Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/12**

Paper 1 Written **May/June 2018**

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 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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)	Processor / CPU	1
1(b)	Motherboard	1
1(c)	Sound card	1
1(d)	RAM / Random Access Memory	1

Question	Answer	Marks
2		4

	3D (✓)	dot matrix (✓)	Laser (✓)
A printer that uses toner.			✓
A printer that uses continuous stationery.		✓	
A printer that can be used to make physical models.	✓		
A printer that prints layer by layer.	✓		

Question	Answer	Marks
3		4

	LAN (✓)	WAN (✓)	WLAN (✓)
A cabled network in a building.	✓		
A network that can use satellites.		✓	
A network that connects countries.		✓	
A network that uses wireless technology.			✓

Question	Answer	Marks
4(a)	a dongle	1
4(b)	encryption	1
4(c)	quantum cryptography	1
4(d)	a PIN	1

Question	Answer	Marks
5	**CD RW** / **Hard disk** / ~~Monitor~~ / ~~Mouse~~ / ~~RAM~~ / ~~ROM~~	**2**

Question	Answer	Marks

6(a)	`<td rowspan="3"><img src="Logo.jpg" alt="Tawara School Logo"></td>`
	
	One mark for each point
	`<td rowspan = ”3”>`
	`<img`
	`src = ”Logo.jpg”`
	`alt = ”Tawara School logo”>`
	`</td>`
	
	or `<td rowspan="3"><img alt="Tawara School Logo”`
	`src="Logo.jpg"></td>`
	
	One mark for each point
	`<td rowspan = "3">`
	`<img`
	`alt = "Tawara School Logo”`
	`src = "Logo.jpg">`
	`</td>`
		5

6(b)	`<td colspan="3"><h1>IGCSE ICT </h1></td>` 1 mark for `<td colspan` 1 mark for `="3">`	**2**

Question	Answer	Marks
7(a)	**Three** from: The RFID reader sends radio waves / signal to the RFID antenna in the tag Tag sends radio wave / signal back to the reader The radio waves move from the tag’s antenna to the microchip / IC ... … a signal is generated and sent back to the RF system The RF wave is detected by the reader which interprets the data.	**3**
7(b)	**Three** from: The goat passes the RFID reader The RFID reader extracts data from the tag The ID is compared with data stored in the database The feed for the goat is then selected / identified / read from the database	**3**

Question	Answer	Marks
8(a)	D6*0.2 1 mark for D6 1 mark for *0.2 Order does not matter	**2**
8(b)	VLOOKUP(D6, I$6:J$11,2) **One** mark for each VLOOKUP() (D6, I6:J11, correct use of $ 2) or **One** mark for each IF(D6<I7, J$6, IF(D6<$I$8, J$7, IF(D6<I9, J$8, IF(D6<$I$10, J$9, IF(D6<I11, J$10, ,J$11)))))	**5**
8(c)	**Two** from: Click on the cell / F6 Move to the bottom RHS cell Select drag handle / cross / black box / double click on drag handle Drag handle / cross to F13 or Click on the cell / F6 Click fill … ... down or Click on the cell / F6 Click copy Select F7 to F13 Click paste or Hover over the cell / F6 Move to the bottom RHS cell Select drag handle / cross / black box / double click on drag handle Drag handle / cross to F13	**2**

Question	Answer	Marks
8(d)	**Five** from: Create / choose a template of the brochure page Type in the text … ... about the auction / date / name of seller / commission Highlight the data in the spreadsheet Open word processing / text editing software Copy the text / data / image and paste into the brochure Position the data / text Select the image from the folder Insert the image of the items Position the image in a suitable location Check spellings / grammar Save the brochure	**5**

Question	Answer	Marks
9(a)	**Three** from: The sensors can drain power from the car Faulty sensors / poorly calibrated can give incorrect readings and the car could collide with an obstacle If the car's computer malfunctions the sensors will not work People are unsure if it is safe to use the system It can give a false sense of security / over-reliance Needs to be turned off in traffic jams	**3**
9(b)	**Four** from: Destination is input by driver Exact position of motor vehicle is continually calculated using GPS … … using data transmitted from 3 / 4 satellites The on board computer contains pre-stored road maps The car's position is displayed on the map / route displayed Algorithm calculates the route from current car's position to destination … … makes allowances for traffic jams / roadworks Car system receives regular updates of traffic conditions Outputs the journey time/ETA of journey / voice output Calculates the journey time / ETA of journey time Outputs speed limits / cameras / warning speed limit	**4**

Question	Answer	Marks
10(a)	Max **four** from: *Advantages* Robots can work in sterile areas where humans would need protective clothing Robots can easily be used for transferring large delicate items Robots can work 24/7 / continuously Cheaper in the long run / robots not paid More accurate as the lens needs to be precise / higher quality of lens More frequent checking of the equipment / lens They do the boring / laborious work Issues can be found quicker Task / job can be carried out far quicker Max **four** from: *Disadvantages* Very expensive to buy / higher in the short term Maintenance is very expensive Difficult to re-program when changes are made 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. If something goes wrong, it may be difficult to find the error A mark can be awarded for a reasoned conclusion	**6**
10(b)	**Four** from: Each module has to be tested independently to ensure it functions correctly Modules need to be tested together Data needs to be transferred from module to module to check for data clashes Errors need to be noted and the corrections made … ... then tested again The system as a whole needs to be fully tested under controlled conditions	**4**
10(c)	**Three** from: Purpose of the system / program Limitations of the system Hardware requirements Software requirements Input format Output formats Sample runs	**3**

Question	Answer	Marks
11(a)	**Three** from: Track zero / sector zero could be erased Files / data can be deleted / destroyed Files / data can be corrupted / damaged System files can be corrupted if on the hard disk Disk space can fill up	**3**
11(b)	Matched pairs: Clicked on / opened a spam email Opened / downloaded the email attachment / embedded image Clicked on / opened a spam email Clicked on a link to a website within the email Opening software from a portable device / medium Running it without being checked by up to date anti-virus software Sharing a portable device / medium But not checking it with an up to date anti-virus software before opening	**2**
11(c)	**Three** from: Detects a potential virus Compares the virus coding with its database Alerts the user of the potential virus It asks the user if the file can be deleted or not Deletes the file and virus Isolates / quarantines the infected files on the hard disk … ... so they cannot infect the computer Dis-infects / cleans the file	**3**

Question	Answer	Marks
12	**Four** from: Audio-conferencing does not have time lag Lip sync errors cannot occur on audio-conferencing In video-conferencing sound quality can be poorer Video-conferencing needs expensive / extra hardware Video-conferencing requires the internet In video-conferencing there is a lack of stability of the system / communication as there is more chance of it disconnecting / hanging In audio-conferencing only voice is sent / received in video-conferencing sounds and vision is sent / received this can cause issues	**4**

Question	Answer	Marks
13		**4**

	Tick (✓)
Virus	
Backache	✓
Electrocution	
Fire	
RSI	✓
Tripping	
Eye strain	✓
Overheating	
Headache	✓
Heart attack	

Question	Answer	Marks
14	Max **three** types of use from: Gather information Can be used as a direction finder Visualise what something will look like in real life Could be used for facial recognition Max **three** examples from: Examples of gathering information about a building / painting / products Giving information about the area you are moving in / finding your way in an airport / railway station / shopping mall etc. Used by archeologists / architects / interior designers / try on clothes / trying makeup / colour of clothing / placing furniture point it at a word to link to the thesaurus / get its meaning / translation / modern landscape / room Used by the police to recognise suspects	**4**

Question	Answer	Marks
15(a)	Max **two** from: The biometric data is unique to the person The biometrics cannot be forgotten / stolen / shared like passwords The person needs to be present to enter the data Difficult to replicate / forge / fake / duplicate Award **one** mark for any two examples Examples: fingerprint / palm print / facial recognition / hand geometry / iris / retina scan / voice	**3**
15(b)	**Four** from: The reader checks the amount to pay is less than the contactless limit The data is read from the chip using RFID / NFC The restaurant's bank's computer contacts the customer's bank's computer The card is checked if it is valid If valid the transaction continues If not valid the transaction is terminated An authorisation code is sent to the restaurant The price of the meal is deducted from the customer's account Added to the restaurant's account	**4**

Question	Answer	Marks
16	To be marked as a level of response: Award a mark for each benefit or drawback but follow the rules below Level 3 (7–8 marks): To gain a level 3 there must be a reasoned conclusion and a justification Must have achieved all of level 2 Award a mark for good justification of one of the points raised Award a mark for a reasoned conclusion Level 2 (4–6 marks): For level 2 there must be advantages and disadvantages Must have achieved all of Level 1 Level 1 (1–3 marks): For level 1 there must be advantages or disadvantages up to three Level 0 (0 marks): Response with no valid content **Examples of answers written below** *Answers may make reference to, for example:* **Advantages of relational databases** Less data entry / data is stored only once / avoids duplication of data Less inconsistency of data Easier to edit data / records Easier to edit data / record format Easier to add / delete data / records More complex queries can be carried out Better security More ability to cater for future requirements / expansion **Disadvantages of relational databases** More complex than a flat file database as more tables are required Takes more time to set up More of a reduction in performance if many tables are needed Slower extraction of meaning from data Less robust due to broken keys and records / each table requires a key field and relationships to other tables More developer expertise / personnel to run the database: More expensive to create a relational database More processing power needed for complex queries. **Advantages of flat file databases** All records are stored in one place Easier to understand / use Sorting is simpler Filtering is simpler Can be used with a spreadsheet / single table DBMS	**8**

Question	Answer	Marks
16	**Disadvantages of a flat file database** Data is more likely to be duplicated / difficult to stop duplication Records can be duplicated and the flat file will not stop this Harder to update Every record in the database has to have the same fields, even though many are not used Harder to change data format Harder to produce complex queries Almost no security	