



CANDIDATE
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0417/11

May/June 2024

1 hour 30 minutes

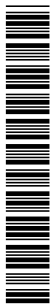
You must answer on the question paper.

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 **16** pages. Any blank pages are indicated.



6726694453

1 Circle **two** internal hardware components.

Actuator	Cloud	DVD	HDD
Motherboard	Printer	ROM	SD Card

[2]

2 Complete each of the following sentences.

(a) The scrambling of data being sent from one device to another device is called

..... [1]

(b) Using a computer to maintain the temperature of a room is called

..... [1]

(c) Unauthorised access to a computer system is called

..... [1]

(d) A conversation between a systems analyst and a member of staff that is part of the analysis is called

..... [1]

- 3 Roger is a 16-year-old student who is setting up a password for his computer. He has four ideas for the passwords he may use.

(a) Select the most appropriate password from the list and give reasons for your choice.

Roger2008

R08123

RogerZpa55w0rd

6lRg08&

Password

Reasons

.....

.....

.....

[3]

(b) State **one** way of avoiding password interception.

.....

.....

[1]

- 4 There are risks involved when using social networking sites.

Describe **four** strategies you could use to minimise the risks of using social networking sites to make new friends.

1

.....

2

.....

3

.....

4

.....

[4]

- 5 One benefit of using a command line interface (CLI) is that it uses less computer memory.

(a) State **two** other benefits of a command line interface (CLI).

1

.....

2

.....

[2]

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

1

2

[2]

- 6 Many organisations use audio-conferencing or video-conferencing as some employees work from home.

Discuss the advantages and disadvantages of using audio-conferencing rather than video-conferencing.

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[6]

- 7 An organisation has provided laptops for its sales team to use when working at home and in the office.

(a) Give **two** benefits to the employees of using these laptops for their work.

Benefit 1

.....

Benefit 2

.....

[2]

(b) Give **two** issues that may arise from providing employees with these laptops.

Issue 1

.....

Issue 2

.....

[2]

(c) The network manager of the organisation has been asked to record the details of the employees who have been provided with laptops. The network manager has decided to produce an online data capture form.

Describe the main design features that should be considered to make the online data capture form easy to complete accurately.

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.....

[4]

- (d) The employees are given a list of strategies to follow to reduce the health risks of using laptops.

State **four** strategies that could be included in the list.

1

.....

2

.....

3

.....

4

.....

[4]

8 Virtual reality can be used when training for sports.

(a) State **two** other uses of virtual reality.

1

.....

2

.....

[2]

(b) Discuss the impact of virtual reality on everyday life.

.....

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[6]

- 9 An expert system can be used to diagnose problems.

Explain the following components of an expert system.

(a) Rules base

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.....

.....

.....

.....

[3]

(b) Inference engine

.....

.....

.....

.....

.....

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[3]

- 10 An autonomous vehicle uses an automated braking system. There is a sensor at the front of the vehicle to measure the distance between the vehicle and the obstacle. The brakes are applied when the vehicle gets too close to the obstacle.

Describe the use of a microprocessor in the automated braking system.

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[4]

- 11 A company is designing a new computer system. After the system has been created and tested, it will be implemented.

(a) Compare parallel running and direct changeover. Your answer should include both similarities **and** differences.

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[4]

- (b) There is new software in this computer system that has to be evaluated.

Describe what needs to be considered when evaluating new software.

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[4]

- 12 One of the threats to personal data is credit card cloning.

- (a) Explain what is meant by credit card cloning.

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[3]

- (b) One security improvement for this type of threat is the use of contactless cards.

Give **two** other security improvements that could be made to help reduce this type of threat.

1

.....

2

.....

[2]

- 13** A new patient is attending a medical centre. He completes a form with his details and gives this to the secretary who enters the details into a database.

- (a)** The secretary carefully checks the details entered into the database with those on the form.

State what this process is called.

..... [1]

- (b)** The medical centre follows a data protection act, so the patient's data is protected by law.

State **four** principles of a typical data protection act.

1

.....

2

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3

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4

.....

[4]

- (c)** The age of the patient is stored on the patient's medical record.

- (i)** Explain why it is **not** sensible to store the age of the patient in the database.

.....

..... [1]

- (ii)** Explain what change could be made to the database to solve this problem.

.....

..... [1]

(d) The database includes primary and foreign keys.

A medical ID number is used as the primary key in the database. Examples of the medical ID number include:

556 442 8483

450 557 7104

485 777 3456

(i) State **two** validation checks that could be used to check the medical ID number.

1

2

[2]

(ii) Describe the characteristics of primary keys and foreign keys.

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[4]

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INFORMATION AND COMMUNICATION TECHNOLOGY**0417/11**

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 **11** 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 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	Motherboard ROM	2

Question	Answer	Marks
2(a)	Encryption	1
2(b)	Control	1
2(c)	Hacking	1
2(d)	(An) interview	1

Question	Answer	Marks
3(a)	Password: 6IRg08& Two from: No obvious sequence of numbers/letters Long password Strong password Hard to guess Not directly related to personal details	3
3(b)	One from: Changing password regularly Use of anti-spyware/anti-malware Be aware of shoulder surfing	1

Question	Answer	Marks
4	<p>Four from:</p> <p>Block and report unwanted users</p> <p>Do not meet an online contact face to face</p> <p>Always tell an adult if you plan to meet in person</p> <p>Avoiding the distribution of inappropriate images when sending to new friends</p> <p>Avoiding the use of inappropriate language</p> <p>Respecting confidentiality/personal/sensitive data of new friends</p> <p>Never reveal personal images</p> <p>Keep personal data private</p> <p>Set account privacy settings</p> <p>Turn off current location</p>	4

Question	Answer	Marks
5(a)	<p>Two from:</p> <p>Experts can operate the user interface faster</p> <p>Does not require a high resolution monitor</p> <p>Requires less processing power to run the CLI</p>	2
5(b)	<p>Two from:</p> <p>Graphical User Interface (GUI)</p> <p>Dialogue based</p> <p>Gesture based</p>	2

Question	Answer	Marks
6	<p>Max five from:</p> <p>Advantages</p> <p>Simpler interface for employees</p> <p>Less equipment is required therefore it is cheaper</p> <p>More flexibility/can dress casually for the employee as they do not need to be in front of a camera</p> <p>No issues with lip sync</p> <p>Can do other tasks as there is no camera/cannot be seen</p> <p>More privacy as the viewers cannot see inside your home/office</p> <p>Max five from:</p> <p>Disadvantages</p> <p>Doesn't let you have visual aids during calls</p> <p>Cannot see the body language of the people in the conference</p> <p>Cannot tell if the employees are paying attention</p> <p>Fewer features than video-conferencing</p> <p>Less personal as you cannot see the person</p> <p>Harder to control the meeting as you do not know who is speaking next</p>	6

Question	Answer	Marks
7(a)	<p>Two from:</p> <p>Data can be stored on the laptop</p> <p>Does not require the use of external storage devices when transferring data to and from the office</p> <p>Employee does not have to use his own equipment saves the employee money</p> <p>Would only be used by the employee therefore improves security</p>	2
7(b)	<p>Two from:</p> <p>Laptop can be lost/stolen in transit</p> <p>Laptop can be more easily damaged</p> <p>Risk of uploading/downloading a virus/malware by use of own devices</p> <p>Security could be compromised if own storage devices are used</p> <p>Device could be used for other work/personal activities (causing security problems)</p>	2

Question	Answer	Marks
7(c)	Four from: Navigation buttons to move to next page Help button to get help with filling in the form Drop down lists to enter the address/name Auto-complete to speed up the process to add addresses Character boxes to make it easier to type in the data Good use of white space to make it easier to read Layout of form to make it easier to read Easy to understand instructions to help fill out the form correctly Use of radio buttons/tick boxes for gender Font size to make it easier to read Font style so it is easier to read Well designed layout to make it easier to fill in	4
7(d)	Four from: Regularly rest the eyes Sit at arm's length from the screen Use a foot rest Use a wrist rest Arrange the workspace so that there is enough space to work Use an ergonomic chair/mouse/keyboard Maintain correct posture Use blue light glasses Ensure the room lighting matches the screen brightness Keep the laptop screen clear of dust and dirt	4

Question	Answer	Marks
8(a)	Two from: Gaming Example of walk through systems Example of training systems	2

Question	Answer	Marks
8(b)	<p>Max Six from:</p> <p>People can be trained allowing them to practice over and over until they have perfected a particular task</p> <p>People can be trained in a virtual environment without risk to themselves/others</p> <p>Allows training in dangerous situations where it is impossible to practice the real thing</p> <p>Can give people a much more interactive experience when they are trained</p> <p>Allows people to retain knowledge much better than reading about it in a book/training room</p> <p>Allows people to walk through to check for potential errors/tested before the design is implemented</p> <p>Designs can be modified quickly therefore better objects can be made</p> <p>Confusion between real life and the game</p> <p>Causes headaches/eye strain/motion sickness/falling over</p> <p>Can become addicted to gaming with this system</p>	6

Question	Answer	Marks
9(a)	<p>Three from:</p> <p>Uses prescribed (knowledge-based) criteria to solve a problem</p> <p>The criteria in the rules base are applied to the inputted data</p> <p>Part of the database of knowledge</p> <p>It contains facts/descriptions of objects</p> <p>Used in searching the knowledge base</p>	3
9(b)	<p>Three from:</p> <p>This determines how to apply the knowledge in the knowledge base to the facts presented at the user interface</p> <p>Processes the knowledge base to find the diagnoses/solution</p> <p>It performs this task in order to deduce new facts which are subsequently used to draw further conclusions</p> <p>The inference engine is the active component of an expert system</p> <p>It provides a methodology for reasoning</p>	3

Question	Answer	Marks
10	Four from: The microprocessor receives the data A preset value for the distance is stored in the microprocessor The microprocessor compares this data to the minimum distance/preset value If the data is less than the preset value the microprocessor sends a signal to the actuator The actuator applies the brakes If the data is more than the preset value the microprocessor does nothing Process is continuous	4

Question	Answer	Marks
11(a)	Max two from: Similarities Both are methods of implementation Both involve the changing of the whole of the old system to a new system Max three from: Differences With parallel running both systems operate together until the old one is removed With direct changeover the new system is implemented immediately With direct changeover benefits are immediate With parallel running the changeover is safer as the old system is still operating for a while With direct changeover costs are reduced as only one set of staff need to be employed/as there is only one system in operation With direct changeover the system has to be more thoroughly tested before becoming operational	4
11(b)	Max four from: Compare the final solution with the original task to ensure that all elements of the solution have been met Identify any limitations of the software these are the problems that may have occurred during the testing/implementation Identify any necessary improvements that need to be made following testing and implementation, errors may be found that need to be improved Evaluate the user's responses to using the new software following the beta testing the users report back and these comments need to be taken into consideration	4

Question	Answer	Marks
12(a)	Three from: A type of credit card theft A digital copy of the credit card is made with data placed on a new blank card An unauthorised copy is made of the data Uses a concealed electronic scanner	3
12(b)	Two from: Use of personal identification number/PIN Use of chipped cards Inspect the credit card reader you are using Use an RFID protector Sign up for text alerts on the account Not using your credit card if you feel unsafe/suspicious websites Don't let your card leave your sight Use third party/smartphone electronic payment systems	2

Question	Answer	Marks
13(a)	Visual verification	1
13(b)	Four from: Data is processed lawfully/fairly Data processing must be transparent The purpose of collecting the data must be specified/explicit/legitimate Personal data must be adequate/relevant/not excessive Personal data must be accurate/kept up to date Personal data must not be kept for longer than is necessary Personal data must be processed in a secure manner Data can only be used for medical purposes Data must be protected	4

Question	Answer	Marks
13(c)(i)	One from: The age of the patient changes every year The data would need to be updated regularly Time consuming to keep changing the age on the database	1
13(c)(ii)	One from: Use the field date of birth Use a calculated field from date of birth	1
13(d)(i)	Two from: Range check Character check Length check Type check Format check Presence check Check digit	2
13(d)(ii)	Max three from: A primary key is unique A primary key helps identify the record A primary key cannot be a null value Creates relationships Only one primary key per table Max three from: A foreign key can have a null value A foreign key is a key in a table which is a primary key in another table A foreign key enforces referential integrity Found in relational databases	4