CAMBRIDGE
International Education

Cambridge IGCSE™

INFORMATION & COMMUNICATION TECHNOLOGY **0417/13**

Paper 1 Theory **October/November 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 October/November 2024 series for most Cambridge IGCSE, Cambridge International A and AS Level components, and some Cambridge O Level components.

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.

Abbreviation	Meaning
/	separates alternative words/phrases within a marking point
// followed by a capital letter	separates alternative answers within a marking point
underline	actual word given must be used by candidate (grammatical variants accepted)
( )	the word / phrase in brackets is not required, but sets the context

These points must be followed:

- No marks are awarded for using brand names of software packages or hardware. These must be created before the word and after it.
- Read the whole sentence **before** marking it
- Annotations **MUST** be placed in white space at or close to where the mark is awarded.
- Before submitting a script please check all ticks match the marks
- At the end of prose answers/long answer place an **R** at the end of the answer to show that the whole answer has been marked, unless a marking annotation has been placed near the end of the answer.
- On 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 and no other answer has been written then attempt to mark it.
- Remember an answer is correct or incorrect only
- Make sure you have read the AE / PE guide **BEFORE** marking

Question	Answer	Marks
1(a)(i)	**Two** from: Data can only be read Non-volatile memory Stores data permanently	**2**
1(a)(ii)	**Two** from: Data can be written to and read from Volatile memory Stores data temporarily	**2**
1(b)(i)	**One** from: Contains: Start-up instructions BIOS Hardware initialisation routines Self-test procedures	**1**
1(b)(ii)	Stores the data the computer is currently processing	**1**
1(b)(iii)	**One** from, for example: Storing HD movies Video games Data backup	**1**
1(b)(iv)	**One** from: Storing backup data Stores an archive	**1**

Question	Answer	Marks
2(a)(i)	**Two** from: Comma Separated Values Delimited by commas Text file	**2**
2(a)(ii)	**Two** from: Roshal Archive Used for data compression Data container to hold other files	**2**
2(a)(iii)	**Two** from: Plain text file Contains un-formatted text data Can be used by any text editors	**2**

Question	Answer	Marks
2(b)	**Three** from: css gif htm / html jpg / jpeg mp4 / mp3 pdf png rtf svg zip	**3**
2(c)	**Two** from: Allows users to save files so that they can be opened on any platform The formatting of the file is not package-specific therefore formatting will not affect the file Using generic formats allows files created on one type of computer to be read on another type of computer	**2**

Question	Answer	Marks
3	*Similarities* Max **five** from: Both store data Both have fast access Both have fixed storage capacity Both store files permanently Both can be plugged into any computer system Both are secondary storage Both allow data to be written to and read from *Differences* Max **five** from: SSD uses semi-conductor technology HDD uses magnetic technology HDD can be affected by strong magnetic fields SSD are more robust as no moving parts SSD produces less heat SSD uses less processing power SSD use less electrical power	**6**

Question	Answer	Marks
4(a)(i)	**Four** from: A switch connects a number of computers together to make a LAN Each device has a unique MAC address The switch receives a signal from one device The signal contains the MAC address of the sender and receiver Reads the recipient's MAC address Sends data to the specific device	**4**
4(a)(ii)	**Four** from: A router connects to a modem The router splits the data into packets Each packet contains the IP addresses and the data A router sends data packets to different networks A router receives data packets from different networks All devices within the network contain unique IP addresses The router stores IP addresses in its routing table The router reads the destination IP address Checks the IP address against its routing table Finds the best / fastest route to the device using the routing table If it cannot find the best route it uses the default one The router forwards the packet to the appropriate network segment Directs incoming and outgoing internet traffic to the device with the local IP address The router can store a route to the target device	**4**
4(b)	**One** from: Used to connect LANs together Connects different types of network so they act as one single LAN	**1**
4(c)	**Six** from: Strong passwords make it harder to crack the password Change passwords frequently using an unused password Change passwords regularly to ensure that unauthorised access is lower Use different passwords on different accounts to ensure that if one password is guessed others are safe Using biometric passwords as these are unique to the user Biometric passwords are very hard to forge Safer to use a combination of different types of password For added security a One Time Password could be used Ensure that the password cannot be linked back to the user as it makes it easier to guess Biometric passwords can be affected by the environment Biometric passwords can be affected by human changes OTP / biometric passwords require extra hardware to be used	**6**

Question	Answer	Marks
5(a)	***Causes*** **Two** from: Typing on a computer keyboard for a long period of time Excessive use of a mouse Holding a mouse incorrectly Working in a cramped workspace Resting the wrists on the desk when typing ***Strategies*** **Two** from: Use an ergonomic keyboard Use an ergonomic mouse Use a wrist rest Arrange the workspace Use voice recognition Exercise hands	**4**
5(b)	***Causes*** **Two** from: Staring at a computer screen for a long period of time Sitting too close to the screen Working in inappropriate lighting Glare on the computer screen Dirt on the screens Blue light affecting the eyes ***Strategies*** **Two** from: Turn down / up the brightness of the screen to match the room lighting Use flicker free screens Use blue light filters / glasses Turn the screen 90 degrees to the window Use an adjustable screen Keep the screens clear of dust Have eyes tested regularly Use night screen mode	**4**

Question	Answer	Marks
6	*Advantages* Max **two** from: Smartphones are more portable therefore can play the game in different places More varieties of games as the smartphone is more likely to be used Disadvantages Max **five** from: Smaller screen makes it difficult to see the content of the game Smaller controls makes it more difficult to use Drains the battery more on the smartphone Desktop computers not reliant on batteries Takes up more of the processing power of a smartphone meaning that hardware intensive games not used The game can be interrupted more due to the functions of the phone The smartphone is more likely to be with the user therefore there can be more issues with gambling Excessive use of the smartphone can lead to more health issues As storage is smaller on a smartphone the game can take up a lot of storage space some games cannot be downloaded / run on a smartphone Causes distractions which could lead to injury	**6**

Question	Answer	Marks
7(a)	***Inputs*** Max **three** from, for example: Student personal details Marks and grades Student behaviour Student test results Attendance data Punctuality data ***Processing*** Max **three** from, for example: Average grades are calculated Comparison made with forecast grades Class averages are created Data is saved Graphs are created ***Outputs*** Max **three** from, for example: Termly/yearly reports are printed / sent to parents Progress against forecast grades are printed / sent Statistical analysis is produced	**6**

Question	Answer	Marks
7(b)	**Two** from: It is a method of learning It is an application / software / program Used to help students to learn about a subject It is tailored to the individual student It can take account of previous assessments when setting learning objectives	**2**

Question	Answer	Marks
8(a)(i)	**One** mark for check and **one** mark for description Format check The data must be in the format LLNNN Length Check The data must contain 5 characters Presence check The field must contain data / cannot be null	**2**
8(a)(ii)	**One** mark for check and **one** mark for description Range check The price must be in the range of 10–100 Type / character check The field only contains number	**2**
8(b)	Name_of_plant – **Alphanumeric** Scented – **Boolean** Price – **Numeric: currency** Height – **Numeric: decimal**	**4**

Question	Answer	Marks
9(a)	Behaviour Presentation	**2**
9(b)	**Two** from: They restrict the output so that the display remains constant / fixed Different browsers should render the table in the same way The tables are independent of the screen resolution Organises the data on the web page	**2**

Question	Answer	Marks
10	*Benefits* *Max **five** from:* The screen lasts longer as no physical contact with the user Natural form of communication which makes the game more realistic Fast form of data entry Do not require additional devices The screen display is free of buttons *Drawbacks* Max **five** from: Reduced commands Commands have to be learnt correctly Causes fatigue Immersion syndrome Distinct physical actions needed as gestures can be mistaken The device can be triggered accidentally If the system is too complex more gestures have to be learnt Uses more processing power Requires a good camera More physical space needed	**6**