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

0417/12   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.

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Ques. No.	Answer				Part mark
1	**A** Multimedia projector		**B** Speakers		1, 1
	C Motor		**D** Dot matrix printer		1, 1
2	**Buzzer** ⟨DVD RAM⟩ **Keyboard**				1
	Mouse ⟨Memory Stick⟩ **Sensor**				1

3		True	False	
	Measuring software is used to write letters		✓	1
	DTP software is used to create magazines	✓		1
	PDAs cannot be used unless plugged in to an electricity socket		✓	1
	Database software is used to create slide shows		✓	1
	A working knowledge of HTML is helpful when creating web pages	✓		1

4	(a)	**A graphics tablet** is used to input a hand drawn image to the computer.	1
	(b)	**A pressure sensor** is used to input data to a microprocessor controlled weighing scale.	1
	(c)	**A Trackerball** is an input device used by people with limited motor skills.	1
	(d)	**A graph plotter** is an output device used to produce large hard copies of car designs.	1
	(e)	**A buzzer** is an output device used in microwave ovens.	1

5			
	Whatifs	✓	1
	Queries		
	Automatic recalculation	✓	1
	Internet browsing		
	Animation		
	Data replication	✓	1

6	**Three** instructions and **three** paired meanings from:		
			6

INSTRUCTION	MEANING
FORWARD *n*	Move *n* mm forward
BACKWARD *n*	Move *n* mm backward
LEFT *t*	Turn left *t* degrees
RIGHT *t*	Turn right *t* degrees
PENUP	Lift the pen
PENDOWN	Lower the pen

7		True	False	
	A faxed message is more private		✓	1
	An emailed message arrives with the customer more quickly	✓		1
	A faxed document can be used for legal purposes	✓		1
	An email attachment can be edited electronically	✓		1

8	**Four** from: Is an example of online processing Requires immediate response Involves the use of sensors/temperature sensors are used in central heating Physical variables/temperature is monitored continuously Requires the use of feedback The output affects the input Heater switched on increases temperature Temperature above preset level causes microprocessor to switch off heater/ temp below preset level causes microprocessor to switch heater on	4

9 (a)	**Four** from: Data is read by sensors/downloaded from onboard computer/entered using keyboard/touch screen/answers to questions are typed in Uses interactive interface/Asks questions... … based on previous responses Expert system analyses data Inference engine compares data Compares data with that held in the knowledge base… … using rules base Matches are found System suggests possible faults/solutions	4
(b)	**Two** from: medical diagnosis Prospecting Tax Careers Chess games Animal/plant classification/identification	2

10 (a)	One mark for check, One mark for description from: Range check Number must be no lower than zero/no higher than highest number/158 (Invalid) character/type check Only digits can be entered – no other characters		**2**
(b)	Must be different to (a) One mark for check, One mark for description from: Boolean check Data must be true or false/N or Y (Invalid) character/type check Only alphabetic characters can be entered/no digits Length check Must be exactly one character		**2**
(c)	Must be different to (a) and (b) One mark for check, One mark for description from: Format check Data must be two digits followed by slash followed by two digits followed by slash followed by two digits (Invalid) character/type check Only digits or slashes can be entered/no alphabetic or punctuation marks other than slash Length check Must have the same number of characters/be no more and no less than 8 characters Range check Day must be <32/Month must be less than 13/year must be <100/All must be >0/Whole date must be < today		**2**
11	To input text from a printed document Bar code reader		1
	To input data from a bank cheque Chip reader		1
	To input data from a bank card MICR		1
	To input data about a product at a POS OCR		1

12	**Three** matched pairs from:	
	User ID and one of password/PIN/Memorable data	
	Password has to be entered before access is gained/Password can be changed frequently to avoid hackers guessing them/Unsuccessful logins can throw you out of the system	
	Magnetic stripe/smart card/electronic key/bar code system/ID card Prevents people without cards accessing system	
	Biometric data Fingerprint/retina/iris/face/voice recognition used as input/Biometric data is difficult to replicate	**6**
13 (a)	**Two** from: RSI – wrists RSI – fingers Headaches Back problems/neck pain Sight problems/Eye strain/dry eyes	**2**
(b)	**Two** from: Electrocution Trailing cables Fire/overheating of computers	**2**
14	**Six** from:	
	Three advantages from: Documents/equipment do not have to be carried around School can call meeting at short notice Do not have to pay for travelling Do not have to pay hotel expenses Do 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	
	Three disadvantages from: Takes time to train students 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	**6**

15	**Four** from: Back/previous record button/arrow/facility Forward/next record button/arrow/facility New record button/arrow/facility Submit/save button/facility First record button/facility Last record button/facility Exit button/return to homepage button/facility Move to top of page if long form Search facility	4
16 (a)	**Six** from: **Parallel running/implementation** A Information is not lost/always a second copy/training can be gradual D Expensive to run two systems together/expense of paying two sets of workers **Phased implementation** A Still have most of system if things go wrong/no expense of running two systems together/no expense of paying two sets of workers/if latest phase fails only need to go back to that point/training can be gradual D Lose some data if things go wrong/more expensive than direct as each phase has to be evaluated before moving to next phase. **Direct implementation/changeover** A Benefits are immediately available/do not have expense of running two systems together/less likelihood of errors as system will have been fully tested/It is the quickest method of implementation D If things go wrong lose all data/old system is not available/training is more difficult to organise **Pilot running** A Still have most of system if things go wrong/no expense of running two systems together/Can train staff in one area only/have to pay fewer workers than parallel D More expensive than direct changeover as more workers are needed/slower method than direct/takes time to implement for whole company Only award marks for **two** methods	6
(b)	**Three** from: Comparison of the solution with the original task requirements Identification of any limitations to the system Identification of any necessary improvements Analysing/collecting users' responses to using the system Comparison of test results of new system with old system results Comparison of the performance of the new system with performance of the old.	3

17	**Four** from: Microprocessor controlled devices do much of housework Do not need to do many things manually Do not need to be in the house when food is cooking Do not need to be in the house when clothes are being washed Can leave their home to go shopping/work at any time of the day Greater social interaction/more family time More time to go out/more leisure time/more time to do other things/work Are able to do other leisure activities when convenient to them Can lead to unhealthy eating due to dependency on ready meals Can lead to laziness/lack of fitness Can encourage a healthy lifestyle because of smart fridges analyzing food constituents Microprocessor controlled burglar alarm provides a sense of security Do not have to leave home to get fit Manual household skills are lost	**4**

18 (a)			

Pressure sensor		
Movement sensor		
Light sensor	✓	**1**
Temperature sensor	✓	**1**
Moisture sensor	✓	**1**
Infra red sensor		

(b)	Computers work in digital Sensors produce analogue data	**1** **1**

(c)	**Five** max. from: Temperature is compared with preset value If lower microprocessor switches on heater If lower microprocessor shuts windows If higher microprocessor switches heater off If higher microprocessor switches fan on If higher microprocessor opens windows Humidity is compared with preset value Moisture level is compared with preset value If lower microprocessor switches on sprinkler If higher microprocessor switches off sprinkler Light is compared with preset value If lower microprocessor switches on light bulb If higher microprocessor switches off light bulb If reading is at the preset value then no action is taken by microprocessor	**5**

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19	**Two** matched pairs from: Phishing Hackers send an e-mail asking for a customer's details/appear to be from the bank/says that the bank needs the information/asks the customer for password, card or account number Pharming Redirects a genuine website's traffic to hacker's website Spyware/key logging software Soft ware which detects key presses on the keyboard when the user logs on to bank account	**4**
20	**Two advantages** from: Usually have mobile phone in your possession Easy to carry/are portable Can access internet almost anywhere **Two disadvantages** from: Easily lost May have poorer signal Display is smaller/keyboard is smaller Content is more limited Can be slower to access internet Batteries might run out No mouse so can be more difficult to navigate	**4**