Cambridge IGCSE™ (9–1)

INFORMATION AND COMMUNICATION TECHNOLOGY	**0983/12**
Paper 1 Theory	**May/June 2022**
MARK SCHEME	
Maximum Mark: 100	

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.

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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	Keyboard Digital camera	**2**

Question	Answer	Marks
2	**Two** from, for example: Sprinkler Lamp Heater Vents/Window openers/Motor Actuator	**2**

Question	Answer	Marks
3(a)	Modem	**1**
3(b)	Router	**1**
3(c)	Switch	**1**
3(d)	Network interface Card/NIC	**1**

Question	Answer	Marks
4(a)	**Four** from: Bold Full justification Highlight Underlined Italic	**4**
4(b)	**Four** from: Click on the shape/logo <u>A</u> Slide the corners in to reduce the size of the shape/logo Keep the aspect ratio//type in the height and width Fill the shape/logo with black Highlight the text Reduce the size of the text Change the colour of the text to white Click on the image/train Reduce the height and width//reduce the size of the image/train	**4**

Question	Answer	Marks
5	**Four** from: RFID are faster to read than bar codes RFID scanning is more accurate than bar codes RFID does not need line of sight to read but bar code does RFID will read the data if the reader is further away RFID can scan multiple items at the same time RFID allows greater security RFID can store more data than a bar code RFID tags can be rewritten, so can be reused RFID tags are more robust as bar codes will not scan if damaged	**4**

Question	Answer	Marks
6	They tend to have a more limited number of read and writes More expensive <u>per</u> Gb than HDD	**2**

Question	Answer	Marks
7(a)	**Four** from: Data should be fairly and lawfully processed//Data should be processed in a transparent manner Data should only be processed for the stated purpose Data should be adequate, relevant and not excessive/limited Data should not be kept longer than necessary Data should be processed in accordance with the data subject's rights Data should be collected for specific purposes Data should only be further processed for archive purposes which is compatible with the initial purposes Data kept for archiving should safeguard the rights and freedoms of individuals Explicit consent required for processing sensitive data Data subjects are allowed access to their personal data Data should be accurate and kept up to date Data should not be transferred to another country unless they have adequate protection Parental consent required for processing personal data of children including online services	**4**
7(b)	**One** mark for the explanation Personal data is data relating to an individual/person that can be identified **One** mark per example Name, address, date of birth, gender, biometrics, mobile/cell phone number, credit/debit card number, personnel ID number, personal appearance, medical record, criminal record, ethnic origin, picture of yourself, political opinions, religious or philosophical beliefs, trade-union membership record, genetic data, IP address, racial identity	**3**
7(c)	**Four** from: The person can be identified from the data The data is confidential as it links directly to the person If someone gets access to the data then they can use the information to attack the person If not kept confidential and secure it could lead to home burglaries as people post holiday details on social media If not kept confidential and secure it could lead to the chance of users suffering physical harm Protects sensitive data	**4**

Question	Answer	Marks
8(a)	2193733.pdf	**1**
8(b)	igcse-ICT-0417	**1**
8(c)	www.cambridgeinternational.org	**1**
8(d)	Secure internet protocol	**1**

Question	Answer	Marks
9(a)	=VLOOKUP(F2,A2:B9,2,0) **Four** from: Looks up F2/Airport name Looks up in the range A2:B9/Code and Name Finds the corresponding value from the 2nd column Displays the value in G2 Finds exact match	**4**
9(b)	**Normal** Data that is within the boundary of acceptability **Abnormal** Data that is outside the boundary/limit of acceptability/incorrect data **Extreme** Data on the edge of acceptability	**3**

Question	Answer	Marks
9(c)	Max **two** from: **Formula** A formula is a statement written by the user A formula is an equation A formula can contain values/references to cells/defined names A formula can contain functions **One** mark Examples =A1+B1, =SUM(A2:B2) Max **two** from: **Function** A function is a named piece of code designed to calculate specific values Functions are used inside formulas A function is a built in/predefined operation **One** mark Examples SUM/AVERAGE etc	**6**
9(d)	**Two** from: A database can use queries A database can use relationships Referential integrity can be enforced in a database Easier to create forms on a database Easier to create reports on a database Better user security Data is easier to manage in a database A database can reduce data duplication	**2**

Question	Answer	Marks
10	**Eight** from: **Use of the monitor** Using a flat screen monitor can reduce eye strain and headaches I turn the monitor 90 deg to the window to reduce the glare on the screen If I turn the monitor this can cause problems with the layout of the room I need to buy a monitor that could tilt to reduce neck ache I close the window blinds to avoid glare on monitor/headaches I should not use rooms with more than one window but this could be difficult I could use a matt screen to prevent glare/headaches I use a flat screen monitor as there is less flicker therefore reduces the chance of an epileptic seizure/eye strain/headaches I keep the screen clear of dust to reduce static and eye strain I could have my eyesight tested regularly Brightness of the room should equal the brightness of the screen to prevent eye strain Enable blue light filter/blue light glasses to prevent eye strain I could set night light on the computer to prevent eye strain I sit at arms length from the screen to prevent eye strain **Sitting down** I use an ergonomic chair/standing desk to reduce back and neck pains I sit with correct posture to help reduce back and neck pain I use a footrest to reduce DVT/improve posture If there are wheels on the chair for easy movement I should be careful to avoid injury problems with the chair moving backwards **Maximum of six marks if candidate only mention strategies for either sitting down or using a monitor**	8

Question	Answer	Marks
11	**Six** from: **Advantages** Robots can work in sterile/harmful areas which are dangerous for humans Humans would need protective clothing which would cost the company more money Robots can more easily be used for transferring large delicate items Robots can work 24/7 Cheaper in the long run Higher productivity More accurate/precise engineering More frequent checking of the equipment Fewer workers are needed therefore lowering costs Production of the cars is more consistent **Disadvantages** Expensive to buy robots Maintenance is expensive Requires backup systems, which are expensive They replace skilled workers, leading to de-skilling They need constant observation which increases the cost of maintenance crews **To gain full marks the discussion must have correct answers for both advantages and disadvantages**	**6**

Question	Answer	Marks
12	**Observation** The analyst sees it with their own eyes Get a complete picture of the whole system Cheaper as it does not take the worker away from work Description of the Hawthorne effect The quality and accuracy of information is highly dependent on the skill of the observer **Examining documents** Can see exact details of inputs, processing and outputs Saves time as there could be copies of previous analysis Allows the analyst to predict the size of the new system by analysing the amount of data Very time consuming to look through all the documents Very expensive to pay for an analyst to look through all the documents **To gain full marks the discussion must have correct answers for both observation and examining documents**	**6**

Question	Answer	Marks
13(a)	**One** mark for naming the verification and **one** mark for explanation Visual verification Person enters the data it is read through and corrected as needed using the original copy Double data entry **One** from: Person types the data then retypes the data from the original copy/source Person types the data and another types the data from the original copy/source	**4**

Question	Answer	Marks
13(b)	Max **three** from: Not all errors are found by validation and verification separately Source document may contain errors Verification only checks that data is copied correctly Verification does not check if data is reasonable/sensible Validation checks are carried out automatically by the computer Max **two** examples: Correct appropriate example of a verification check e.g. data supplied by the borrower is incorrect on the source document and was copied Correct appropriate explanation of an example of a validation check e.g. (Number of books borrowed is 1 misread as a 7; in a range check of 1–10)	**4**

Question	Answer	Marks
14(a)	**Two** from: Spam is junk mail Sent in large numbers to inboxes Unwanted/unsolicited emails Fills the inbox Used for advertising Used for phishing/spreading malware	**2**

Question	Answer	Marks
14(b)	Max **four** from: Multiple spelling/grammatical errors Asked to carry out tasks immediately Asking to click on a link Does not ask for you by name Stored in a SPAM folder Email asks for personal information Large amount of repeated emails from same user Lots of other similar email addresses in the send to box Max **four** from: Use a spam filter Not filling your details on online form Not replying to spam emails Not having an auto reply set Not consenting to marketing when providing details to a company Do not give email address	**6**

Question	Answer	Marks
15(a)	**Six** from: **What it is:** Cloud storage involves storing data in a remote physical location Online storage platform Cloud storage systems use hundreds of interlinked data servers Storage system that requires access to the internet **How is it used:** User accesses the cloud storage using the internet Cloud data can be accessed from any device Clients send files to a data server The server is maintained by a cloud provider Data can be shared with other users Cloud storage automatically backs up data If one server fails there are others used as backup Users pay a monthly/annual fee for storage used **To gain full marks the explanation must have correct answers for both what it is and how it is used**	6
15(b)	**Two** from: Easier to hack as data is always available Lose control of your data More than one copy available to access therefore security is reduced More difficult to delete all copies of the data	2

Question	Answer	Marks
16(a)	**Two** from: A set of rules House style states how all documents and written communication should be formatted Consistency across all documents in the portfolio of the company Used to promote the company Controls how the colours/font style/font size/font type/position of logo/justification of text/position and style of address details to be used – **1 mark for any two items**	2

Question	Answer	Marks
16(b)	**Two** from: To display descriptive information on each page Helps the user to navigate through the document Used for repeatable items Headers and footers can be on every page Maintains consistency in the document Saves time rather than writing the same things on each page	**2**