Cambridge Assessment International Education

Cambridge International AS & A Level

INFORMATION TECHNOLOGY **9626/12**

Paper 1 Theory **March 2020**

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.

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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.

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Question	Answer	Marks
1(a)	The processing of data usually takes place when the computing resources are very busy It is used in the control of traffic lights It typically involves the use of sensors and control systems It is typically used in the printing of electricity bills ✓	1
1(b)	It would be suitable for controlling a car park barrier ✓ It does **not** require an immediate response It is never used 24 hours a day for the same task It is where a group of transactions is collected over a period of time before being processed	1
1(c)	**Three** from: Computers deal with each input after a short delay/give apparently immediate/real time **responses** The delay is caused by the computer accepting/dealing with other inputs The delay may be so brief that it seems to the user as if the transaction has happened straight away Interactive processing deals with one transaction at a time Once the transaction has taken place the database will be updated immediately/same time as the booking The booking system takes a request for a seat and marks that seat as booked The computer sends a message to the user to inform him/her the seat has been booked	3
1(d)	**Two** from: Because the database is updated immediately it is impossible to have overbooking Seats can be booked at any time of day or night Customers know immediately if they have successfully booked a seat/get immediate confirmation Customers are able to re-book immediately if they are unsuccessful first time	2

Question	Answer	Marks
2(a)	The running and maintenance costs of a flight simulator are far greater than those of an actual aircraft: Dangerous situations can be simulated without putting the trainee pilot's life at risk: ✓ It is more difficult to simulate adverse weather conditions in a flight simulator: The level of noise in a flight simulator is far louder than in an aircraft:	1
2(b)	The pilot has to be able to use spreadsheet software efficiently: There is no limit to how many 'g' a simulator can subject a pilot to, and for how long: The simulator response will always be exactly the same as an actual aeroplane, as there are so few variables: Sometimes pilots become overconfident after training on the simulator: ✓	1

Question	Answer	Marks
3	Evaluation based on: Advantages HDDs have faster data access speed than magnetic tape drives Quicker to make single file retrievals from backups / selective backups with HDD than magnetic tape drives Tapes are more likely to go missing as they are more portable HDDs are cheaper <u>to buy</u> than magnetic tape <u>drives</u> Disadvantages Once the data is found, magnetic tape drives have quicker data transfer rate than HDDs when reading data HDDs tend to have shorter longevity compared to magnetic tape drives HDDs have less storage capacity than magnetic tape drives When further memory is required subsequently, it is more expensive to buy another HDD than to buy a new tape HDDs are more prone to mechanical failure than magnetic tape drives HDDs have higher power consumption than magnetic tape drives **Must have at least one of each to gain full marks**	6

Question	Answer	Marks
4	**Eight** from: RAM stands for Random Access Memory and ROM stands for Read Only Memory RAM stores information for relatively short term/temporary usage by the processors/CPU and other components such as the VGA RAM is used by computers for storing data during computing processes RAM is a volatile memory/data are destroyed once the power to the device is stopped RAM stores active program data Large RAM chips can be read faster than most ROMs… … so ROM content is sometimes copied to RAM and subsequently read from RAM ROM cannot be changed/erased by a program/user/easily/can only be read from RAM can be read from and written to RAM is needed to store data that the user is currently working on ROM is non-volatile memory/ROM retains its data even after the computer is turned off/ROM is needed to store the instructions for the computer to start up (when it is turned on again)/ permanent computer instructions ROM is used to store software that is unlikely to need frequent updates ROM is needed to store boot up instructions to activate hard disk drive/BIOS	**8**

Question	Answer	Marks
5	**Six** from: Advantages It makes inputting of data quicker/saves time Codes require less storage space The smaller the size of the database, the faster it will be to search and produce results Fewer mistakes will be made when entering coded data When data have been coded it makes it easier to use validation Disadvantages Coarsening of data such as colours – light and dark blue coded as blue Coding can obscure the meaning of the data/can be difficult to interpret/easy to misunderstand If people are unfamiliar with the codes, it can slow down data entry If codes are complicated, they might be entered incorrectly It is possible to run out of code combinations/there might not be enough codes One mark is available for a reasoned conclusion **Must have at least one of each to gain full marks**	**6**

Question	Answer	Marks
6	**Eight** from: Advantages of gesture-based/disadvantages of dialogue based Gestures may be a quicker way of initiating a response from a device People who have a speech impediment may find a dialogue interface too difficult to use/can find a gesture based interface useful Dialogue interface may not operate reliably/gestures will still be reliable if there is (background) noise or user has a cold/strong dialect/accent Dialogue interface often requires a training session with the user/gestures can be taught through manuals Disadvantages of gesture-based/advantages of dialogue based Users with physical disabilities may not be able to make gestures/may find dialogue interfaces easier to use Users with physical disabilities in their limbs could still speak into a microphone to control a device Certain gestures may not be socially acceptable/user could feel uncomfortable making gestures while driving/in front of others, which is not a problem with a dialogue interface Some gestures may be unintentional but still initiate a reaction from the device Dialogue interface allows hands free control, ensuring safety when driving Gestures would need at least one hand to leave the steering wheel Gesture based is less effective when several users/background movement involved Gesture based interface requires line of sight unlike dialogue interface **One from each section is needed to gain full marks**	**8**

Question	Answer	Marks
7(a)	**Two** from Select C2:E4 Click the Name box at the left end of the formula bar Type jobrate and press enter Or On the Formulas tab, in the Defined Names group, click Define Name In the New Name dialog box type jobrate In the refers to box type C2:E4	**2**

Question	Answer	Marks
7(b)	**Four** from It looks through the cells C2 to C4/in the named range 'jobrate'/C2 to E4… …until it finds the value equal to the contents B10/ Cl/Job code 0 (FALSE) forces an exact match It records the corresponding value from column 3/$15/standard rate per hour The answer is multiplied by D10/36/Hours worked this week Produces 15 × 36 = 540/Wage paid this week	**4**
7(c)	**Two** from: It saves time rather than having to type in an absolute cell reference range every time it is needed It is not necessary to remember to use absolute or relative cell references in a formula They are easier to remember than a cell range if appropriate names are used They are easier to explain to other people using that spreadsheet They are less prone to errors when typing in name than when typing the complete range each time	**2**
7(d)	**Six** from: Select cells A6:E11 Select data/ sort and filter/right click then filter/autofilter/apply filter tool Click on drop down arrow for Job code/Job type/B6/C6 Click on select all to deselect it Select Se/Secretary / deselect Assistant and Clerk Click on drop down arrow for Wage paid this week/E6… …select number filter then greater than / more than Type in 750 and click on OK	**6**
7(e)	It looks through the cells C2 to C4/C2 to D4 – 1 mark Until it finds the value equal to the contents of B7 which is As – 1 mark It records the corresponding value from column 2 which is Assistant – 1 mark The ,0 forces an exact match – 1 mark	**4**

Question	Answer	Marks
8	**Six** from: All the major web browsers currently in use support TLS. SSL stands for Secure Socket Layer and TLS stands for Transport Layer Security TLS is the successor to SSL as SSL is being phased out TLS and SSL are protocols that provide security of communication in a network TLS/SSL are used in web browsing, email, Internet faxing, instant messaging and Voice over IP/VoIP (at least two examples needed) Client-server applications use TLS in a network to try to prevent eavesdropping Encryption protocols enable credit card payments to be made securely SSL/TLS requires a handshake to be carried out	**6**

Question	Answer	Marks
9	**Three** from: Data that doesn't change Limited amount of information in a static information source … …because as soon as it is created it is difficult to have information added to it Static data tends to go out of date quickly Appropriate example such as a newspaper story/textbook contains static data – 1 mark	**4**

Question	Answer	Marks
10(a)	**Four** from: Involves using email to persuade people to divulge their personal information The email may include a website URL/link inviting the receiver to go to the site Email/website looks just like an actual organisation's email/website but is a fake website/email Clicking on the link takes the target to a fake website The email may ask customer to reply with their bank details The email usually contains something that demands the target's immediate attention Examples include 'We confirm that you have signed up to our service. You will be charged $2 a day unless you cancel your order on this URL: ...' The website then asks the target to enter their personal/financial information	**4**
10(b)	**Three** from: Installs a piece of malicious software/code on the customer's computer Creates a fake website which looks like the actual bank's website The fraudster redirects genuine website's traffic to own website… …customer is now sending personal details to fraudster's website unknowingly/customer is asked by fake website for personal details	**3**

Question	Answer	Marks
11	**Four** from: Files created in one software package are sometimes difficult to use in other software if the packages are incompatible If another word processing/ spreadsheet package does not recognise that file format it will be unable to load it… …as word processing/spreadsheet files are usually saved as a specific word processing/spreadsheet file type Word processing/spreadsheet files need to be saved as a generic file format so they can be read by any word processing/ spreadsheet package Word processing files should be saved as a .txt file type Spreadsheet files should be saved as a .csv file type	**4**

Question	Answer	Marks
12	Six from: Digital audio is a series of discrete bursts called samples The frequency at which these samples occur is so fast it sounds like a continuous sound The sampling rate is the number of samples within a given period of time/the number of 'snapshots' of audio that are sampled every second The higher the sample rate, the more accurately the original sound can be represented If sound is recorded at higher sample rates then it is using more samples in a file and these files are going to be much bigger Bigger files take up more disc space/the lower the sampling rate the less storage capacity is required/the faster the transfer rate Bigger files require more computing power to process The human ear is limited regarding the frequencies it can detect Reducing the sample rate will reduce the sound quality/ A higher sampling rate sounds better than a lower rate	6

Question	Answer	Marks
13	**Eight from:** The internet is an international network of networks of computers The internet refers to the physical connection between networks of computers WWW makes use of hypertext to access the various forms of information available on the internet The internet consists of hardware The internet consists of computers, cables, routers, switches, repeaters The internet is the physical layer on which a number of protocols are in use to carry data all around the world The world wide web is only one of the services provided by the internet Instant messaging uses the internet without using the world wide web IP Phones that are used to make calls over the internet have their own VoIP protocols and have no need for the WWW The world wide web is accessed through browsers/users browsing	**8**

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