MARK SCHEME for the May/June 2007 question paper

0418 INFORMATION TECHNOLOGY

0418/01   Paper 1 (Written), maximum raw mark 120

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

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Question Number	Answer				Part mark
1	A Microphone		B	Light pen	1 each
	C Remote control		D	Memory stick	
	E Numeric keypad				
2	Plotter				1
	Robot arm				1
3 (a)	an OMR sheet				1
(b)	A bank cheque				1
(c)	a CD RW				1
(d)	a dot matrix printer				1
4	False				1
	True				1
	False				1
	False				1
	False				1
5	memory stick				1
	DVD R				1
	fixed hard disk drive				1
6	Right 90				
	Forward 75				
	Right 90				
	Forward 75				
	Penup				
	Forward 85				
	Pendown				
	Forward 65				
	Right 90				
	Forward 75				
	Right 90				
	Penup				
	Forward 40				
	Pendown				
	Forward 35				
	1 mark for each group of 3 statements				5

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Question Number	Answer	Part mark
7 (a)	**Three** from: Temperature Moisture Humidity Light pH Gas sensor (O2, CO2)	3
(b)	**Three** from: Name + what variable is changed. water sprinkler/humidifier - humidity heater/cooler/air con. - temperature light bulb – light intensity/level motor for opening/closing windows - temperature fan – temperature	3
(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 moisture sensor constantly monitors moisture content of soil 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	5
(d)	**Three** explanations from: Computers are more accurate than human beings Computers can work continuously without taking a break Computers do not forget to take readings Computers can take readings more frequently Computers can respond quicker to changes than human beings	3
8	**three** from: Real thing may be: Too dangerous Too expensive Too large a time scale required Wasteful of materials Too vast a scale	3

Question Number	Answer	Part mark
9 (a)	Problem – Headaches Prevention – Use anti-glare screen/Take regular breaks Problem – Eyestrain Prevention – Use anti-glare screen/Take regular breaks Problem – RSI Prevention – Use ergonometric keyboard / wrist rests/Take regular breaks Problem – Backache Prevention – Use straight backed chair/Take regular breaks 1mark for each problem (2 max) 1 mark for each prevention (2 max)	4
(b)	Problem -electrocution Prevention – RCB installed Problem – trailing cables Prevention – create ducts/cover cables with carpets etc. Problem – heavy equipment falling Prevention – sturdy tables Problem – fire Prevention – extinguisher 1mark for each problem (2 max) 1 mark for each prevention (2 max)	4
10 (a)	**three descriptions** from: observation questionnaires interviews collecting documents	3
(b)	He could find details of a book more quickly He would save space in his bookshop	1 1
(c)	**Maximum 5 from:** Title Author's name Reference number/ISBN/Publisher/Picture of cover/ Dewey number/ genre/ 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 Information fills the page AND is clearly a screen form Appropriate spacing for each field	1 1 2 marks for 4 items, 1 for 3 items else 0 1 1
(d)	typing in the data twice and comparing them visually comparing the typed in data with the original	1 1

Question Number	Answer	Part mark
11 (a)	**two** from: computer works in digital phone lines carry sound/analogue signal need to convert digital to analogue/analogue to digital	2
(b)	**Two** from: user id/account number password memorable name	2
(c)	**Three** from: Causes data to be scrambled/encoded Requires an encryption key/software to encrypt Requires a decryption key/encryption software to decrypt Results in data which is not understandable/readable protects sensitive data from being understood if falls in to the wrong hands.	3
(d)	Disadvantages to bank – **two** from: Lose older customers who don't like change Initial set up costs of equipment/ Initial outlay on computers expensive Need to employ highly paid technical experts to maintain system Initial large redundancy payments Upset/Lose customers due to lack of personal touch Greater risk of fraud so lose money/description of effects of phishing Need to retrain staff	2
(e)	Disadvantages to customer – **two** from: Lack of socialising/ social contacts Identity theft/misuse of personal data Customers must have a computer/Internet access/(basic) computer skills Hackers may intercept data and defraud customer Deprived of personal touch Easier for customers to mismanage accounts Phone bills can increase Without broadband other family members cannot use the phone Cannot deposit/withdraw cash/money More vulnerable to phishing	2
(f)	**three** 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	3
12	RAM ROM ROM	3

Question Number	Answer	Part mark
13 (a)	4	1
(b)	Bar code	1
(c)	5027200190653	1
(d)	Producer/food type	1
(e)	Check digit	1
	two from:	
	A single digit	
	is calculated using the other digits	
	and added on to the end of the number	
	recalculated at a later stage to ensure validity of data entry	2
(f)	**Three** from:	
	The bar code field in the data file is read	
	Record by record	
	Until a match is found with the bar code entered	
	The corresponding number in stock is read	
	One is subtracted from this number	
	Written back to file.	3
(g)	**Two** from:	
	PIN is entered	
	PIN is read from chip	
	Numbers compared	
	If identical, transaction is authorised	
	If not identical transaction refused	2
(h)	**Four** from:	
	Details from customer's card read	
	Bank code allows shop computer to contact bank's computer	
	Card details checked for not stolen	
	Account checked for sufficient funds	
	If card stolen or insufficient funds then transaction is rejected	
	If card not stolen and sufficient funds then transaction is authorised	
	Amount deducted from customer's bank account	
	Amount credited to shop's bank account	
	Itemised receipt printed out	4
14 (a)	webcams/small video cameras	1
	microphones	1
(b)	**three** from:	
	saves travelling time	
	Do not have to pay for conference room.	
	Do not have to hire transport.	
	Conferences can be called at short notice.	
	Don't have to carry bulky documents to conference	
	Disabled students do not have to travel	3

Question Number	Answer	Part mark
15 (a) (i)	the old and the new system run side by side	1
	If the new system breaks down you still have the old system as a backup	1
	It can be a slow process/all tasks have to be performed twice/have to pay two sets of wages	1
(ii)	the new system replaces the old system in one go	1
	saves money in wages/very fast method of implementation	1
	if anything goes wrong you don't have the old system to fall back on	1
(b)	Technical – **three** 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 Known bugs Validation rules	3 max
	User – **three** from: How to load software/ 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 handling Troubleshooting guide/Contact details/help line/FAQ	3 max
(c)	**three** from: comparing the solution with the original task requirements; identifying any limitations to the system; identifying any necessary improvements evaluating the users' responses to using the system Comparing test results of new system with old system results Comparing the performance of the new system with performance of the old.	3

Question Number	Answer	Part mark
16	**Six** from: Interactive user screen appears Questions about geological profile are asked Answers to questions/geological profile are typed in Inference engine searches Searches the Knowledge base using the Rules (base) Suggested probabilities of finding oil are output using Probable depth of likely deposit Predictions of geological deposits above oil Detailed Output format	6