



Cambridge International AS & A Level

INFORMATION TECHNOLOGY

9626/11

Paper 1 Theory

May/June 2021

MARK SCHEME

Maximum Mark: 90

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 2021 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 descriptors 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.

Question	Answer	Marks								
1(a)	<table border="1"> <tr> <td data-bbox="320 253 1233 349">A sentence in a textbook that says, 'The American Declaration of Independence was in 1776' is an example of dynamic data</td> <td data-bbox="1233 253 1310 349"></td> </tr> <tr> <td data-bbox="320 349 1233 448">Data that is read from and not written back to a file is called dynamic data</td> <td data-bbox="1233 349 1310 448"></td> </tr> <tr> <td data-bbox="320 448 1233 517">A hard copy newspaper is an example of a dynamic data source</td> <td data-bbox="1233 448 1310 517"></td> </tr> <tr> <td data-bbox="320 517 1233 577">Dynamic data can be updated quickly</td> <td data-bbox="1233 517 1310 577">✓</td> </tr> </table>	A sentence in a textbook that says, 'The American Declaration of Independence was in 1776' is an example of dynamic data		Data that is read from and not written back to a file is called dynamic data		A hard copy newspaper is an example of a dynamic data source		Dynamic data can be updated quickly	✓	1
A sentence in a textbook that says, 'The American Declaration of Independence was in 1776' is an example of dynamic data										
Data that is read from and not written back to a file is called dynamic data										
A hard copy newspaper is an example of a dynamic data source										
Dynamic data can be updated quickly	✓									
1(b)	<table border="1"> <tr> <td data-bbox="320 611 1233 707">Handing out a questionnaire to factory workers to find out about working conditions</td> <td data-bbox="1233 611 1310 707"></td> </tr> <tr> <td data-bbox="320 707 1233 777">Using sensors to monitor pollution in a river</td> <td data-bbox="1233 707 1310 777"></td> </tr> <tr> <td data-bbox="320 777 1233 873">Asking businesses for their customers' details to produce a mailing list</td> <td data-bbox="1233 777 1310 873">✓</td> </tr> <tr> <td data-bbox="320 873 1233 969">Observing the number of customers entering a store to see how busy it is</td> <td data-bbox="1233 873 1310 969"></td> </tr> </table>	Handing out a questionnaire to factory workers to find out about working conditions		Using sensors to monitor pollution in a river		Asking businesses for their customers' details to produce a mailing list	✓	Observing the number of customers entering a store to see how busy it is		1
Handing out a questionnaire to factory workers to find out about working conditions										
Using sensors to monitor pollution in a river										
Asking businesses for their customers' details to produce a mailing list	✓									
Observing the number of customers entering a store to see how busy it is										

Question	Answer	Marks
1(c)	<p>Max four from:</p> <p>Double data entry is where the data is entered twice by the same person... ... The computer stores the data on its hard disk/SSD... ... the two versions are compared by the computer... ... discrepancies are highlighted as the second copy is entered... ... the computer generates an error message/alerts the user if the second entry does not match the first</p> <p>Double data entry can be when two people enter the data simultaneously... ... the two versions are compared by the computer as they are entered... ... discrepancies are highlighted immediately... The keyboard freezes if there is a difference</p> <p>Visual verification is when a person compares the original source document visually... ...with the data on screen/database printout If mistakes are spotted, they can be corrected by the person Sometimes the data entered is printed out... ...and the printout is compared to the original paper document for differences/mistakes</p> <p>Must have visual and double entry to gain these four marks</p> <p>Max Six from:</p> <p>With double data entry data, the second copy must be entered in exactly the same order as the original data entry otherwise errors will occur With visual check data is only entered once... ...so it is normally a quicker process than double data entry... Visual check tends not to identify all errors unlike double data entry which is much more reliable A problem with double entry is that if the same error is made both times... ...<u>the computer</u> will not find a difference Visual checking can be unreliable... ...as it is difficult to transfer attention between screen and paper</p> <p>Must be a proper analysis to gain full marks Max. five marks if bullets/list of points Must have expansions to be a proper analysis</p>	6

Question	Answer	Marks								
2(a)	<table border="1"> <tr> <td data-bbox="320 248 1233 344">It is a lot slower to enter large amounts of text than an inexperienced user typing it in</td> <td data-bbox="1233 248 1310 344"></td> </tr> <tr> <td data-bbox="320 344 1233 412">It can be used to read ordinary handwriting</td> <td data-bbox="1233 344 1310 412">✓</td> </tr> <tr> <td data-bbox="320 412 1233 479">It is always completely accurate, with no mistakes being made</td> <td data-bbox="1233 412 1310 479"></td> </tr> <tr> <td data-bbox="320 479 1233 575">It is more expensive to scan the text than to pay someone to type in the text</td> <td data-bbox="1233 479 1310 575"></td> </tr> </table>	It is a lot slower to enter large amounts of text than an inexperienced user typing it in		It can be used to read ordinary handwriting	✓	It is always completely accurate, with no mistakes being made		It is more expensive to scan the text than to pay someone to type in the text		1
It is a lot slower to enter large amounts of text than an inexperienced user typing it in										
It can be used to read ordinary handwriting	✓									
It is always completely accurate, with no mistakes being made										
It is more expensive to scan the text than to pay someone to type in the text										
2(b)	<table border="1"> <tr> <td data-bbox="320 607 1233 674">It is very suitable for entering text</td> <td data-bbox="1233 607 1310 674"></td> </tr> <tr> <td data-bbox="320 674 1233 741">It can read marks made on an otherwise blank piece of paper</td> <td data-bbox="1233 674 1310 741"></td> </tr> <tr> <td data-bbox="320 741 1233 808">It is much more accurate than data being keyed in by a person</td> <td data-bbox="1233 741 1310 808">✓</td> </tr> <tr> <td data-bbox="320 808 1233 904">If the marks are not in a dark enough pencil, they are still always read correctly</td> <td data-bbox="1233 808 1310 904"></td> </tr> </table>	It is very suitable for entering text		It can read marks made on an otherwise blank piece of paper		It is much more accurate than data being keyed in by a person	✓	If the marks are not in a dark enough pencil, they are still always read correctly		1
It is very suitable for entering text										
It can read marks made on an otherwise blank piece of paper										
It is much more accurate than data being keyed in by a person	✓									
If the marks are not in a dark enough pencil, they are still always read correctly										
2(c)	<p>Eight from:</p> <p><i>Advantages</i> MICR characters are readable even if a document is obscured by marks or overprinted MICR systems provide a high level of security... ...since MICR documents are difficult to forge The error rate for reading MICR characters is small compared to other character recognition systems Data entry is quicker than typing the details</p> <p><i>Disadvantages</i> Printing of MICR is demanding, requiring difficult-to-achieve standards... ...which causes it to be slower to print MICR readers are expensive to purchase... ...whereas manual input of text can be used with a very cheap keyboard MICR readers can only recognise MICR fonts/cannot read text with normal fonts/ink... ...which are written in a specific format There are a limited number of characters available for use in documents MICR printers run on cartridges that cost far more than other toner cartridges Because of cost, it is often impractical for small businesses to use MICR</p> <p>At least two of each required to obtain full marks Must be a proper evaluation to obtain full marks Max. six marks if bullets/list of points Must have expansions or comparisons to be a proper evaluation</p>	8								

Question	Answer	Marks
3	<p>Eight from:</p> <p><i>Similarities</i> Both allow users to enter numeric and text data into a report Both perform calculations using formulae and functions Both let users format text with a variety of fonts, styles and symbols Both allow the importing of graphics such as images and charts Both include the ability to save files in a variety of formats for use with other packages Both have spelling and grammar checking and search/replace functions Both have page formatting options, including headers/footers/justification options</p> <p><i>Differences</i> Spreadsheet software allows users to perform "what if" scenarios/create models Word processing software lets users produce reports <u>which can be mail merged</u> Word processing software only has rudimentary functions to aid calculations Spreadsheet software uses cells, rows and columns to hold data whereas word processing software <u>doesn't restrict</u> where data can be entered Word processing software and spreadsheet software control text alignment and page margins in different ways Word processing software includes a word count feature</p> <p>At least two of each required to obtain full marks</p>	8

Question	Answer	Marks
4	<p>Three from:</p> <p>Sensors are used to feed data back <u>to a computer</u> Naming two sensors/devices used to gather data Analogue data is converted into digital data for the computer to process using an analogue to digital converter The computer stores readings in a table/database/file/spreadsheet</p>	3

Question	Answer	Marks
5	<p>Six from:</p> <p><i>Similarities</i> Both can use all forms of software available within the school Both can produce neater work than if handwritten Both allow for computers to be used to make lessons more interesting/entertaining/varied Both allow computers to be used to help students with special educational needs Both can allow more accurate work to be produced by using spellcheckers</p> <p><i>Differences</i> Network computers make it easier for students to share work in group projects All network computers can access the internet through the same connection, thereby having access to a greater range of information The school intranet is available to students who can access the network Students could access their work from any network computer... ...whereas they would need USBs/portable media on non-networked computers Students using network computers could have too much information available through the internet/intranet and may find it difficult to synthesise Students could print their work from any network computer</p>	6

Question	Answer	Marks
6	<p>Six from:</p> <p>It was invented by (English scientist) Tim Berners-Lee (in 1989) Hypertext Markup Language (HTML) is the markup (formatting) language for the world wide web Web pages are primarily text documents formatted and annotated using Hypertext Markup Language (HTML) The world Wide Web uses Uniform Resource Locators (URLs) A URL is an address that is unique and used to identify each resource on the World Wide Web The World Wide Web uses HTTP(S), allowing for the retrieval of linked resources from across the World Wide Web HTTPS provides secure websites Web pages may contain formatted text, images, video and software components Hyperlinks allow users to navigate between web pages The World Wide Web comprises websites made up of several webpages (with a common theme) The World Wide Web is basically a system of web servers (that support specially formatted documents)</p>	6

Question	Answer	Marks
7	<p>Eight from:</p> <p>She would agree a date and time with the other participants</p> <p>She would send a reminder shortly before the start to the other participants</p> <p>She would send the other participants means of access to the password/PIN</p> <p>She would send the other participants the link to join the conference</p> <p>For herself, she would purchase a webcam, a microphone and speakers/headphones</p> <p>She would ensure the webcam, microphone, speakers/headphones are switched on, connected and ready</p> <p>She would carry out tests on the webcam/microphone/speakers/headphones</p> <p>She would adjust her webcam so she can be seen</p> <p>She would open/run the video conferencing software</p> <p>She would log on to the system/Internet</p> <p>She would ensure the video conferencing software/internet connection is running properly/installed</p> <p>She would select/create a room</p>	8

Question	Answer	Marks
8(a)	<p>Three from:</p> <p>It looks at the first Serial number 614481</p> <p>It takes the three characters from the right-hand side 481</p> <p>It returns the numerical value of this text...</p> <p>...and displays it in the Price column as \$481</p>	3
8(b)	<p>It looks at all the Months in the Month column</p> <p>For the Sales Month Jan</p> <p>It adds up all the corresponding Prices</p> <p>It displays the answer as a Monthly Total as \$1964</p>	4
8(c)(i)	F3:G7	1
8(c)(ii)	<p>Four from:</p> <p>Add a chart title: Sales of washing machines in first 5 months of 2021/general description/reason</p> <p>Add x axis title: Sales Month</p> <p>Add x axis data labels: Jan to May</p> <p>Add y axis title: Monthly Total</p> <p>Add y axis data labels: 0 to 2000</p>	4

Question	Answer	Marks
8(d)	<p>Six from:</p> <p><i>Advantages</i></p> <p>What if statements can be asked <u>without rebuilding the spreadsheet...</u> ...from scratch each time a test is carried out Calculations can be performed more quickly/more easily/recalculated automatically... ... than if done by pen and paper It can provide quick results for predictions of sales that may take years to actually happen Graphs of monthly sales can automatically change... ...as new values are added/old values altered This spreadsheet already exists and reduces the need for technical experts The model can have formulae replicated fairly easily... ...to show future trends Graphs can be produced automatically/more quickly/no manual method required</p> <p><i>Disadvantages</i></p> <p>It does not take into account every possible variable... ...when calculating/forecasting sales There is no way of predicting the effect that financial crises will have on real life behaviour Many variables need to be considered and it is easy to omit some... ...To improve the spreadsheet, try to account for as many variables as possible Complex sales predictions may need additional expensive software</p> <p>At least one of each required to obtain full marks Must be a proper evaluation to obtain full marks Max. five marks if bullets/list of points Must have expansions or comparisons to be a proper evaluation</p>	6

Question	Answer	Marks
9(a)(i)	<p>The librarian is looking for all the people whose family name begins with B AND who also Do not live in Lowtown Printing only the first and family names and the town they live in</p>	4
9(a)(ii)	<p>Brown Christine Redleigh Brierley Fred Redleigh Breen Wally Armley</p> <p>1 for all records correct</p>	1
9(b)(i)	<p>The librarian is looking for all the books whose <u>Author's</u> name ends with 'son', printing only the Title, Author and Number of copies – 1 mark OR which have a replacement cost less than \$10 –1 mark</p>	2

Question	Answer	Marks
9(b)(ii)	Too Open Too Short Paul Stevenson 2 The Divide of Decay Donal Haroldson 2 Respeto por la Castilla Celia Rodriguez 4 1 for all records correct	1

Question	Answer	Marks
10	Eight from: Text boxes or individual character boxes for Name More accessible/readable font Spaces for Name/Address should be longer Separate lines for each part of the address Drop down dates or calendar for Date of birth and Date joined company Radio buttons/drop down list for Gender Navigation buttons: forward/back Help button/information/prompts on how to complete the form Appropriate title at the top of the form Appropriate white space and information filling the page	8

Question	Answer	Marks
11	Three from: A generic file format is one which will be recognisable to most software packages If a software package does not recognise a particular file format it will be unable to load it Generic file formats are .txt, .csv, file types (allow any two correct examples) Max one for an expansion e.g. .txt can be loaded by most word processing software .csv can be loaded by most spreadsheet software	3

Question	Answer	Marks
12	Four from: It is organised in the form of a tree-like structure The data is stored as records which are connected to one another through links It uses (several) one-to-many relationships It links several records to one owner/parent record It is not a versatile system It is limited by using only one type of relationship	4