UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11   Paper 1 (Written), maximum raw mark 100

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 must be read in conjunction with the question papers and the report on the examination.

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Ques. No.	Answer				Part mark
1	**A** Trackerball		**B** Digital camera		1, 1
	C Light pen		**D** Joystick		1, 1
2	(buzzer) DVD RAM joystick				1
	magnetic tape (plotter) touch pad				1

3

	True	False	
A number pad is used to enter a PIN	✓		1
Presentation software is used to write letters		✓	1
Database software is used to create queries	✓		1
A Graphical User Interface uses icons to represent applications	✓		1
Sensors are used to store data		✓	1

4

	Validation	Verification	
A computer comparing two versions of the data		✓	1
Using check digits	✓		1
Applying a length check	✓		1
Performing a range check	✓		1
Typing in data twice		✓	1
Visually comparing data on screen with the original data source		✓	1

5 (a)	**Two** from: Switch Network card Hub	2
(b)	**One** from Router Modem	1
6	A **file** is a collection of records/all the students names, addresses, phone numbers and dates of birth	1
	A **field** is one item of information/name/address/phone number/date of birth	1
	A **record** is all the information about one student/name, address, phone number and date of birth of one student	1

7	**RIGHT** *90* *REPEAT* **8** *FORWARD* **100** *LEFT* **45** **END REPEAT** 1 mark for each correct statement	5
8	**Four** from: Cheques are collected together During the course of the day Cheques are then processed all at once Cheques are processed overnight Bank accounts updated following morning No human intervention	4
9 (a)	**Three** from: Workers can use own office so documents do not get lost in transit/bulky documents/equipment do not have to be carried around Company can call meeting at short notice Employees can work from home Company does not have to pay travelling expenses Company does not have to pay hotel expenses Company does not have to pay for conference room facilities Travelling time is saved Might be dangerous to fly/travel Disabled people may find it difficult to travel	3
(b)	**Three** from: Takes time to train employees Difficult to call international meetings because of time differences Initial cost of hardware Equipment can break down Strength of signal/bandwidth/lipsync can be a problem/connection can be lost/ power cuts Loss of personal/social contact Takes time for workers to learn new technology Can't sign documents	3
10 (a) (i)	Air conditioning (Y/N)	1
(ii)	**One** from The field only contains Y or N (two possibilities) It saves time entering data It reduces errors when inputting data It's easier to validate It saves storage space for the file	1
(b) (i)	Number sold	1
(ii)	**One** from: Might need to calculate total of all cars sold Easier to validate Might need to produce a graph Can easily find best selling make	1

11	**Four** from: ROM cannot be changed/RAM can be changed RAM can be read from and written to ROM is read only memory and RAM is random access memory ROM holds instructions that need to be unchanged such as BIOS/program cycles in a washing machine/program instructions in games RAM holds the work that is being currently done by the user ROM is non-volatile/RAM is volatile	4

12	**Four** from:
	Symptoms are entered
	Uses interactive interface/Asks questions...
	     … based on previous responses
	Expert system analyses data
	Inference engine compares symptoms
	Compares with those held in knowledge base…
	     … uses rules base
	Matche**s** are found
	Suggests probabilities/possible diagnoses
		4

13	**Two** devices from: CD DVD Blu-ray DVD RAM **One** advantage from: More portable/less likely to spike/cheaper to buy **One** disadvantage: Limited capacity/slower access times/slower transfer rates/can be more easily lost/can be more easily stolen/can be more easily scratched	2 1 1

14	LAN uses cables to transmit data
	WLAN uses wireless technology
	
	Advantage
	Cheaper as less cabling/new workstations can be sited anywhere/different
	    devices can be connected easily
	
	Disadvantage
	Slower transfer rates/limited transmission distance/physical obstacles can limit
	    transmission/less security
		1
		1
		
		1
		
		1

| 15 | **Two** problems from:
Headaches (from staring at screen continuously)
Eyestrain (from staring at screen continuously)
RSI in fingers (from continual typing/repetitive clicking of mouse)
RSI in wrists (from continual typing/repetitive clicking of mouse)
Backache from sitting in same position all day

Two matching methods from:
Use anti-glare screen (headaches/eyestrain)
Take regular breaks (all)
Use ergonomic keyboard (RSI)
Use wrist rests (RSI)
Use straight backed chair/maintain good posture (backache) | **4** |

| 16 | **Three** matched triples from:

Authentication technique/User ID and Passwords/PIN/memorable data
Advantage
Only person who knows password can access data
Disadvantage
Key logging software can detect key presses/passwords can be intercepted by expert hackers/user can forget password

Encryption
Advantage
Data is scrambled into unreadable form/only person/computer with key can understand data
Disadvantage
Data can still be deleted from system

Firewall
Advantage
Only allowed users/computers can access data
Disadvantage
It is not necessarily the hacker that is excluded but the computer/hackers might use an acceptable computer

Digital certificates
Advantage
Only computer with certificate can access data
Disadvantage
Can be expensive to purchase

Anti Spyware
Advantage
Prevents spyware from invading your computer and gaining personal information
Disadvantage
Doesn't work for all invasions/needs to be continually updated

TANs
Advantage
Is a double layer of security
Disadvantage
PIN can be forgotten/if misused can generate wrong TAN

Award one mark for name and one for an advantage and one for a disadvantage up to a maximum of three marks for each triple answer | **9** |

17 (a)	**Three descriptions** from: Observing the librarian/students/teachers using the current system Questionnaires are distributed to librarian/students/teachers asking questions about the current system Interviewing the librarian/students/teachers asking questions about the current system Examining documents from the current system	3
(b)	Appropriate spacing for each field	1
	Forward and backward buttons	1
	Title	1
	Author's name	1
	Reference number/ISBN/Publisher/Picture of cover/Dewey number/Genre or category/fiction or non-fiction/target age group/picture of author/date published/summary of contents/no. of copies/cost price/selling price/ number of pages/hardback or softback	2 marks for 4 items, 1 for 3 items else 0
	Information fills the page AND is clearly a screen form	1
	Maximum of five marks	
17c	**Three** from: Keyboard to type in data A bar code (reader) A magnetic stripe (reader) Touch screen Biometric methods RFID	3
18 (a)	Normal data	1
	Data is between 0 and 100/within the given range	1
(b)	Extreme data	1
	Data is on the boundary of given range	1
(c)	Abnormal data	1
	Data is outside the given range	1

19	Technical	1
	Two from:	
	Program listing	
	Programming language	
	Flowchart/algorithm	
	List of variables	
	File structure	
	Purpose of the system/program	
	Input format or example	
	Output format or example	
	Hardware requirements	
	Software requirements	
	Sample runs/test runs	
	Known bugs/possible errors	
	Validation rules	2
	User	1
	Two from:	
	How to load software/install/run software	
	How to save a file	
	How to search	
	How to sort	
	How to print	
	How to add records	
	How to delete/edit records	
	Purpose of the system/program (only if not mentioned in technical documentation)	
	Input format or example (only if not mentioned in technical documentation)	
	Output format or example (only if not mentioned in technical documentation)	
	Hardware requirements (only if not mentioned in technical documentation)	
	Software requirements (only if not mentioned in technical documentation)	
	Sample runs (only if not mentioned in technical documentation)	
	Error messages	
	Error handling	
	Tutorials	
	Troubleshooting guide/Contact details/help line/FAQ	
		2
20	**Six** from:	
	Does site have excessive advertising	
	Is the advertising related only to its own products	
	Can use the final part of a URL to identify reliability	
	.ac, .gov, .org are usually fairly reliable	
	Can compare information from reliable sites to see if it is reliable	
	Can compare with information from reliable/authenticated/text books	
	Is site endorsed	
	Does it have links to other reliable sites/unreliable sites	
	Does it have testimonials	
	See if responsible bodies have endorsed the site	
	Check the date of the last update	
	Are there links to and from the website to and from well known reliable websites?	
	Checking the author's credentials	6