CAMBRIDGE
International Education

Cambridge International AS & A Level

INFORMATION TECHNOLOGY **9626/12**

Paper 1 Theory **October/November 2025**

MARK SCHEME

Maximum Mark: 70

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 2025 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.

Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	Benefit of the doubt
	To indicate where a key word/phrase is missing
	Incorrect
	Indicate a point in an answer
	Ignore subsequent work
	Statement/points are linked
	Maximum number of marks that can be awarded
	Not answered question
Off-page comment	Allows comments to be entered at the bottom of the RM marking window and then displayed when the associated question item is navigated to.
	To indicate a point that has already been made or was given in the question
	Indicates that work/page has been seen including blank answer spaces and blank pages.
	Correct
	Too vague
	Indicate a point in an answer

Question	Answer	Marks
1	**Three from:** • Accuracy/free from error (1) • Completeness (1) • Level of detail (1) • Relevance (1) • Time/age/out of date (1)	**3**

Question	Answer	Marks
2	**Three from:** • Used to check the file has been transmitted correctly (any awareness of verification/checking of file transfer) (1) • The control total is done **only** on numeric data (1) • The control total is a calculated value/any awareness of calculation to achieve a total (1) • The control total is added to the file (to be transmitted) (1) • The control total is recalculated **when the file has been transmitted** (must have concept of "after transmission" linked to the recalculation) (1) • Statement about outcome based on comparison of two totals (1)	**3**

Question	Answer	Marks
3(a)	**Four from:** • Acts as a reasoning system/applies logic/makes decisions (1) • Searches **the knowledge base/database** (1) • Selects/applies/uses **applicable**/**relevant** rules (1) • Uses rules to interrogate the knowledge base/database (1) • Uses the rules to determine outcomes (1) • Uses IF THEN analysis (1) • Uses forward chaining/backward chaining to reason/arrive at solutions (1) • **Request** clarification from the user if necessary/**asks** (further) questions from the user if necessary (1)	**4**
3(b)	**Four from:** • Data is **collected** from experts/relevant sources/data mining (any awareness of source) (1) • **Relevance** of data is decided (1) • Data is entered (into knowledge base) (1) • Uses a knowledge base editor to edit/created by a **knowledge base** engineer (1) • Design/decide the rules base (1) • **Create** the rules base (1) • Create the links between the rules and knowledge/data (1)	**4**

Question	Answer	Marks
4	**Four available.** **Max two for each matched pair:** e.g. • Impossible/difficult/improbable to include all the possible variables (1st) – too many/unknown/unexpected variables (variables in widest sense) (1) • Spreadsheet software is limited size/capacity/scalability (1st) – plus suitable explanation of an issue this causes (1) • May not have the required **formulae/functions** (NOT "options") (1st) – plus suitable explanation of an issue this causes (1) • Need training to use the software (properly)/requires an expert/complicated for new users (1st) – plus suitable explanation of an issue this causes e.g. cost of expertise (1) – therefore takes time to create (do not award as extension for "requires an expert") (1) • Spreadsheets can be edited by anyone who has the software (1st) – So different versions may develop (1) – So different outcomes arrived at (1)	**4**

Question	Answer	Marks
5	**Eight available.** **Two per error and improvement. ONLY consider a maximum of four errors.**	**8**

Location (1st mark)	What would be achieved
WHILE X=0	WHILE loop would continue if X is equal to zero/would not continue if x is greater than 0
AND <=Y	Logic error as <Y is not being compared to anything
<=Y	If X = Y, algorithm will continue.
PRINT X, "is a factor of Y"	Would not show value of Y / would show Y as the value
Lines of code following the WHILE statement are NOT indented	Code would run (regardless if conditions are met) ONCE/no loop
No ENDIF	The IF statement will only consider one line/will not compute as no close detected

Question	Answer	Marks
6(a)	**Two from:** e.g. • To commit theft (1) • To commit industrial espionage (1) • To commit sabotage (1) • Reasons of extortion/financial gain (1) • To track behaviour/actions/keystrokes/inputs (1)	**2**
6(b)	**Six available for three matched pair answers.** **Max two for each matched pair:** e.g. • System slow-down/sluggish/lack of response (1) anti-virus software uses up resources/processing power/memory/space (1) • Disrupts user experience/annoys user (1) with popups/system restarts. (1) • Limited to known viruses/database/software has to be updated regularly (1) new viruses are developed all the time (1) (**only award if either of previous two marks given**) • False sense of security (1st) – new viruses are developed all the time (1) – unless file is updated (1) • False positive/identification (1st) – unnecessarily quarantined/blocked files (1) **Max two from**: • Limited check/Only checks for viruses (1st) – it does not remove other type of malware (1) OR • It does not check **all types** of malware (1st) – such as (e.g.) rootkits (1)	**6**

Question	Answer	Marks
7(a)	**Four from:** • Decide on what you want to learn/know (1) • Identify/prepare questions (1) • Decide on interviewer (1) • Identify population/decide which group of staff to interview (1) • Choose suitable date/time (1) • Choose suitable location (any indication of choice OR criteria) (1) • Select/invite attendees/employees (1) • Choose suitable timetable/length (1) • Prepare suitable recording methodology (1)	**4**
7(b)	**Four from:** ***Analysis*** • You can create **complex** reports (1st) – allows to combine data from multiple tables (1) • You can create **complex** queries (1st) – … (1) • You can create **dynamic** queries (1st) – … (1) ***Organisation*** • **Quicker** to search (1st) – Because data is held in tables (1) ***Consistency*** • Data is not repeated/reduced redundant data/only entered once (1st) – Quicker/easier to modify the data (1) – File size can be smaller/frees up (NOT “creates”) storage space (1) – Reduced chance for errors (1)	**4**

Question	Answer	Marks
8(a)	**One from:** • Compressed data **cannot** be **reconstructed** (1) • It **permanently** removes data (1)	**1**
8(b)	**One from**: • Compressed data can be **reconstructed (1)** • Does **not permanently** remove data (1)	**1**

Question	Answer	Marks
8(c)	**Four available.** **One per instance of a valid comparison:** e.g. • Lossless will not affect the quality of video/lossy will affect the quality (1) • Lossy reduces the colour range (1) • Lossy can alter the frame rate (make the video jumpy/stutter) (1) • Lossy can desync the audio with video (1) • Lossy can affect the colour settings of the video (1) • Lossy can affect resolution of video (1) • Lossy can affect the bitrate/make incompatible with devices (1)	**4**

Question	Answer	Marks
9	**Six from:** • Definition of encryption (1) • Protects data/data “is safe”/improves data security (1) • Data **remains** protected if pen drive is **lost** (1) • Proves that the data has maintained its integrity (1) • Files cannot be **understood** unless decrypted (must have concept of encryption/decryption) (1) • Files cannot be **understood** by an unauthorised user/anyone without the decryption key (1) • Remains encrypted regardless of **where it is moved to** (1) • Reduces motivation to steal pen drive (1) • Increased confidence in saving sensitive data/files on the pen drive (1)	**6**

Question	Answer	Marks
10	**Four from:** • They have a **long** lifespan (1) • They **perform** consistently (1) • They have very little downtime (1) • They are easier to maintain/hot swap (1) • They have stronger security (1) • They have high fault tolerance (1) • They achieve very high temperatures/They require heat maintenance (1) • They have a large number of processors/multi-core processors/uses parallel processing (1) • They can carry out multiple processes at the same time • They can run multiple operating systems at the same time (1) • They have a high degree of backwards compatibility (1)	**4**

Question	Answer	Marks
11	**Two from:** • FLOPS is floating point operations per second (1) • Are a unit of measurement of processing power (1) • Are used to measure **supercomputer's** performance (1)	**2**

Question	Answer	Marks
12	**Four from:** ***Organisation*** *e.g.* • It organises the arrangement of the files on the disk (1st) **Max one from:** – uses indexes to determine where to put data (1) – organises data by (two from) cylinder, head, sector (1) – organises data by memory location/index (1) ***Maintenance*** *e.g.* • Maintains / creates directory structures (1) • Random access/serial access to files (1) • Disk formatting tools/Defragmentation tools (any mention) (1) ***Access*** *e.g.* • Controls access / implements access rights / implements password protection / Makes file sharing possible (1) • Specifies tasks that can be performed on a file (**two** from e.g. open, close, delete, copy, create, move) (1)	**4**

Question	Answer	Marks
13	**Six from:** e.g. • Can give differing levels of access to health services (1) • Increased risk of death/length of illness extended (1) • May not have online health services (1) – Reasonable implication (1) • Delayed access to results (1) • May need to attend doctor in person/travel to hospital (1) • Not everyone may be able to book online (1st) – need to visit/telephone (1) – which means time is wasted/used less efficiently (1) • Not everyone can order/reorder medicine/prescriptions online (1) • Doctors can work remotely from the patient (1st) – increased access to doctor/patient (1) – ambulances are less frequently used (1) • Not everyone can submit/receive test results online (1) • Not everyone can be monitored remotely (1)	**6**

