UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 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.

• Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2012 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



Page 2		Ма	Mark Scheme: Teachers' version		Syllabus	Paper
			IGCSE – May/J	une 2012	0417	11
1	A Micropho B Webcam C Remote D Number	A MicrophoneB WebcamC Remote controlD Number pad				[1] [1] [1] [1]
2	buzzer	<	DVD R) joystick		[1]
\langle	magnetic ta	pe	plotter	touch pad		[1]

3

	True	False
A scanner is used to enter a PIN		\checkmark
Word processing software is used to write letters	~	
Database software is used to create newspapers		~
A command line interface uses icons to represent applications		~
Sensors are used to monitor physical variables	✓	

4

	Abnormal	Extreme
20		~
21	~	
twenty	~	
0		~

[4]

[5]

Page 3	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2012	0417	11

5 Three pairs from:

Hub

Broadcasts data packets to computers in a LAN

Router

Connects LANs to a WAN/Internet

Switch

Directs data packets to specific computers

NIC

Enables computers to be connected to a network

Bridge

Connects networks/LANs together/Directs data packets to specific networks

Proxy server

Stores web pages for faster re-use by computers/can act as a firewall

Modem

Modulates data and demodulates phone signals

6

	LAN	WLAN
Uses wireless technology to transmit data		~
Faster transmission of data	✓	
Greater security	~	
Is cheaper as there is less cabling		✓

Г

Т

7

END REPEAT		END REPEAT	
LEFT	45	LEFT	60
FORWARD	100	FORWARD	80
REPEAT	8	REPEAT	6
RIGHT	90	PEN DOWN	
PEN DOWN		FORWARD	300

PENUP

1 mark for each correct statement

[8]

[6]

[4]

Pa	ge 4	Mark Scheme: Tea IGCSE – May/	chers' version June 2012	Syllabus 0417	Paper 11	
A bl	u ray dise	c is used to	store high definition	copies of movie	S	
A gi	raphics ta	ablet is used to	retouch photograph	S		
An i	nkjet prin	nter is used to	print out photograph	IS		
Am	iotor is us	sed to	open windows in a g	reenhouse		
An	Optical M	lark Reader is used to	input candidate exar	nination answer	<u>S</u>	[5]
Thr If cc Mor RAI RAI RAI Soft	ee from: omputer is re likely th M is more M is bulkin M provide tware pac a may ne	s switched off work in RAM g nat data is accidentally delete e expensive than backing sto er than backing storage <u>per</u> es faster access than backing ckage may be so large that it ed to be transferred from on	goes but backing storag ed in RAM prage <u>per unit of memor</u> <u>unit of memory</u> g storage t is physically impossible e computer to another a	e stores data for Y e for RAM to store and can't do that y	future use e it. with RAM	[3]
(a)	Three from $Temperative from Temperative from Temperative from Temperative for the temperature for te$	om: ature sensor nsor or or sor				[3]
(b)	Five from The sense Data is of Reading by the Difference Graphs a plotted Process	m: sors feed back data to micro converted from Analogue to l is from A are compared with e computer/microprocessor ces are printed out are <u>automatically</u> produced b I against time is continuous.	processor/computer Digital those from B by computer showing va	alues from A and	В	[5]
(a)	Four fro User inte Rules ba Knowled Inference	m: erface ase Ige base e engine				[4]
(b)	Two from Engine of Prospect Tax Careers Chess g Animal/p	m: car fault diagnosis ting ames plant classification				[2]
	Pa A bl A gr A n i A m A m A m If co Mor RAN RAN Soffi Dat (a) (b)	Page 4A blu ray disA graphics taAn inkjet prirA motor is usAn Optical MThree from:If computer isMore likely thRAM is bulkiRAM is bulkiRAM provideSoftware paceData may nee(a) Three from:Light sensO2 senseCO2 senseCO2 senseCO2 senseCO2 senseCO2 senseCO2 senseCO2 senseCO2 senseCO2 senseCO3 senseCO4 senseCO5 senseCO5 senseCO5 senseCO5 senseCO5 senseCO5 senseCO6 process(b) Two fromEngine ofProcess(b) Two fromEngine ofProspecTaxCareersChess gAnimal/p	Page 4 Mark Scheme: Teal IGCSE – May/. A blu ray disc is used to A graphics tablet is used to An inkjet printer is used to A motor is used to An Optical Mark Reader is used to Three from: If computer is switched off work in RAM g More likely that data is accidentally delet RAM is more expensive than backing storage per RAM is bulkier than backing storage per RAM provides faster access than backing Software package may be so large that it Data may need to be transferred from on (a) Three from: Temperature sensor Light sensor p1 sensor O2 sensor CO2 sensor (b) Five from: The sensors feed back data to micro Data is converted from Analogue to I Readings from A are compared with by the computer/microprocessor Differences are printed out Graphs are <u>automatically produced B</u> by the continuous. (a) Four from: User interface Rules base Knowledge base Inference eng	Page 4 Mark Scheme: Teachers' version IGCSE – May/June 2012 A blu ray disc is used to store high definition A graphics tablet is used to print out photograph An inkjet printer is used to print out photograph A motor is used to open windows in a g An Optical Mark Reader is used to input candidate exar Three from: If computer is switched off work in RAM goes but backing storage More likely that data is accidentally deleted in RAM RAM is more expensive than backing storage per unit of memory RAM provides faster access than backing storage Software package may be so large that it is physically impossible Data may need to be transferred from one computer to another at (a) Three from: Temperature sensor Light sensor pH sensor Q ₂ sensor (b) Five from: The sensors feed back data to microprocessor/computer Data is converted from Analogue to Digital Readings from A are compared with those from B by the computer/microprocessor Differences are printed out Graphs are <u>automatically</u> produced by computer showing va plotted against time Process is continuous. (a) Four from: User interface Rules base Knowledge base Inference engine (b) Two from: Engine car fault diagnosis Prospecting Tax Careers Chess games Animal/plant classification	Page 4 Mark Scheme: Teachers' version Syllabus IGCSE - May/June 2012 0417 A blu ray disc is used to store high definition copies of movie A graphics tablet is used to retouch photographs An inkjet printer is used to print out photographs A motor is used to open windows in a greenhouse An Optical Mark Reader is used to input candidate examination answer Three from: If computer is switched off work in RAM goes but backing storage stores data for More likely that data is accidentally deleted in RAM RAM is bulkier than backing storage per unit of memory RAM is bulkier than backing storage per unit of memory RAM is bulkier than backing storage per unit of memory RAM to store approximate than backing storage per unit of memory RAM provides faster access than backing storage Software package may be so large that it is physically impossible for RAM to store Data may need to be transferred from one computer to another and can't do that that the sensor Q ₂ sensor Co2 sensor C/D sensor Differences are printed out Graphs are automatically produced by computer showing values from A andplotted against time Process is continuous. Four from: User interface Ruid diagnosis	Page 4 Mark Scheme: Teachers' version Syllabus Paper IGCSE - May/June 2012 0417 11 A blu ray disc is used to store high definition copies of movies. A graphics tablet is used to retauch photographs. An inkjet printer is used to print out photographs. A motor is used to open windows in a greenhouse. An Optical Mark Reader is used to input candidate examination answers. Three from: If computer is switched off work in RAM goes but backing storage stores data for future use More likely that data is accidentally deleted in RAM RAM is builter than backing storage per unit of memory RAM is builter than backing storage per unit of memory RAM provides faster access than backing storage per unit of memory RAM provides faster access than backing storage per unit of memory RAM provides faster access than backing storage per unit of memory RAM provides faster access than backing storage per unit of memory RAM so builter than backing storage per unit of memory RAM so builter than backing storage per unit of memory RAM is builter than backing storage per unit of memory RAM so sconered from Analogue to Digital Readings from A are compared with those from B

Page 5	Page 5 Mark Scheme: Teachers' version		Paper
	IGCSE – May/June 2012	0417	11

12 Three pairs from:

Length check

Checks there are exactly 16 characters

Invalid character/type check Checks all characters entered are digits

Check digit

Single digit calculated from other digits appended to these, computer carries out fresh calculation on digit and compares answer with original check digit.

Existency check Is the card number on the database

[6]

13	RSI in the wrists – caused by repetitive typing/prolonged gripping of mouse	[1]
	RSI in the fingers – caused by repetitive clicking of mouse	[1]
	Headaches – staring at the screen for too long	[1]
	Back pain – sitting in the same position for long periods	[1]

14 Three matched triples from:

User ID and password

Benefit – each user ID could be unique/only user will know the password/data can only be accessed by person who knows the password/Password can be changed frequently to avoid hackers guessing them/Unsuccessful logins can throw you out of the system Drawback – user might forget password/keylogging software can be used to intercept it

Biometrics

Benefit – each user has unique biometrics Drawback – equipment is expensive to buy/may be difficult or expensive to get equipment to user

Magnetic/chip card with PIN Benefit – Hacker needs to have the card and know the PIN Drawback – can lose the card/can forget PIN

TAN

Benefit – Always changing so a hacker would not be able to use it even if they intercepted it when user typed it in.

Drawback – need to have card and remember PIN and use it within a short period of time. [9]

15	(a)	Would always be the same contents/waste space putting in duplicated field		
	(b)			
		Field name	Validation check	
		Model	Must be Feisty or Mendo or Galactica	
		Colour	Must be red, blue or gold	
		Air conditioning	Boolean check - Must be yes or no	
		Number of doors	Range check >2 AND <6 / >=3 AND <=5	
			1	[7]
16	(a)	Validation is the che Verification is check Verification does not If original data is inc Validation does not If, for example, data Validation will pick u Verification will pick u Verification can som Validation is always Three from: It looks through the in Sheet 1 Until it finds the valu B2 in sheet 2 contai	cking that data is reasonable or acceptable ing that data has been accurately copied from one medium to another t check that data is correct orrect it will still be incorrect after it has been copied accurately check that data is correct is incorrect but within a given range, a range check won't reject it p errors that verification does not up errors that validation does not etimes be carried out by the user carried out by the computer cells A2 to B7 e equal to the contents B2 (BAH) in sheet 2 ns BAH	[6]
		It records the corres Produces Bahamas	ponding value from column 2 of sheet 1	[3]
	(b)	Maldives		[1]
	(c)	Three from: It looks through A8 t Cell B2 contains the Checks whether A8 Counts all the cells w Produces the answe	o A18 code BAH to A18 contains the code BAH/contents of B2 where there is a match er 3.	[3]
	(d)	4		[1]

Mark Scheme: Teachers' version IGCSE – May/June 2012

Page 6

Paper 11

Syllabus 0417

Page 7	Mark Scheme: Teachers' version	Syllabus	Paper
	IGCSE – May/June 2012	0417	11

- (e) Four from:
 - Benefits

Real thing may be too expensive to build Real thing requires too large a time scale Real thing would be too wasteful of materials Real thing is too vast a scale Easier to change data/variables Costs less to change data/variables The real thing may be impossible to access/create Real thing may be too dangerous You can test predictions more easily/model can make predictions more accurately you can ask many whatif questions which would be impractical in real life

Drawbacks

Can never allow for all eventualities Difficult to exactly recreate a lifelike situation Hardware and software may be expensive Workers will need to be trained to use the system

Max. 3 drawbacks or benefits