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INFORMATION AND COMMUNICATION TECHNOLOGY

0417/13

Paper 1 Theory

May/June 2024

1 hour 30 minutes

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 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 Circle **two** solid-state storage devices.

- | | | | |
|----------|-----------|--------------|-----------|
| Actuator | Cloud | CD-ROM drive | DVD drive |
| HDD | Pen drive | Sensor | SSD |

[2]

2 Complete each of the following sentences about web development layers.

(a) The layer used to create the structure of a web page is called

..... [1]

(b) The layer used to display and format elements within a web page is called

..... [1]

(c) The layer that is a scripting language to control elements within a web page is called

..... [1]

3 A student is able to access a secure area of the school's website using zero login.

(a) Explain what is meant by zero login.

.....

 [2]

(b) Biometrics could be used as another method of accessing the secure area.

State **three** examples of biometric methods.

- 1
- 2
- 3

[3]





- 4 Discuss the positive and negative effects of using microprocessor-controlled devices in autonomous vehicles.

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[6]





5 One of the benefits of a Graphical User Interface (GUI) is that it is user friendly.

(a) State **two** other benefits of a GUI.

1

.....

2

.....

[2]

(b) State **two** other types of user interface.

1

2

[2]

6 (a) Discuss the advantages and disadvantages of using web-conferencing rather than video-conferencing for meetings.

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[6]





(b) An organisation has decided to use video-conferencing for its meetings.

State the hardware and software required to set up the video-conference.

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.....

[4]





7 A teacher is creating a revision website for her students. The website contains information taken from a number of different sources including published books. These sources are protected by copyright.

(a) State what the teacher needs to do to ensure that she does not break copyright rules when she publishes the website.

.....

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.....

.....

[2]

(b) Explain the principles of software copyright.

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.....

[3]

(c) Explain why copyright legislation is needed.

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.....

[3]





8 Artificial Intelligence (AI) is having an impact on everyday life. Social media now uses AI for many tasks.

(a) State what is meant by Artificial Intelligence (AI).

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.....

[2]

(b) Evaluate the impact of Artificial Intelligence (AI) in the use of social media.

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[4]

9 An expert system can be used in medical diagnosis. An explanation system is a component of an expert system.

(a) State **three** other components of an expert system.

1

2

3

[3]





(b) Explain what is meant by an explanation system.

.....

.....

.....

.....

[2]

10 An automatic vacuum cleaner uses sensors to detect obstacles. If the vacuum cleaner is too close to the obstacle, it stops and automatically changes direction.

Describe the drawbacks of using this type of control system.

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[4]

11 Parallel running can be used as a strategy to implemented new systems.

(a) Describe what is meant by parallel running.

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[2]





(b) Describe the benefits and drawbacks of using parallel running.

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[5]

12 One of the risks when entering a password into a computer system is key logging.

(a) Explain what is meant by key logging.

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.....

.....

[2]

(b) Give **two** security improvements that could be made to prevent key logging.

1

2

[2]





- 13 A shopkeeper sells fruit and has created a table containing the name of the fruit, its bar code number and an image of the bar code.

Part of the table is shown.




Type of fruit	Bar code number	Bar code
Apple – Fuji	977135120128	 9 77135 12012 8
Apple – Jona Gold	050023495154	 0 50023 49515 4
Apricot	050128440066	 0 50128 44006 6

Fig. 13.1

- (a) State and describe **two** validation checks that could be used for the bar code number.

1

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.....

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2

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.....

[4]





- (b) Describe the advantages and disadvantages of entering the data by scanning the bar code rather than typing in the number.

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[4]

- (c) A bar code reader is an example of a direct data entry device.

State **three** other examples of direct data entry devices.

1

2

3

[3]

- 14 The features of emails include carbon copy (cc) and blind carbon copy (bcc).

- (a) State **three** other features of emails.

1

.....

2

.....

3

.....

[3]





(b) Describe what is meant by blind carbon copy (bcc).

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.....

[2]

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Paper 1 Theory

May/June 2024

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 May/June 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This document consists of **10** 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 descriptions 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.

Mark scheme comments

/ separates alternative words / phrases within a marking point

// separates alternative answers within a marking point

underline actual word given must be used by candidate (grammatical variants accepted)

max indicates the maximum number of marks that can be awarded

() the word / phrase in brackets is not required, but sets the context

Note: No marks are awarded for using brand names of software packages or hardware.

Examiners must ensure that annotations are placed to show that the whole answer has been seen

Annotations MUST be placed in white space close to where the mark is awarded

Before submitting a script please check all ticks match marks

If you have not placed any annotation near the end of a long answer then place R to show that the whole answer has been read

Read the full sentence/answer before marking it

Any blank pages place one SEEN annotation

If an answer is left blank then use SEEN and award NR, but if anything has been written for example 'Don't know', '?' etc. then use NAQ and award 0. If an answer has been attempted and crossed out then attempt to mark it.

Please make sure you have read the most up to date (10th May) AE guide.

Question	Answer	Marks
1	Pen drive SSD	2

Question	Answer	Marks
2(a)	Content/structure	1
2(b)	Presentation/style	1
2(c)	Behaviour/scripting	1

Question	Answer	Marks
3(a)	Two from: It is a security method to protect the resources/data that the user can access It is an authentication method Ability to pass through security information from initial login to host PC It requires no manual input from the user	2
3(b)	Three from: Voice recognition Fingerprint scanning Facial recognition Iris recognition Hand geometry recognition Typing recognition	3

Question	Answer	Marks
4	<p>Max five from:</p> <p>Positive Driving/travel becomes safer as the vehicle can react faster to situations Fuel/driving becomes more efficient as the vehicle finds the best way of getting from A to B Prevents human error Keeps drivers/others safe Can avoid accidents</p> <p>Max five from:</p> <p>Negative The vehicle/driver is totally dependent on the technology Very costly to repair/maintain Makes the vehicle more expensive to build/buy as it needs complex systems The device could stop working/misread/disconnect causing accidents/distractions for people Security problem of others/hackers gaining access to the vehicle can control its operation example: slam on the brakes Interference with the signal can stop the vehicle weather can interfere with the signal The driver must remain alert to override the system if needed Humans lose driving skills as no need to learn how to drive (1) Not as safe as the driver is less focused on the road</p>	6

Question	Answer	Marks
5(a)	<p>Two from:</p> <p>Uses a WIMP system It can be customised Don't have to learn commands They are intuitive</p>	2
5(b)	<p>Two from:</p> <p>Dialogue based Gesture based Command line interface</p>	2

Question	Answer	Marks
6(a)	<p>Max five from:</p> <p>Advantages Reduced cost as less extra hardware/ dedicated software is needed Far simpler interface for employees Fewer issues with lip sync/video lag/buffering Can be used on more devices Increased privacy as there is no camera More flexibility for the employee as they do not need to be in front of a camera</p> <p>Max five from:</p> <p>Disadvantages Requires internet connection and it must be stable/reliable Cannot see the body language of the people in the conference Cannot tell if the employees are paying attention/or even there Fewer features than video-conferencing Less personal as you cannot see the person</p>	6
6(b)	<p>Max three from:</p> <p>Hardware Camera Monitor Microphone Speakers Router</p> <p>Max three from:</p> <p>Software Software/hardware drivers Video conferencing software CODEC Echo cancelling software</p>	4

Question	Answer	Marks
7(a)	Two from: Must contact the copyright holders She must ask permission to use the material She should acknowledge whether material was copyright free or not She should acknowledge the sources for the material	2
7(b)	Three from: Users must not lend/rent/sell the software to other people User must not install the software on a network when other users can access it unless it is a network version Users must not modify/plagiarise the software Must not use coding from the software in your own software	3
7(c)	Three from: Prevents theft of intellectual material Protects the copyright of the owner of the software Prevents plagiarism To ensure people are rewarded for their endeavours	3

Question	Answer	Marks
8(a)	Two from: It's a computer system It can simulate human intelligence Mimics human problem solving/decision making/behaviour It can learn from previous decisions	2
8(b)	Four from: It targets advertisements allows advertisers to attract more relevant customers But targetted adverts may not be relevant/wanted Influences the user to buy articles by advertising by analysing the items they searched for/interests of users on the site/comments made by users Allows for better content on the site as customised to the user Makes it easier to locate/communicate with people therefore improve communication skills It can recognise people's faces/tag people in photographs posted to reduce the user's work in doing this It can easily detect spam/inappropriate material therefore making the social media site safer	4

Question	Answer	Marks
9(a)	Three from: User interface Inference engine Knowledge base Rules base	3
9(b)	Two from: Explanation system supplies/gives information/data to the user about the solution to the problem It describes the decision making process step by step Clarifies the structure of the solution to the problem	2

Question	Answer	Marks
10	Four from: The sensor may be above the obstacle and may not detect it Sometimes they detect transient/moving obstacles this can cause the cleaner to get confused The home owner becomes too reliant on the technology The sensors can become obstructed by dirt/dust therefore giving false readings/stop working It cannot clean the whole room due to sensing objects Does not know which parts it has cleaned or not	4

Question	Answer	Marks
11(a)	Parallel running is running both systems together until the new system works properly/fully implemented When the new system works the old system is removed	2
11(b)	Max four from: Benefits If the <u>new</u> system fails the old one is still available for a time to be used Less data will be lost during implementation Training is gradual New system can be easily tested with live data Max four from: Drawbacks Implementation is expensive as two sets of staff are needed Two systems are needed therefore more expensive There will be duplication of data entry which can cause differences in the output of the two systems More time consuming to enter data into two systems Two systems take up more physical space	5

Question	Answer	Marks
12(a)	Two from: Keylogging is a software/hardware device It records/sends to a third party every keystroke on your keyboard It can gain fraudulent access to passwords/confidential information.	2
12(b)	Two from: Install anti-keylogging/anti-malware/anti-spyware software Check the computer system before entering confidential data Update the computer system regularly	2

Question	Answer	Marks
13(a)	Two matched pairs: Check digit An extra digit added to a number which is calculated from the other digits, this ensures the rest of the number is correct Length check Checks that there are only 12 characters Presence check Checks that the number exists in the table/not a null value Type check Checks that the data entered is an integer Character check Checks that the data entered are only numbers	4
13(b)	Max two from: Advantages Faster data entry Fewer data entry errors are made Max three from: Disadvantages The scanner could misread the barcode whereas people typing in the data are more likely to check Extra hardware is required increasing costs If the bar code is damaged/folded/missing then the data may not be read properly More reliant on the technology If the barcode is incorrect the scanner would not know whereas a human could see the difference	4

Question	Answer	Marks
13(c)	Three from: Magnetic stripe reader Radio Frequency Identification reader Optical Mark Reader Optical Character Reader QR scanner Biometric scanner Magnetic Ink Character Reader	3

Question	Answer	Marks
14(a)	Three from: Automatic reply to messages Auto-forward and redirection of messages Facility to send copies of a message to many people at once Automatic filing and retrieval of messages Addresses can be stored in an address book and retrieved instantly Notification if a message cannot be delivered Emails are automatically date and time stamped Signatures can be attached Attachments can be sent	3
14(b)	Two from: Allows the user to send a message privately to some of the recipients Any recipients on the bcc line of an email are not visible to other recipients of the email Security method as emails are hidden in bcc list	2