Cambridge IGCSE™

INFORMATION AND COMMUNICATION TECHNOLOGY	**0417/13**
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.

Cambridge International is publishing the mark schemes for the May/June 2022 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This document consists of **15** 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	DVD RAM Drive Memory stick	**2**

Question	Answer	Marks
2(a)	Check digit	**1**
2(b)	Length check	**1**
2(c)	Presence check	**1**
2(d)	Format check	**1**

Question	Answer	Marks
3	**Two** from: Sensors Keypad/Number pad Touch screen Microphone Camera	**2**

Question	Answer	Marks
4(a)	**Three** from: Automatic backup More storage Difficult to lose the data as many copies are made of it Many people can share access to the data Can be accessed anywhere there is internet connection Can be accessed from many devices	**3**

Question	Answer	Marks
4(b)	**Three** from: No control over data/security Requires internet access If the company goes out of business can lose data If the internet crashes during sending or receiving then data could be lost Many copies are made of the data which increases security issues More expensive in the long run due to monthly charges	**3**

Question	Answer	Marks
5(a)	**Normal** Any seat from A1 to Z20//Any letter from A to Z inclusive followed by any number 1 to 20 inclusive **Abnormal** Any incorrect seat row or number/Any character other than A to Z and/or any number outside range 1–20 or anything that's incorrect	**2**
5(b)	**Five** from: Can be used for multiple elements Fast access to additional information Can be linked into a website Can automatically link to email The QR code is unique to the ticket More robust than bar codes Secure as the code cannot be swapped	**5**

Question	Answer	Marks
5(c)	**Eight** from: **Advantages** The customer does not need an email address for the booking The customer can pay by cash or electronic means whereas is an online system cards/apps are needed Customers do not need an internet connection More control of the booking therefore less errors for customers Easier to cancel a booking once made It is easier for the customer to gain information/help on the purchase **Disadvantages** Manual systems can result in double booking Manual booking systems update the data less often than online systems Difficult to see if a seat is taken as the seats are not updated when booked Bookings can only be made when the booking office is open Can only book at a booking office People have to travel to the booking office to book, therefore wastes time People have to travel to the booking office to book wastes cost More difficult to change bookings Physical tickets are issued which can be lost more easily **To gain full marks the discussion must have correct answers for both advantages and disadvantages**	8

Question	Answer	Marks
6(a)	**Three** from: Staring at a computer screen for prolonged periods of time Working in a room with poor lighting/Screen brightness too high/blue light of screen Wrong setting on contrast Glare from windows Flickering screens Dirty screens Sitting too close to a screen Text too small/font colour is contrasting with background/incorrect resolution/screen too small	3

Question	Answer	Marks
6(b)	**Four** from: Take regular breaks/look into the distance to relax the eyes/look at green objects Use TFT/LCD/LED/flat screens to reduce the flicker Use anti-glare screens/TFT/matt screens/window blinds to reduce the glare Match the lighting in the room with the brightness of the computer screen Turn the screens 90 degrees to the window to reduce the glare on the screen Enable blue light filter/wear blue light glasses Use night screen light on the computer Have eyes tested regularly Use a LED/LCD/flat screen monitor can reduce eye strain and headaches Keep the screen clear of dust/dirt	4

Question	Answer	Marks
7(a)	**Eight** from: **Advantages** No longer need to travel to the store so it saves the cost of travelling No longer need to travel to the store so it saves the time of travelling Saves time shopping as favourite lists can be produced Saves time shopping around different stores Wider range of shops Customers can shop 24/7 Customers can compare the prices of different stores without travel Shopping can take place using mobile devices anywhere there is an internet connection Regular shopping schedules can be set up Can see the physical objects in store and then have the advantages of shopping online **Disadvantages** Makes people lazy/lack of exercise Over-reliance on computers More security issues Needs a reliable internet connection Goods can take time to arrive Goods could be damaged in transit More chance of errors in the ordering More difficult to amend an order after purchase No way of checking the goods before buying There may be delivery/packaging costs **To gain full marks the discussion must have correct answers for both advantages and disadvantages**	8
7(b)	**Four** from**:** Bold colours/contrasting colours making it easier to read Larger font sizes/clear font so it is easier for people reading the text Simple navigation makes it easier to find the products Larger buttons so they can be easily seen Interactive screens/buttons/drop down menus to reduce typing Larger bold heading to make it an easy to read layout	4

Question	Answer	Marks
8	**Six** from: **Similarities** Both have improved security by using encryption Data cannot be read by eye so more secure Data can be re-written Direct data entry Both allow fast access to the room Both are read by a reader/scanner Both can be easily damaged **Differences** RFID is contactless therefore has less wear and tear whereas magnetic is placed in reader RFID reads the data faster More data on RFID card RFID cannot be left in the lock accidentally RFID cards can be read by others from a distance using a device Easier to clone a magnetic stripe card Magnetic cards can only be read in one direction whereas RFID are only tapped Magnetic stripe can be affected by magnets/mobile phones RFID cards are more robust **To gain full marks the comparison must have correct answers for both similarities and differences**	**6**

Question	Answer	Marks
9(a)	**Three** from: Internet protocol address Assigned to your computer/NIC/device when it connects to a network Uniquely identifies NIC/device on an IP network/unique number Locates individual devices on a network/internet Can show/indicate/track the physical location of the device	**3**
9(b)	**Three** from: The router creates data packets The router receives the data packet The data packet contains the destination/IP address The router looks at the destination/IP address in the packet The router uses its/has a routing table Router compares the destination address in the packet with the addresses in its routing table The router then determines the best route to the next router/network/destination	**3**
9(c)	**Four** from: It is needed for network security It controls/checks the incoming and outgoing network traffic A firewall is a barrier between a trusted secure internal network and the internet//network and the user It can log incoming and outgoing traffic It stops malicious traffic/cyber attacks/checks incoming data against criteria It prevents computers connecting to unwanted sites It prevents untrusted/un-recognised/un-authorised computers/users accessing data on the system Protects data Sends warnings/alerts the user	**4**

Question	Answer	Marks
10(a)(i)	**Two** from: Public access Its world wide/International Vast collection of computers and networks/network of networks/WAN/Wide Area Network	**2**
10(a)(ii)	**Two** from: Private network Restricted access Used in companies and organisations Used to share internal documents, internal emails Uses internet technology	**2**
10(b)	**Six** from: Vast amount of information Faster to access information Search engines allow the user to search quickly vast amounts of information Information increases all the time Its widely available Allows users to meet other people/like minded people/communicate with friends over long distances Easy for all people to use Allows people to easily join specialist world wide groups Allows social networking Pages are hyperlinked so easier/quicker to find related pages Allows online shopping/banking Allows online up to date news, sports around the world/TV on demand Allows interactivity, such as watching a video to see how to do a task/training aid Helps vulnerable people to communicate with others Allows people to be creative/make own websites	**6**

Question	Answer	Marks
11(a)	**Four** from: Load the image/photo editing software Load/import the image Click on image Click on crop Move arrows to select area to be cropped/Draw around the area to be cut out Click on delete/Click outside the image Select Save As/export and then select png format	**4**
11(b)	**Four** from: jpg is lossy format Smaller file size Joint photographic experts group Loses quality when compressed png is lossless format Does not lose quality when compressed Portable network graphics	**4**

Question	Answer	Marks
12(a)	**Four** from: Be careful of impersonators/people pretending to be officials Safely dispose of personal information Encrypt your data Keep passwords private/Use a strong password Don't share personal data Keep privacy settings high Use security software/anti-spyware Avoid phishing emails Use a nickname/alias online	**6**
12(b)	**Four** from: **For policed** Prevents illegal material being readily available Prevents young children accessing unsuitable material Ensures copyright laws are maintained Stops extreme viewpoints from being seen Prevents libelous text being added Prevents hate comments/foul language/racial comments **Against policed** Governments block text/viewpoints/their own bias viewpoint Unsuitable material is easily available in other ways Control would cost money and users would have to pay Control would be very difficult to enforce Could cause less people to use it Laws are different in each country but the internet is world wide Creates a feeling of big brother/always being watched **To gain full marks the discussion must have correct answers for both for and against policed**	**4**

Question	Answer	Marks
13	**Four** from: Letters can be personalised for each student The data is from the file therefore fewer errors Saves time than typing in all the details each time Letter can be saved and used again Standard letter can be used each time/More consistency Data in the database need only be checked Easier to make changes to the letters	**4**

Question	Answer	Marks
14	**Six** from: User telephones the bank telephone centre System asks for the long number on the credit/debit card/sort code and account number/customer Access/ID number The user taps out the number on the phone keypad and presses #/speaks the number System asks for certain characters in a password/phone banking security number The user taps out the characters asked for/security number and presses # System checks the number is correct System rejects the password/security number The user re-enters the characters/security number After three attempts the telephone connection drops System asks other security answers The user taps it in/speaks the answer System asks which service you require/options given Users tap in the number to select transfer from one account to another System asks number of account transfer from User taps in account number System connects with the bank account System asks for number of account transfer money to User taps in account number System asks amount to transfer User taps in the amount Checks the amount in the account/maximum not exceeded Approves request If amount exceeded the call is terminated/transaction declined/insufficient funds System asks when the transfer should happen The user taps in the date System asks you to confirm it/sends a text message/send email Customer hangs up to end the transaction	6