

Cambridge International AS & A Level

INFORMATION TECHNOLOGY**9626/11**

Paper 1 Theory

May/June 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 May/June 2025 series for most Cambridge IGCSE, Cambridge International A and AS Level 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.














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	<p>One mark per bullet point to a maximum of two marks.</p> <ul style="list-style-type: none"> • Age//possibly too old to be of any use (1) • Relevance//may not be about recycling (1) • Accuracy//the figures/information may be incorrect (1) • Completeness// the information may be too vague (1) • Level of detail//there may be too much or too little detail (1) 	2

Question	Answer	Marks
2	<p>Max 4 marks: MUST be a comparison <i>Benefits:</i></p> <ul style="list-style-type: none"> • Easier to create a storage systems//multiple tables/worksheets (1) • Easier to calculate (1) • Easier to create complex formulae//carry out complex calculations (e.g. use functions (if state functions, this is equivalent to complex)) (1) • Repeated data can be easier to enter (1) • Charts are easier to produce (1) • Includes conditional formatting to (e.g.) highlight data easier (1) <p>Max 4 marks: <i>Drawbacks:</i></p> <ul style="list-style-type: none"> • Information may exist across many sheets (1) • Large spreadsheets are more difficult to use/read (1) • Spreadsheets are best suited to single focus (e.g. per year) (1) • Formulae may need to be modified as spreadsheet grows (1) • Harder to create complex queries (1) • Harder to create a report (1) • Validation is easier in a database (1) • Repeated data exists in spreadsheet//databases are normalised (1) • Referential integrity reduces (e.g.) redundant data (1) 	6

Question	Answer	Marks
3	<p>One mark per bullet point to a maximum of four marks.</p> <ul style="list-style-type: none"> • Blocks threats to data//potential attackers (1) • Only allows allowed IP addresses (1) • Checks allowed IP addresses in allowed/forbidden table/list (1) • Blocks/allows ports for data transmission (1) • Can be set to stealth mode (1st) <ul style="list-style-type: none"> – so that packets are not bounced back (1) • Blocks suspicious activity to/from the network (1) • Creates a log of issues for analysis (1) • It can manage IPsec clients (1) • Can act as authenticator for remote access (1). 	4

Question	Answer	Marks
4	<p>One mark per bullet point to a maximum of six marks</p> <ul style="list-style-type: none"> • They can cause a loss of manual skills (1) • They can stop people from performing simple exercise (1) • They can lead to people becoming lazy (1) • They could become over reliant on microprocessor-controlled devices (1) • The system will not function if there is a problem with the Wi-Fi/internet (1) • The system will not function if there is a power cut (1) • They can be vulnerable to hackers (1) • All devices have to be on the same network (1) • Can increase electricity use (1) • Automatic running of routines may have undesired affect (1) 	6

Question	Answer	Marks
5	<p>One mark per bullet point to a maximum of six marks.</p> <ul style="list-style-type: none"> • Can be available quicker than custom written software//is readily available (1) • Costs to buy are less than custom written software (1) • Has been fully tested before launch (1) • More (informal) support available (1st) <ul style="list-style-type: none"> – Example of support other than direct support from the company (1) • Company provides a help desk (1) • May offer more features (1) • Increased flexibility//not task specific (1) 	6

Question	Answer	Marks
6	<p>Two marks from:</p> <ul style="list-style-type: none"> • The gap between people who have access to//resources (computer hardware) to use new information//communication technology and those who don't (1) • The gap between people who have access to information and those who don't (1) <p>Max 2 from: People with/from:</p> <ul style="list-style-type: none"> • Varying ICT skills (1) • Living in rural areas and those living in cities (1) • Different education levels (1) • Different socioeconomic groups (1) • Different age groups (1) • Different industrially developed/technologically aware nations (1) 	4

Question	Answer	Marks
7(a)	<p>One mark per bullet point to a maximum of six marks.</p> <ul style="list-style-type: none"> • A moisture/humidity sensor/tensiometer (1st) <ul style="list-style-type: none"> – is used to measure absolute and relative humidity (1) – measures the amount of moisture in the air (1) • A wind sensor/anemometer (1st) <ul style="list-style-type: none"> – is used to measure the direction of the wind (1) – used to measure strength of wind (1) • A raindrop/raingauge/rain sensor (1st) <ul style="list-style-type: none"> – is used to measure rainfall (1) • A light sensor/photodetector (1st) <ul style="list-style-type: none"> – is used to measure/sense light (1) • A pressure/barometric sensor (1st) <ul style="list-style-type: none"> – is used to measure pressure values and height changes. (1) • A temperature/NTC thermistor/RTD thermocouple/IC sensor (1st) <ul style="list-style-type: none"> – is used to measure temperature (1) 	6
7(b)	<p>Six marks from:</p> <ul style="list-style-type: none"> • The data will be sent to the computer for processing (1) • Via Analogue Digital Convertor (ADC) (1) • ADC will convert the analogue data to digital (1st) <ul style="list-style-type: none"> – So, the computer can read it (1) • It can create graphs/charts (1st) <ul style="list-style-type: none"> – To show monthly trends (1) • It can do calculations (1st) <ul style="list-style-type: none"> – Such as averages/max min (1) • It can produce predictions (1st) <ul style="list-style-type: none"> – Based on historical of weather data (1) • It can produce reports of weather trends (1st) <ul style="list-style-type: none"> – Such as global warming (1) • It can produce weather warnings (1st) <ul style="list-style-type: none"> – From its collected data. (1) 	6

Question	Answer	Marks
8	<p>Six marks from:</p> <ul style="list-style-type: none"> • Customer taps card/card is read (1) • Supermarket computer contacts customer bank (1) • Checks to see if there are sufficient funds (1) • If there are sufficient funds transaction is authorised/made//money is transferred (1) • If there are insufficient funds transaction is rejected/not made//money is not transferred (1) • Amount of the transaction is deducted from customer's bank account (1) • Amount of the transaction is credited to supermarket's bank account (1) • The transaction is closed//shown as completed. (1) 	6

Question	Answer	Marks										
9	<p>One mark per bullet point to a maximum of four marks.</p> <table><tr><td>Error (MAX 2)</td><td>Answer – MUST identify what is wrong with the code OR what the new code now does, and justify the change</td></tr><tr><td>Count is incorrect for the logic – this error identified (1st)</td><td><p>e.g.</p><ul style="list-style-type: none">Count>10 means that the code ends on first run through ANDChange to Count<10 ORChange to Count = 9 (1)Candidate may answer by arguing that Count should have been set to 1. This is acceptable, but this expansion may only be marked once.</td></tr><tr><td>SUM variable not initialised (1st)</td><td><ul style="list-style-type: none">SUM ← 0 added to process box ANDSUM + calculation will not work, as no initial value for SUM (1)</td></tr><tr><td>No output (1st)</td><td><ul style="list-style-type: none">The flowchart will not output a value for the sum of the numbersANDOUTPUT added for SUM along NO path (1)</td></tr><tr><td>Loop goes to wrong place (1st)</td><td><ul style="list-style-type: none">Flowchart will run without end ORLoop goes to wrong part of the flowchart ANDLoop changed to go after initialisation of COUNT/before decision box (1)</td></tr></table>	Error (MAX 2)	Answer – MUST identify what is wrong with the code OR what the new code now does, and justify the change	Count is incorrect for the logic – this error identified (1st)	<p>e.g.</p> <ul style="list-style-type: none">Count>10 means that the code ends on first run through ANDChange to Count<10 ORChange to Count = 9 (1)Candidate may answer by arguing that Count should have been set to 1. This is acceptable, but this expansion may only be marked once.	SUM variable not initialised (1st)	<ul style="list-style-type: none">SUM ← 0 added to process box ANDSUM + calculation will not work, as no initial value for SUM (1)	No output (1st)	<ul style="list-style-type: none">The flowchart will not output a value for the sum of the numbersANDOUTPUT added for SUM along NO path (1)	Loop goes to wrong place (1st)	<ul style="list-style-type: none">Flowchart will run without end ORLoop goes to wrong part of the flowchart ANDLoop changed to go after initialisation of COUNT/before decision box (1)	4
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10(a)	<p>One mark per bullet point to a maximum of two marks.</p> <ul style="list-style-type: none"> • Are used to summarise the contents of a table//summarise field values (1) • Also called Group-By queries/aggregate queries (1) • use aggregate functions (1) • They are used to extract aggregate of data items for a group of records • Uses functions such as//calculates (TWO of) SUM, AV(ERA)G(E), MIN, MAX, COUNT 	2
10(b)	<p>One mark per bullet point to a maximum of two marks.</p> <ul style="list-style-type: none"> • Searches using more than one parameter value (1) • Searches on more than one field (1) • It often uses Boolean operands (1) • It is made up of (TWO of) AND, OR or NOT operands or a mixture of these (1) 	2
10(c)	<p>One mark per bullet point to a maximum of two marks.</p> <ul style="list-style-type: none"> • A nested query is a query within another query (1) • It can be often referred to as a subquery (1) • Use the result of one query (1st) <ul style="list-style-type: none"> – as an input parameter of another (1) • Innermost subquery is executed first, then next level, until the main query is reached. (1) 	2

Question	Answer	Marks
11	<p>Max 6 marks: <i>Benefits</i></p> <ul style="list-style-type: none"> • Program code will run on different operating systems (1) • Only need to maintain one version of the program code/source code (1) • Less time will be spent on program code maintenance (1st) <ul style="list-style-type: none"> – When updates are needed (1) • Errors are highlighted/user is alerted as they are encountered (1) it is easy to debug the program (1) • As only a few lines of program code are in memory (1) uses less memory than a compiler (1) • Code can run in a virtual mode (1st) <ul style="list-style-type: none"> – so is less likely to crash the computer (1) <p>Max 6 marks: <i>Drawbacks</i></p> <ul style="list-style-type: none"> • The interpreter software needs to be kept up to date (1) • If the interpreter is updated then the program code may need to be changed to work with it (1) • Code has to be interpreted every time it is run (1) • Interpreted programs run slower than compiled programs (1) • It stops every time an error is encountered (1st) <ul style="list-style-type: none"> – interpreting a program is a much slower process than compiling (1) • The source code must always be shared (1) • Source code is easier to convert by fraudulent users (1) • Easier to copy the program. (1) 	8

Question	Answer	Marks												
12	<p>One mark per bullet point to a maximum of six marks.</p> <p><i>Normal</i></p> <ul style="list-style-type: none"> • Data is accepted by the system • Any integer between 0 and 60(inclusive) <p><i>Abnormal</i></p> <ul style="list-style-type: none"> • Data outside of the range which will be rejected/not accepted by the system • Any data that is not an integer between 0 and 60 <p><i>Extreme</i></p> <ul style="list-style-type: none"> • Data that is at the boundaries of the acceptable range • 0 or 60 <p>E.g.</p> <table border="1"> <thead> <tr> <th>Type of test data</th><th>Example of mark entered</th><th>How the validation rule deals with the mark entered</th></tr> </thead> <tbody> <tr> <td>Normal</td><td>41</td><td>Data is within the range data and will be accepted by the system</td></tr> <tr> <td>Abnormal</td><td>68/-2/pink</td><td>Data outside of the range which will be rejected/not accepted by the system</td></tr> <tr> <td>Extreme</td><td>0/60</td><td>Data that is at the boundaries of the acceptable range and will be accepted by the system</td></tr> </tbody> </table>	Type of test data	Example of mark entered	How the validation rule deals with the mark entered	Normal	41	Data is within the range data and will be accepted by the system	Abnormal	68/-2/pink	Data outside of the range which will be rejected/not accepted by the system	Extreme	0/60	Data that is at the boundaries of the acceptable range and will be accepted by the system	6
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