

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the October/November 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.

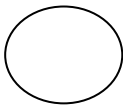
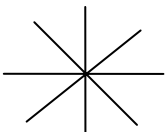
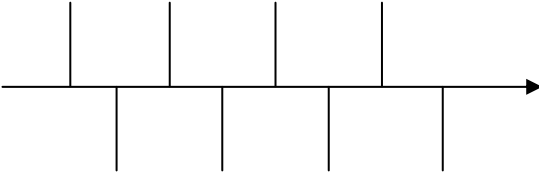
All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2007 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Page 2	Mark Scheme	Syllabus	Paper
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Question Number	Answer	Part mark																																																																					
1	A Touchscreen C Midi interface E Printer B Video camera D Plotter	1 each																																																																					
2	CD ROM drive Memory stick	1 1																																																																					
3	<p>CAD → a bank worker</p> <p>MICR → an examination paper marker</p> <p>OMR → a shop worker</p> <p>Touch screen → a payroll office worker</p> <p>Batch processing system → an aircraft designer</p>	1 1 1 1 1																																																																					
4 (a)		1																																																																					
(b)		1																																																																					
(c)		1 for horizontal line 1 for correct verticals																																																																					
5	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Penup</td> <td style="width: 30%;"></td> <td style="width: 30%;"></td> <td rowspan="2" style="border: 1px solid black; padding: 5px; vertical-align: middle;">N.B. Pendown and Right 90 are interchangeable</td> </tr> <tr> <td>Forward</td> <td>20</td> <td></td> </tr> <tr> <td colspan="4">-----</td> </tr> <tr> <td>Pendown</td> <td></td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>Right</td> <td>90</td> <td></td> </tr> <tr> <td>Forward</td> <td>100</td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>Right</td> <td>90</td> <td></td> </tr> <tr> <td colspan="4">-----</td> </tr> <tr> <td>Forward</td> <td>230</td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>Right</td> <td>90</td> <td></td> </tr> <tr> <td>Forward</td> <td>75</td> <td></td> <td rowspan="2"></td> </tr> <tr> <td colspan="4">-----</td> </tr> <tr> <td>Penup</td> <td></td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>Forward</td> <td>25</td> <td></td> </tr> <tr> <td colspan="4">-----</td> </tr> <tr> <td>Pendown</td> <td></td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>Right</td> <td>90</td> <td></td> </tr> <tr> <td>Forward</td> <td>80</td> <td></td> <td rowspan="2"></td> </tr> <tr> <td>(Right</td> <td>90)</td> <td></td> </tr> </table>	Penup			N.B. Pendown and Right 90 are interchangeable	Forward	20		-----				Pendown				Right	90		Forward	100			Right	90		-----				Forward	230			Right	90		Forward	75			-----				Penup				Forward	25		-----				Pendown				Right	90		Forward	80			(Right	90)		1 1 1 1 1 1
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6	<p>True</p> <p>False</p> <p>True</p> <p>False</p> <p>False</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
7	<p>(a) A DVD</p> <p>(b) A floppy disc</p> <p>(c) A laser printer</p> <p>(d) A trackerball</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
8	<p>(a) Three from:</p> <p>Data capture forms</p> <p>Report layouts/output format</p> <p>Validation routines</p> <p>Queries</p> <p>Test data/routines</p> <p>Macro</p> <p>Specifying hardware and software requirements</p>	<p>3</p>
	<p>(b) five max from:</p> <p>Staff payroll number or equivalent</p> <p>Personal data (name, address, phone no., fax no., email address, work phone number, next of kin, date of birth, gender, qualifications, photo etc.)</p> <p>- 2 marks for 4 items, 1 for 3, else 0</p> <p>Job description</p> <p>Appropriate spacing for each field</p> <p>Information fills the page and is clearly a computer output screen</p>	<p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p>
	<p>(c) Description of abnormal data i.e. data that is outside the range of acceptability</p> <p>Description of normal data i.e. acceptable data/valid data</p> <p>Description of extreme data i.e. on the edge of acceptability</p>	<p>1</p> <p>1</p> <p>1</p>
	<p>(d) Five from:</p> <p>Gathering data from experts</p> <p>Designing knowledge base</p> <p>Creating a knowledge base</p> <p>Creating a structure to relate each item in the database/knowledge base</p> <p>Creating an interrogation technique to get at the data</p> <p>Designing a user interface/method of displaying the results/method of inputting data/input screen/output screen</p> <p>Design/create Inference engine</p> <p>Design/create rule base</p> <p>Testing the system</p>	<p>5</p>
	<p>(e) Two from:</p> <p>Car fault diagnosis</p> <p>Mineral/oil prospecting</p> <p>Tax</p> <p>Chess games</p> <p>Plant/animal/rock identification</p>	<p>2</p>

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(f)	Three from: Pulse/heart rate Temperature Blood pressure Glucose/sugar level Rate of respiration Oxygen level in blood	3
(g)	Analogue to digital converter Sensors measure analogue quantities Computers work in digital	1 1 1
(h)	Three from: Will not take breaks/can operate continuously (not constantly) Fewer mistakes/ greater accuracy More than one variable can be measured at any one time Readings can be taken more frequently Results are analysed automatically/faster to react/charts are produced automatically More reliable/readings taken at regular intervals Nurses are free to do other tasks Reduces chance of nurses being exposed to contagious diseases	3
9 (a)	C5	1
(b)	Any in range A1:A6, B1:B6, C1:G1, B8, E8,F8	1
(c)	E2-D2	1
(d)	SUM(C2:C6) or C2+C3+C4+C5+C6	1
(e)	Copy cell C8 Paste into G8 or Click on cell G8 Double click on Autosum/click on Autosum and press enter or Click on cell C8 Ctrl+move to G8	1 1 or 1 1 or 1 1
(f)	Two from: Designing structures of buildings/architects designs Flight simulation/car driving simulation Simulating chemical reactions Simulating nuclear reactions Population growth Queuing	2

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10 (a)	<p>i) Two from: Webcams/small video cameras Microphones Speakers Modem</p> <p>ii) Two from: Any aspect of connecting equipment together/what each component does employees are connected on-line/may need to access the Internet/WAN to work Images of the employees appear on the screen in real time Software is needed in each computer to operate the conference Employees can be heard by all the other employees in the conference</p>	2 2
(b)	<p>Two from: Different time zones make it difficult to have a video conference between people in different countries Start up costs can be high/equipment can be expensive to buy Communication link can go down/reception can be poor Equipment can fail Can seem impersonal Pictures and sound can be out of sync</p>	2
11	<p>Three from: Internet - INTERnational NETwork Is a Wide Area Network (WAN) Can access it from anywhere Greater amount of information available Unlimited access Intranet - INTernal Restricted Access NETwork Usually a Local Area Network (LAN) Password controlled pages Behind a firewall Can set up specific information pages on Intranet systems Information within the school is easily accessible by all users Can limit the places where users can go to study No wasted time looking through millions of resources Intranet is better protected for use of emails/from viruses/from hackers</p>	3
12 (a)	<p>Two from: Microwaves Ovens Washing machines Dish washers Or any reasonable labour saving device</p>	2
(b)	<p>Four from: Increased leisure time/free time/more time to do other things Increase in social interaction Can go out whenever they want Unhealthy diet – TV dinners Better quality meals – easier to prepare exotic dishes Part time workers can now work full time</p>	4

Page 6	Mark Scheme	Syllabus	Paper
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13	<p>True</p> <p>False</p> <p>False</p>	<p>1</p> <p>1</p> <p>1</p>
14	<p>Inputs:</p> <ul style="list-style-type: none"> Pressure pads Light sensors temperature sensors Contact switches/push switch Input keypad Pass number input to keypad Zones selected Sound sensor Infra red sensor/proximity sensor Motion sensor/movement sensor Digital/video camera <p>3 max</p> <p>Processing:</p> <ul style="list-style-type: none"> Microprocessor continually monitors sensors. If light sensor detects light beam interrupted: If movement sensor activated: If contact switch activated: If pressure sensed by processor is greater than preset value: If temperature sensed by processor is greater than preset value: If sound sensed by processor is greater than preset value: Microprocessor sends signal to output device. <p>4 max</p> <p>Outputs:</p> <ul style="list-style-type: none"> Alarm light flashes/lights come on Alarm sounds Signal automatically sent to police <p>3 max</p> <p>Must have at least one from each section to gain full marks</p>	<p>6 max</p>
15 (a)	<p>Three from:</p> <ul style="list-style-type: none"> Looking at other people's data Changing other people's data Deleting other peoples data Spreading data around 	<p>3</p>
(b)	<p>Two from:</p> <ul style="list-style-type: none"> Use of usernames/ids Use of passwords Firewalls Physical locks of computers/room Use of biometrics Special access rights for administrator 	<p>2</p>

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(c)	<p>Two from:</p> <ul style="list-style-type: none"> Protects data during transmission phase Results in data which is not understandable Is understandable only to authorised users Need a decryption key/software to decrypt data 	2
(d)	<p>Five from:</p> <ul style="list-style-type: none"> Open/use DTP/word processing package Create frames/boxes Take photo using camera Upload from camera/load from CD ROM/download from Internet/scan photo Save the picture Load magazine document Import/copy and paste/insert into document Position the picture/resize picture/editing picture Type text/import text files 	5
(e)	<p>Three from:</p> <ul style="list-style-type: none"> Sound plus example Video/animation Links to other websites Hot spots Buttons for navigation/moving around the site Hit counters 	3
(f)	<p>Three from:</p> <ul style="list-style-type: none"> Website can be hacked into and modified/viruses can be introduced Can be difficult to read/navigate Have to have a computer/electricity Is not portable Have to have a modem/Internet/router Can accidentally go to undesirable sites Cost of maintaining website Technical knowledge required to maintain website 	3
(g)	<p>Six from:</p> <p>Advantages-</p> <ul style="list-style-type: none"> Information is up to date Easier to produce neatly presented work Internet has vast amounts of information Speed of search only if referring to use of search engine <p>Disadvantages-</p> <ul style="list-style-type: none"> Danger of accessing doubtful websites. Can take long time to find required information Can access biased websites Can access inaccurate websites Lack of expertise leads to inefficient searching Can get easily distracted <p>+ reasoned conclusion</p> <p>Must be at least one of each (advantage + disadvantage) to gain full marks</p>	6

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16 (a)	<p>Four from:</p> <ul style="list-style-type: none"> Departure airport typed in Arrival airport/destination/country typed in Date of departure typed in Duration of holiday typed in Computer database searches for matching departure airport If match found Computer database searches for matching arrival airport If flight on correct date found Search if seats/tickets available If so marks seat as booked Reduces number of seats/tickets available by one Prints flight details 	4
(b)	<p>Three from:</p> <ul style="list-style-type: none"> Collection of data Over a period of time Data is processed all at once Usually at quiet processor times Double booking could occur People would have to wait to see if their booking was made Cannot change options if no flights available 	3