevant information	3
4(b)	Four from: Block/report unwanted users Do not arrange to meet online strangers face to face Do not meet people you do not know alone Do not disclose personal data Do not use your real name for the social media name Do not post images that can link directly to you Do not post inappropriate images Do not use inappropriate language Respect people's confidentiality/privacy Set status to private	4

Question	Answer	Marks
5	Six from: Interactive user interface asks questions about the route The user answers the questions with Yes/No answers The towns and areas visited/start/end point are typed/entered into the interactive user interface Answers lead to other questions The inference engine searches... ...the knowledge base... ...uses the rules base The knowledge base is searched for suitable routes between two points Suggested/probable routes and schedules are displayed	6

Question	Answer	Marks
6	Two from, for example: Keyboard Headphones Printer Smart phone	2

Question	Answer	Marks
7(a)	Two from: It is unique It cannot be a null value Identifies a record	2
7(b)	Two from: Is needed to act as a link in relationships It is only present in relational databases It is a primary key in another table	2

Question	Answer	Marks
8	Four from, for example: Can control the heating from your smartphone so that you come home to a warm house Smart TVs allow programs to be recorded remotely Smart TVs allow view on demand via the internet Money saving due to reduced utility bills as heating is only turned on when needed Smart fridges allow food to be automatically added to the food order Increased sense of security in the home due to monitoring the CCTV remotely The smart device sends alerts to your phone/portable device Can control the power to devices from anywhere in the home therefore saves money	4

Question	Answer	Marks
9(a)	One from: Holds/to enter the information of a web page Create the structure of the web page	1
9(b)	One from: Presentation Styles One from: To display elements within the web page Holds the css/stylesheets Defines the format of a web page through styling elements Maintains the consistency of the elements in the web page One from: Behaviour Scripting One from: For scripting language to control elements within the web page Holds the forms/image galleries Adds Interactive content of the web page Adds functionality	4

Question	Answer	Marks
10	Three from: Quick to select options Small footprint Improved hand/eye coordination Allows the user to use zoom and pinch making item selection quick	3

Question	Answer	Marks
11(a)	Two from: Pop up messages can appear on the computer screen Causes the computer processing to slow down Causes the computer to crash Deletes/corrupts files/programs/data	2
11(b)	Three from: Download/use up to date anti-virus software Regularly scan the computer for viruses Only open email attachments from people you trust Scan all portable storage media before downloading files/software	3
11(c)(i)	System files	1

Question	Answer	Marks
11(c)(ii)	<p>Max two from:</p> <p>Scan the computer for viruses</p> <p>If a virus is found in the file...</p> <p>...it alerts the user that the file needs to be quarantined</p> <p>Re-scan the computer to check for further viruses</p> <p>Max two from:</p> <p>Allows the user to accept/reject the quarantining of the file/</p> <p>The file is moved to a hidden directory</p> <p>The user does not have access to the quarantined file</p>	3

Question	Answer	Marks
12(a)	<p>Four from, for example:</p> <p>Use of videos/animation relating to the topic</p> <p>Use images relating to the topic</p> <p>Consistent layout across all the slides</p> <p>Balance of pictures and text</p> <p>Balanced use of white space and content</p> <p>Use bullet points as easier to absorb information</p> <p>Balance of size between headings and text</p> <p>Use of interactive elements</p> <p>Use of background music/sound</p>	4
12(b)	<p>Two from:</p> <p>Copyright is a type of intellectual property</p> <p>It gives the owner of the copyright the exclusive right to make copies of the work</p> <p>It allows the owner to give permission for others to use the work</p>	2

Question	Answer	Marks
13	<p>Two from:</p> <p>Cheaper than buying the Blu-ray player</p> <p>Streaming works on different internet connected devices</p> <p>Streaming uses a simpler interface</p>	2

Question	Answer	Marks
14	<p>Four from:</p> <p>Similarities Both are internal memory Both are primary storage The data on both can be read Both are directly accessed by the CPU</p> <p>Differences RAM is volatile//ROM is non-volatile RAM data can be read from and written to//ROM is read only RAM is temporary memory//ROM is permanent memory ROM stores the start up instructions whereas RAM is used to store the current program/instruction</p> <p>To gain full marks the comparison must have correct answers for both similarities and differences</p>	4

Question	Answer	Marks
15	<p>Six from:</p> <p>Advantages Benefits are immediate whereas with parallel running it takes time for the new system to be fully running With direct they only have to pay for one set of staff therefore saves costs Costs are saved as only one computer system is needed With direct the maintenance is cheaper as there is only one set of computers Data is only entered once so saves duplication of data The new system is checked thoroughly before implementation</p> <p>Disadvantages Staff have to be trained and be fully ready to use the new system before it is implemented Staff cannot be trained on the new system whereas in parallel both systems are running If there is a problem, then all the data can be lost; this could be disastrous for the company whereas in parallel there is the original system With direct staff cannot be trained gradually</p> <p>To gain full marks the description must have correct answers for both advantages and disadvantages</p>	6

Question	Answer	Marks
16(a)	Microphone Camera Pressure sensor	3

Question	Answer	Marks
16(b)	<p>Six from:</p> <p>Benefits Saves time in having to check the number plates manually Less errors as the recognition system is automatic Saves money as there is no need to check the number plates manually Secure system as it only allows stored vehicles</p> <p>Drawbacks All vehicles need to be added to the database If the number plate is obscured/dirty it is difficult to read Some number plates cannot be read due to odd font/sideways Data needs to be kept up to date Expensive to setup/maintain the system</p> <p>To gain full marks the discussion must have correct answers for both benefits and drawbacks</p>	6

Question	Answer	Marks
17(a)	<p>Visual verification – 1 mark Re-reading the document referring to the original – 1 mark</p> <p>Double data entry – 1 mark One from: One person types in the data again referring to the original document A second person types in the data from the original document and the two entries are compared</p> <p>Allow one mark for the method and one mark for the corresponding description</p>	4
17(b)(i)	Checks that the data has been entered/present into the field	1
17(b)(ii)	<p>One from: Checks the input data does not contain invalid characters Checks the data contains the correct <u>data</u> type</p>	1