

Cambridge International AS & A Level

INFORMATION TECHNOLOGY**9626/11**

Paper 1 Theory

May/June 2026**MARK SCHEME**Maximum Mark: 70

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **16** printed pages.

General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: - the specific content defined in the mark scheme - the specific skills defined in the mark scheme or in the level descriptions - the standard of response required as exemplified by the standardisation scripts.
2	Examiners must award whole marks (not half marks, or other fractions).
3	Examiners must award marks positively . This means that: - marks are not deducted for errors or omissions - marks are awarded for correct/valid answers as defined in the mark scheme and also for other valid answers which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate - the quality of spelling, punctuation and grammar are judged only when the mark scheme indicates that these features are specifically assessed in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must consistently apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the full range of marks defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and must not award marks with grade thresholds or grade descriptions 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.

Annotation	Meaning
	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	Guidance
1(a)	TWO marks available, one per complete difference: - Direct data is used for the same purpose for what it was collected.//Indirect data is used for a different purpose to what it was collected for. (1) - Direct data is collected by/for you/by the user.//Indirect data is obtained from someone else. (1) - Indirect data is from a secondary source//direct data is from a primary source (1) - Direct data is collected first hand//secondary data is second hand data (1)	2	Do Not Award - Direct data may be free, indirect data you may have to pay for - Swapping used and collected
1(b)	TWO marks available: - Candidate identifies a suitable circumstance (1st): e.g. Project needs a lot of data/named example. Project needs to be completed very soon/named example. Direct data would be too expensive to gather/named example. Direct data would be dangerous to gather/named example. Data to be gathered refers to something in the past/named example. Data may be seasonal and it's the wrong season Data is available now Direct data does not exist - Candidate explains why this circumstance would be better suited to use indirect data (MUST match circumstance) (1) e.g. Because collecting a lot of data would take time/beyond the scope of the person who needs it to collect. Because data would be gathered already. Because data is being gathered from a warzone/identified place or circumstance of danger. Because situation no longer exists for the data to be gathered.	2	

Question	Answer	Marks	Guidance
2	EIGHT marks available: - A user interface is used to input (1) - IF....THEN (any awareness of USE of) (1) - Any awareness of the use of rules (may exemplify) (1st) These rules are stored in the knowledge base (1) - An expert system takes prior learning/knowledge and applies it to a problem (1) - Locations/address (for delivery) are input (1) - Details of delivery are input//examples of details (weight/dimensions etc) (1) - The responses will be compared with the facts (1st) By the inference engine (1) In the knowledge base (1) - Suggested routes (1) and estimated times of delivery will be output (1) To the user interface//to a printed list (1)	8	Do Not Award - One word answers – must be the USE of. - ANY answers that are not in the scenario - GPS (references to real time processing, traffic delays etc may be taken as GPS) - Parcel collection The question states ‘in this scenario’ therefore, answers have to be in this scenario

Question	Answer	Marks	Guidance
3(a)	TWO marks available: - Use a drop-down menu which only allows selection from the list (1) - Accept only whole number e.g. between two extremes/greater than X (1) - Accept only decimal e.g. between two extremes/greater than X (1) - Accept only date e.g. between two extremes/equal to a set date (1) - Accept only time e.g. between two extremes/before a set time (1) - Restrict text length e.g. between two extremes/greater than X (1) - Set allowable value to be equal to that in another cell (1) - Use a (run on change) macro to check the value (1)	2	Do Not Award ‘Use validation tools’ - Length check on its own, but allow description of length check
3(b)	ONE mark available: A cell reference that will not change when the formula is dragged down//copied to another cell/replicated (1)	1	MUST have both parts

Question	Answer	Marks	Guidance
3(c)	TWO marks available for one complete explanation Identify benefit (1st) state why it is a benefit/state the beneficial implication (1) • Identification of benefit (1st): e.g. Fewer errors Reduced time to create the spreadsheet/formula • Explanation (1) e.g. Because formula only has to be typed once Because can enter formula in one cell and can (e.g.) drag down Because cell references automatically change as copied/dragged/replicated	2	Do Not Award • Makes data more accurate, however, if this is further explained – such as fewer errors, you may award fewer errors • Enter numbers and drag down – has to be formulas
3(d)	SIX marks available: • Checks value from cell C2 (1) • If the contents are Dog (1) • The first IF statement is run (1) • It will check the contents of cell D2 (1) • If the contents are Male (1st) It will display “Block A” (1) If not, it will display “Block B” (1) • If C2 not Dog (1) • It will check contents of cell D2 AND if the contents are Male (1st) It will display Block C otherwise it will display Block D (1)	6	

Question	Answer	Marks	Guidance
4(a)	FOUR marks available, two marks per matched and described example. • What–if analysis explores what will happen if something else occurs/didn't occur/a variable is changed (1) • Rate of birth can be changed (1) to see impact of increased babies (1) • Rate of mortality can be changed (1) to see impact of increased//decreased teenagers//young adults/adults on number of births (1) • Life expectancy can be changed (1) to see impact of people living longer//shorter on overall population. (1) • Change structural constructs (e.g. schools, hospitals, access to water) (1) to see impact on e.g. mortality rates (1)	4	

Question	Answer	Marks	Guidance
4(b)	EIGHT marks available: Simulations can model/represent what happens in the real world/a natural disaster (1) Positives (max 6) • Simulation can be used in advance of a disaster (1) • Do not have to wait for the disaster to happen//simulations can run now (1) • Simulations can show (possible) impacts/damage of the disaster (1) • Identifies aspects that can be planned e.g. evacuation routes (1) • (e.g.) buildings/infrastructure can be checked to check resilience (1) • Structural/environmental changes can be made (based on the results) (1) • The replacement cost of a e.g. collapsed bridge exceeds the cost of a simulation (1st) Therefore money is saved by using on a simulator (1) • Simulations can repeat scenarios//allow for trial and error//can test different plans out (1st) e.g. So the response team can explore different responses//check if their response works (1) Learn from their mistakes (1) • There is no risk to human life in a simulation (concept of reduced risk/not being in a risk situation) (1st) Therefore the simulation is safer (1) • Small changes can be made to the scenario//different scenarios can be checked/explored/used (1st) To research into marginal effects (concept of) (1) To allow the team to practice in changing conditions/explore the impact of small changes (1) • Simulations can be recorded (1st) for (e.g.) future analysis/training (1)	8	

Question	Answer	Marks	Guidance
4(b)	Negatives MAX 6 • Simulations may not include all possible events (1) Simulation is not realistic (1) • Simulations assume fixed responses/fixed rules (1st) People may respond differently in real life (1) • Initial cost of purchase of software may be expensive (1) • Interpretation of the outcomes requires experts//team members from different groups (1) • Interpretation of the outcomes requires time//has a cost implication (1) Conclusion (may only be awarded if positives(s) and/or negatives are included) • One mark for a value judgement/conclusion based on two arguments (1)		

Question	Answer	Marks	Guidance
5(a)	ONE mark available: • It has a width of 16 units and height of 9 units (1) • width to height ratio is 16:9/1.78:1 (1)	1	Do Not Award • Length not allowed. Unless it is length and height
5(b)	TWO marks available for two complete explanations: • Ensures high-definition quality therefore final product will be of a high standard/clear to see (1) • Offers more content to the viewer so a better-quality product (1) • Is the more modern format, so product looks up-to-date (1) • Is the most widely used format in computer monitors/Television so the video will fit properly (1) • 16:9 is the international/industry standard therefore it will be more widely used/meets international broadcast standards (1)	2	

Question	Answer	Marks	Guidance
6	TWO marks available: - Both use compression (1) - MP4a has a higher sound quality (1) - MP3 file sizes are larger (1) - MP4a has a higher bit rate (1) - MP3 is lossy/MP4a is lossless (1) - MP3 files can be used on more platforms than MP4a (may exemplify a hardware type) OR MP3 Files are more widely used OR MP3 files is the standard format to use for sound files, MP4a is less widely used for sound files (1) Allow converse answers where applicable	2	

Question	Answer	Marks	Guidance
7(a)	TWO marks available: e.g. - Will lose access to (all) data/devices/files/system (1) - Financial cost (e.g.) of ransom//checking data when it comes back (1) - Data could be released/leaked/sold (any awareness of data being passed onto a 3rd party) (1) - Business disruption/reduced productivity (1) - Loss of revenue (1) - Liability/compliance costs/risk of prosecution (1) - Reduction in customer confidence (1)	2	

Question	Answer	Marks	Guidance
7(b)	SIX marks available. MAX FOUR if only first mark answers. - Definition of what is meant by physical method of prevention//identifies ONE methods of physical protection (1) Positives MAX FOUR e.g. - Cannot physically access the computers (1) - Physical defences can e.g. list malicious sites//give restrictions on how sites may be used (1st) Therefore, users know (which) sites to avoid (1) - Physical defences can state how external devices can be used (may exemplify) (1st) Therefore, users know if they can be used//how to make them safe (1) - A standalone dedicated computer can be set up for virus checking (1st) So, devices can be checked (1) Negatives MAX FOUR e.g. - Digital attacks can occur even if there is an (e.g.) guard (1) - Ransomware attacks are more likely to be software based//happen over a network//digital (1st) Therefore physical methods are ineffective (1) - Physical defences require the user to follow them//may be a change from working practice (1st) And so may be ignored (1) - New staff/temporary staff may not be aware of the restrictions (1) - Physical restrictions are not automatic//will require staff to make decisions/take actions (1) - Training may not take place at busy times (1st) Therefore, it becomes irrelevant (1) Conclusion (may only be awarded if positive(s) and/or negative(s) are included) - One mark for a value judgement/conclusion based on two arguments (1) E.g. it can increase consumer confidence	6	Do Not Award 'Cannot access' on its own

Question	Answer	Marks	Guidance
8(a)	TWO marks available: • Temperature sensor/Thermostat (1) • Keypad (1) • Microphone (1) • Touch screen (1) • (Push) Switch (1) • Remote control (1)	2	Do Not Accept: • Smart Phone etc. • Button • Heat sensor
8(b)	TWO marks available: • The actuator converts a signal <u>from the microprocessor</u> into an action/to perform an action (1) • To turn the pump on/off (1)	2	

Question	Answer	Marks	Guidance																						
8(c)	EIGHT marks available: <table><tr><td>IF temperature >28</td><td>1</td></tr><tr><td>THEN (on separate line from the IF) (award if EITHER THEN fits this mark point)</td><td>1</td></tr><tr><td>(Send signal to) turn on fan ONLY AWARD IF THIS IS AS A CONSEQUENCE OF TEMPERATURE >28 <u>ONLY</u></td><td>1</td></tr><tr><td>Send signal to turn on indented</td><td>1</td></tr><tr><td>ENDIF correctly positioned within the algorithm</td><td>1</td></tr><tr><td>IF temperature <19 with matching ENDIF</td><td>1</td></tr><tr><td>THEN (on separate line from the IF) (Send signal to) turn heating on ONLY AWARD IF THIS IS AS A CONSEQUENCE OF TEMPERATURE <19 <u>ONLY</u></td><td>1</td></tr><tr><td>Any use of ENDIF when in capitals and not split</td><td>1</td></tr><tr><td>UNTIL SYSTEM SWITCHED OFF</td><td>1</td></tr><tr><td>UNTIL statement correctly positioned and indented</td><td>1</td></tr><tr><td>ALL IFs and ENDIFs correctly indented</td><td>1</td></tr></table>	IF temperature >28	1	THEN (on separate line from the IF) (award if EITHER THEN fits this mark point)	1	(Send signal to) turn on fan ONLY AWARD IF THIS IS AS A CONSEQUENCE OF TEMPERATURE >28 <u>ONLY</u>	1	Send signal to turn on indented	1	ENDIF correctly positioned within the algorithm	1	IF temperature <19 with matching ENDIF	1	THEN (on separate line from the IF) (Send signal to) turn heating on ONLY AWARD IF THIS IS AS A CONSEQUENCE OF TEMPERATURE <19 <u>ONLY</u>	1	Any use of ENDIF when in capitals and not split	1	UNTIL SYSTEM SWITCHED OFF	1	UNTIL statement correctly positioned and indented	1	ALL IFs and ENDIFs correctly indented	1	8	
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Question	Answer	Marks	Guidance
9(a)	SIX marks available: Effect of icons • Avoids the need to read (1) • Graphical icons engage on an emotional level//are more appealing//visually appealing (1st) Therefore, more likely to be completed (1) Results are more reliable/accurate (1) • Less time is required to record customer satisfaction (1st) Therefore more likely to respond (1) Results are more reliable/accurate (1) • Graphical icons are simple to understand (1st) Therefore people will not need to queue/stop to be able to read them (1) Results are more reliable/accurate (1) • Graphical icons are universal/international/not language dependant (1st) Therefore more likely to respond (1) Results are more reliable/accurate (1) • Icons will be more widely understood (1st) Therefore more likely to respond (1) Results are more reliable/accurate (1) Languages • No need to use a 'select language button' (1st) Therefore people will not need to queue/stop to be able to read them (1) Therefore more likely to respond (1) • No guarantee that everyone speaks the same language//the language of the country in which the airport is (1) • In an airport, there will be a range of languages spoken (1)	6	Only award answers that support the use of a GUI as a method Do not award • repetition of explanations • answers about the system finding icons easier to process//.impact of use of icons on processing etc. • Users of the airport may be in a rush • GUI more easy to understand • Easier to navigate/use

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Question	Answer	Marks	Guidance
9(b)	FOUR marks available: • Lots of noise (may interfere with vocal/vocal may not be clear) (1st) Therefore the computer may misinterpret what has been said (1) • Can not be used by certain disabilities (1) because these users cannot (e.g.) speak (1) • Would need to support all/many languages//may not support a specific languages (1st) Would need a very large database of languages/dialects (1)	4	Mark first two answers only. Do Not Accept: • Will have difficulty with accent