

MS3
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WELSH JOINT EDUCATION COMMITTEE
CYD-BWYLLGOR ADDYSG CYMRU

General Certificate of Secondary Education

Tystysgrif Gyffredinol Addysg Uwchradd

MARKING SCHEMES

SUMMER 2006

**INFORMATION &
COMMUNICATION TECHNOLOGY**

WJEC
CBAC

INTRODUCTION

The marking schemes which follow were those used by the WJEC for the 2006 examination in GCSE Information and Communication Technology. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

The WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

**INFORMATION &
COMMUNICATION TECHNOLOGY**
GCSE PAPER 1 / SHORT COURSE PAPER
Mark Scheme – Foundation Tier

Question	Answers		Max Mark
1(a)	<p><i>Any four of:</i> Change fonts / font style / WordArt (<i>not font by itself</i>) Bold fonts (<i>not bold by itself</i>) Change font size / font size Picture / clipart / graphic Add border / thicker border / larger border</p>	<p>Larger size / paper Centre text / centre alignment / centre justification (<i>Not 'centre' by itself, not 'alignment', not 'italics'</i>)</p>	4
1(b) (i)	<p>A network of networks Networks linked together world wide web</p>	<p>WAN (Wide Area Network) Not 'large network'</p>	1
1(b) (ii)	<p>Messages / letters / text sent from one computer to another Messages sent across the internet</p>	<p>Messages sent across networks Electronic messaging system Accept mobile phone to mobile phone, or computer to mobile (<i>look for 2 electronic devices</i>)</p>	1
1(b) (iii)	<p>1 mark = 'name' 1 mark = 'service provider' <i>Three ticks - two correct answers shown – 1 mark</i> <i>Three ticks – one correct answer shown – 0 marks</i> <i>Four ticks – 0 marks</i></p>		2
1(c)	<p>Faster to deliver / receive Email is faster Email is faster than the normal post <i>Not 'faster' by itself</i> <i>'Don't have to leave the house'</i> must be justified e.g. disabled person.</p>	<p>Greater security / password protected Less likely to get lost Records when sent / read <i>Any reasonable answer</i></p>	1

2(a)	£200 / 200		1										
2(b)	A =B2+B3+B4+B5+B6+B7+B8+B9 or D =SUM(B2:B9)		1										
2(c)	B10 or B11 or B12 (any two)		2										
2(d)	D =B10 * 0.1		1										
2(e)	<table border="1"> <thead> <tr> <th></th> <th>Advantages</th> </tr> </thead> <tbody> <tr> <td>The student gets the best deal.</td> <td></td> </tr> <tr> <td>Calculations are correct if formulas are correct</td> <td>✓</td> </tr> <tr> <td>The student can try out other options and the computer will recalculate the totals.</td> <td>✓</td> </tr> <tr> <td>The student doesn't have to do anything.</td> <td></td> </tr> </tbody> </table> <p>Three ticks - two correct answers shown – 1 mark Three ticks – one correct answer shown – 0 marks Four ticks – 0 marks</p>		Advantages	The student gets the best deal.		Calculations are correct if formulas are correct	✓	The student can try out other options and the computer will recalculate the totals.	✓	The student doesn't have to do anything.			2
	Advantages												
The student gets the best deal.													
Calculations are correct if formulas are correct	✓												
The student can try out other options and the computer will recalculate the totals.	✓												
The student doesn't have to do anything.													
3(a)	Any two of: Debit card Cheque guarantee card Credit card Cash card	Smart card / chip and pin cards Savings card No brand names such as Switch, Visa, Solo Not 'Bank card' – too vague.	2										

<p>3(b)</p>	<p>1 mark for each crime [x 2] (<i>answer must imply misuse</i>) 1 mark for each prevention [x 2]</p> <p><u>Crime</u> Credit card / card fraud <i>not 'fraud' by itself.</i> <i>'Hacking' must be qualified.</i></p> <p><u>Prevention</u> PIN (or security number) / Passwords / agreed security words / Chip & PIN PIN protection e.g. don't write PIN down / don't tell anyone your PIN, change PIN regularly but not 'keep PIN in safe place' Never carry your PIN around with you. (only allow once)</p> <p>Lower the amount that can be spent using credit / debit cards before seeking authorisation Details of stolen cards on POS terminals Use secure payment methods on the Internet e.g. Paypal type services. Stop card immediately / report card fraud immediately to bank (only allow once) Shred all bank documents / destroy old cards Phone call or letter from bank to check (must be specific). Monitoring spending patterns.</p>	<p><u>Crime</u> Card copying <i>not 'forgery' by itself</i></p> <p><u>Prevention</u> Holograms make cards more difficult to copy Smart cards make more difficult to copy Photos on credit / debit cards</p> <p><u>Crime</u> Mugging / theft / stealing</p> <p><u>Prevention</u> Cameras at ATMs Take extra care when getting money out at ATM Put ATM in locked foyer / room inside bank PIN protection e.g. don't write PIN down / don't tell anyone your PIN, change PIN regularly but not 'keep PIN in safe place' (only allow once)</p> <p>Stop card immediately / report card fraud immediately to bank (only allow once)</p> <p>If the prevention qualifies the crime, award mark.</p> <p>Accept relevant <u>prevention</u> even if the <u>crime</u> scores zero.</p>	<p>4</p>
<p>3(c) (i)</p>	<p><i>Any two of:</i> Provide 24-hour services Access ATMs in many locations Not simply the idea 'they are available everywhere' Cuts down on queues <i>in banks</i></p>	<p>Faster cash access for customers</p> <p><i>Any reasonable answer</i></p>	<p>2</p>
<p>3(c) (ii)</p>	<p><i>Any two of: (must be process)</i> Check balances / get a balance Print (get) mini-statements Change PIN number Order cheque book Order statements Print (get) a receipt Choose language</p>	<p>Transfer cash Book tickets Deposit cash / cheques Top up phone cards (not 'Top up' on its own) Donate money to charities Pay utility bills</p>	<p>2</p>

<p>4(a)</p>	<p><i>Any two of:</i> Share files Share programs / licensing Share hardware / printers etc Monitoring what workers are doing / audit trails Can use any computer on the network. <i>Note - be careful of answers which are also true of standalones</i></p>	<p>All can access the Internet Use email / chat messaging systems / communicate with each other Only need to install software once <i>Any reasonable answer</i></p>	<p>2</p>
<p>4(b)</p>	<p><i>Any four of:</i> Virus scan all discs / don't spread a virus Do not tell anyone else your password Change your password regularly Do not send abusive emails Always log off Allow 1 housekeeping practice e.g. 'delete unwanted files' but not delete shared files or delete system files. Not 'No Food and drink allowed'</p>	<p>Do not access other people's files / no hacking Do not copy programs / files Do not use printers for personal use / other personal misuse – (accept general misuse) <i>Any reasonable answer</i></p>	<p>4</p>
<p>4(c)</p>	<p><i>Any two of:</i> Do not download pornography / visit pornographic sites Do not download illegal software Do not visit terrorist / racist or other types of unsuitable sites Do not send abusive emails (<i>only if not used in 4b</i>) Do not chat to dubious people / do not use chat lines / do not give out personal details on chat lines Do not send a virus (if not already credited in 4b)</p>	<p>Do not run up large phone bills Do not buy goods / holidays on the Internet / (personal use - must be qualified) Condone 'No illegal sites' / 'unauthorised sites' / 'inappropriate sites' as misuse Not 'Don't download' / 'no downloading' unless clearly qualified <i>Any reasonable answer</i></p>	<p>2</p>

5	<p>1 mark for each type</p> <p>Database software Names and address list Birthday details Email contacts list</p> <p><i>Any reasonable answer</i></p>	<p>Photographic software Download pictures from digital camera Movie making Photo editing / manipulation / morphing</p> <p>Must be a process e.g. get images from a camera / edit photos / put images on the Internet Not 'downloading pictures' unless specifically mention a camera. Not 'store' or 'print' photos</p> <p><i>Any reasonable answer</i></p>	2												
6(a)	<p>Raw facts and figures / readings / questionnaires Raw data which has not been processed / 'unprocessed information' Not 'Data which has no meaning'</p>		1												
6(b)	6		1												
6(c)	Code		1												
6(d)	<table border="1"> <thead> <tr> <th>Field</th> <th>Data type</th> </tr> </thead> <tbody> <tr> <td>Town</td> <td>String</td> </tr> <tr> <td>Code</td> <td>Number</td> </tr> <tr> <td>Type</td> <td>String</td> </tr> <tr> <td>Date of visit</td> <td>Date</td> </tr> <tr> <td>Coastal</td> <td>Yes/No (Y/N)</td> </tr> </tbody> </table>		Field	Data type	Town	String	Code	Number	Type	String	Date of visit	Date	Coastal	Yes/No (Y/N)	4
Field	Data type														
Town	String														
Code	Number														
Type	String														
Date of visit	Date														
Coastal	Yes/No (Y/N)														
6(e)	12/04/05 accept the <u>correct</u> date, however it is presented.		1												
6(f)	<i>Fieldname</i> + <i>Search criteria</i> Type + Rural	Do not need the logical operator	1												
7(a)	<p>Can choose options / area Better quality of images (if qualified) Updating (if qualified) Not passive / with teletext you can't influence order / choices / have no choice of order</p> <p><i>Any reasonable answer</i></p>		1												

7(b)	Tick two boxes		2								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Buy a holiday</td> <td style="width: 50%; text-align: center;">✓</td> </tr> <tr> <td>Buy a house</td> <td></td> </tr> <tr> <td>Buy a bike</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Buy a haircut</td> <td></td> </tr> </table>				Buy a holiday	✓	Buy a house		Buy a bike	✓	Buy a haircut	
Buy a holiday	✓										
Buy a house											
Buy a bike	✓										
Buy a haircut											
<p><i>Three ticks - two correct answers shown – 1 mark</i> <i>Three ticks – one correct answer shown – 0 marks</i> <i>Four ticks – 0 marks</i></p>											
7(c)	<p><i>Any two of:</i> Pay for view services / pay movies / pay sports channels Home-banking Voting / tele-voting Series links Set reminder messages Lottery / Gambling</p>	<p>Competitions Multi-screen Pausing live TV / Action replay - (Choosing from range) Dating services Games Email Top up mobile phones <i>Must have interactive element.</i></p>	2								
7(d)	<p>Initial cost of installation Run up large bills Encourages ‘couch potato’ syndrome / social isolation <i>Not ‘makes people fat or unhealthy’ unless qualified</i></p>	<p>Children could access ‘unsuitable’ material e.g. pornographic or watershed programmes. Signal problems. Technical problem with signal. Technical problem with the server (picture freezing) Bad weather interrupting the signal. <i>Any reasonable answer</i></p>	1								
8	<p><i>Must be in the following order</i> MICR OMR OCR</p> <p style="text-align: right;">Correct answer only (no duplicates)</p>		3								
9	<p>1 mark each</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Task</th> <th style="width: 50%; text-align: center;">Facility needed</th> </tr> </thead> <tbody> <tr> <td>Advertising the videos and music for sale on the Internet</td> <td>Webpage</td> </tr> <tr> <td>Storing details of the videos and music you are going to buy</td> <td>Shopping basket</td> </tr> <tr> <td>Paying for videos and music</td> <td>Secure payment site</td> </tr> </tbody> </table>		Task	Facility needed	Advertising the videos and music for sale on the Internet	Webpage	Storing details of the videos and music you are going to buy	Shopping basket	Paying for videos and music	Secure payment site	3
Task	Facility needed										
Advertising the videos and music for sale on the Internet	Webpage										
Storing details of the videos and music you are going to buy	Shopping basket										
Paying for videos and music	Secure payment site										

10(a)	<p style="text-align: center;">Tick two boxes</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Sell by date</td> <td></td> </tr> <tr> <td>Price</td> <td></td> </tr> <tr> <td>Reorder level</td> <td></td> </tr> <tr> <td>Check Digit</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Colour</td> <td></td> </tr> <tr> <td>Product code</td> <td style="text-align: center;">✓</td> </tr> </table> <p><i>Three ticks - two correct answers shown – 1 mark</i> <i>Three ticks – one correct answer shown – 0 marks</i> <i>Four or more ticks – 0 marks</i></p>	Sell by date		Price		Reorder level		Check Digit	✓	Colour		Product code	✓	2
Sell by date														
Price														
Reorder level														
Check Digit	✓													
Colour														
Product code	✓													
10(b)	<p>If stock number \leq level order more stock</p> <p>Number used to decide when more stock is needed</p>	1												
	Total marks	60												

**INFORMATION &
COMMUNICATION TECHNOLOGY
GCSE PAPER 1 / SHORT COURSE PAPER
Mark Scheme – Higher Tier**

Question	Answers	Max Mark
1(a)	<p><i>Any two of:</i> Change fonts / font style / WordArt (Not 'font' by itself) Bold fonts (not bold by itself) Change font size / font size Insert picture / clipart / graphic Add border / thicker border / larger border Larger size / paper Centre text / centre alignment / centre justification (Not 'centre' by itself, not 'alignment', not 'italics')</p>	2
1(b)	<p><i>Any two of:</i> Flier Letters Business cards Seating plan Newspaper adverts Web page Not slideshow <i>Any reasonable answer</i></p>	2
2(a)	<p>A = B2+B3+B4+B5+B6+B7+B8+B9 or D = SUM(B2:B9)</p>	1
2(b)	B10 or B11 or B12 (any two)	2
2(c)	D = B10 * 0.1	1
2(d)	<p>=D10-D11 =SUM(D2:D9)*0.9 =D10*0.9 =D10-10% =SUM(D2:D9)-D11 <i>Accept any formula that works.</i></p>	1

2(e)	<p><i>Any two of:</i> Accuracy of calculations Not 'accurate' by itself or 'less mistakes' What if's Save formula and data Graphs / variety of output formats 'Speed of calculation' – if qualified Condone 'validation rules', '3D referencing of spreadsheet'</p>	2
3(a)	<p><i>Any three of:</i> Debit card / cheque guarantee card Credit card Cash card / cashpoint card Smart card / chip and pin cards Savings card <i>No brand names such as Switch, Visa, Solo</i> <i>Not 'Bank card' – too vague.</i></p>	3
3(b)	<p><i>Any three of:</i> Bank Sort Code / Bank No / Bank Code Account No Withdrawal limit per day / how much they <u>can</u> withdraw PIN</p>	3
3(c)(i)	<p><i>Any two of:</i> Holograms Smart cards / programmable cards make them more difficult to copy Photos on credit / debit cards Chip & PIN</p>	2

3(c)(ii)	<p>1 mark crime (<i>answer must imply misuse</i>) 1 mark for each prevention [max 2]</p> <p><u>Crime</u> Credit card / card fraud <i>not 'fraud' by itself</i> <i>'Hacking' must be qualified.</i></p> <p><u>Prevention</u> PIN / Passwords / agreed security words / security number Chip and PIN PIN protection e.g. don't write PIN down / don't tell anyone your PIN, change PIN regularly but not 'keep PIN in safe place' (only allow once)</p> <p>Lower the amount that can be spent using credit/debit cards before seeking authorisation Details of stolen cards on POS terminals Use secure payment methods on the Internet e.g. Paypal type services / only use secure sites Stop card immediately / report card fraud immediately to bank (only allow once) Shred all bank documents / destroy old cards Phone call or letter from bank to check (must be specific) Monitoring spending patterns Biometrics Photo card / photo ID.</p> <p><i>Do not accept 'mugging' as the crime, but allow its prevention.</i> Cameras at ATMs Take extra care when getting money out at ATM Put ATM in locked foyer / room inside bank PIN protection e.g. don't write PIN down / don't tell anyone your PIN, change PIN regularly but not 'keep PIN in safe place' (only allow once)</p> <p>Stop card immediately/ report card fraud immediately to bank (only allow once)</p> <p>Accept relevant <u>prevention</u> even if the <u>crime</u> scores zero.</p> <p><i>Any reasonable answers</i></p>	3
3(d)(i)	<p><i>Any two of:</i> Provide 24-hour service Access ATMs in many locations not simply the idea 'they are available everywhere' Cuts down on queues <i>in banks</i></p> <p><i>Any reasonable answer</i></p>	2

3(d)(ii)	<p><i>Any three of: (must be process)</i></p> <table border="0"> <tr> <td>Balances / get a balance</td> <td>Print mini-statements</td> </tr> <tr> <td>Change PIN number</td> <td>Order cheque book</td> </tr> <tr> <td>Order statements</td> <td>Print receipts</td> </tr> <tr> <td>Choose language</td> <td>Transfer cash</td> </tr> <tr> <td>Book tickets</td> <td>Deposit cash / cheques</td> </tr> <tr> <td>Donate money to charities</td> <td>Pay utility bills</td> </tr> <tr> <td>Top up phone cards (not 'Top up' on its own)</td> <td></td> </tr> </table>	Balances / get a balance	Print mini-statements	Change PIN number	Order cheque book	Order statements	Print receipts	Choose language	Transfer cash	Book tickets	Deposit cash / cheques	Donate money to charities	Pay utility bills	Top up phone cards (not 'Top up' on its own)		3
Balances / get a balance	Print mini-statements															
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4(a)	<table border="1"> <thead> <tr> <th>Job</th> <th>Facility needed</th> </tr> </thead> <tbody> <tr> <td>Advertising the videos and music for sale on the Internet</td> <td>Webpage</td> </tr> <tr> <td>Choosing videos to buy</td> <td>Shopping basket</td> </tr> <tr> <td>Purchasing videos and music</td> <td>Secure payment site</td> </tr> </tbody> </table>	Job	Facility needed	Advertising the videos and music for sale on the Internet	Webpage	Choosing videos to buy	Shopping basket	Purchasing videos and music	Secure payment site	3						
Job	Facility needed															
Advertising the videos and music for sale on the Internet	Webpage															
Choosing videos to buy	Shopping basket															
Purchasing videos and music	Secure payment site															
4(b)	<p><i>Any four, but answers must contain at least one advantage and one disadvantage</i></p> <p>Advantages</p> <p>Faster to receive Already in digital form for editing Cheaper (if qualified) i.e. no middle man / package to pay for Condone 'doesn't take up much room in the house' but not if disadvantage is 'takes up memory' 'Don't have to leave the house' must be justified e.g. disabled shopper Available 24/7 Does not get lost in the post Environmental benefits – save on packaging.</p> <p>Disadvantages</p> <p>Idea of 'can't send it back / may not be what you ordered'. Corruption / can't send it back if corrupted Could contain a virus Slow speeds could take a long time to download Slow speed could run up large telephone bills Incompatibility with own computer system / wrong format for hardware Takes up memory It is not portable / can't listen to it away from the computer Not 'hacking' It could be an illegal site / could be illegally downloading Could lose your music if your computer crashes</p> <p><i>Any reasonable answer</i></p>	4														

5(a)	<p><i>Any two of:</i> Share files Share programs / licensing Share hardware / printers etc All can access the Internet Use email / chat messaging systems / communicate with each other Only need to install software once Monitoring what workers are doing / audit trails Can use any computer on the network. <i>Note - be careful of answers which are also true of standalones</i></p>	2
5(b)	<p><i>Any four of:</i> Virus scan all discs / don't spread a virus Do not tell anyone else your password Change your password regularly Don't access other people's files / no hacking Do not copy programs / files Do not damage hardware Do not send abusive emails [accept only if not used in 5(c)] Do not use printers for personal use / other personal misuse (accept general misuse) Always log off Allow one housekeeping practice e.g. 'delete unwanted files' but not delete shared files or delete system files Not 'No Food and drink allowed' <i>Any reasonable answer</i></p>	4
5(c)	<p><i>Any two of:</i> Do not download pornography / visit pornographic sites Do not download illegal software Do not visit terrorist / racist or other types of unsuitable sites Do not chat to dubious people / don't use chat lines / do not give out personal details Do not run up large phone bills Do not buy goods on the Internet Do not waste company time for personal use / do not go on EBay Do not send abusive emails [accept only if not used in 5(b)] (Personal use - must be qualified) Condone 'No illegal sites' / 'unauthorised sites' / 'inappropriate sites' as misuse Not 'Don't download' / 'no downloading' unless clearly qualified <i>Any reasonable answer</i></p>	2
5(d)	<p><i>One mark for each:</i> Attachments / attach leaflet / cut and paste leaflet into email Use of Email address list / contacts list as external database Automatic merging of data / mailmerge Group send / Carbon copy send / BCC / send at the same time</p>	3

5(e)	<p>Change analogue to digital signals (and vice versa) Not ‘ to connect to the Internet’, or ‘ code and decode’</p>	1
5(f)	<p>Faster to deliver / receive / download / faster access Not ‘its faster’ by itself Can use normal telephone whilst online <u>Fixed rate</u> so don’t run up large bills Broadband is always connected / always on / no need to dial-up <i>Any reasonable answer</i></p>	1
6	<p>Distance learning E-learning / online learning / GCSE <i>Byte size</i> websites Learning from home (if qualified – <u>how</u> pupils could learn from home) Videoconferencing to remote tutors Access remote databases Condone ‘teleworking’ <i>Any reasonable answer</i></p> <p>Sound technology Downloading music file for a music project Creating music for a school production Use sound in PowerPoint file / animation / web site Listen to <u>Teaching</u> CDs / Language files Test pitch <i>Any reasonable answer</i></p> <p>Sensor Datalogging in science or geography Control e.g. burglar alarms, control of heating systems Condone if candidates name a sensor and say how it could be used but do not have a context e.g. ‘use a heat sensor to measure temperature variations’. Not ‘scanning’ without justification Not a ‘censor’ type context <i>Any reasonable answer</i></p> <p>Digital Imaging software Photo manipulation / crop / resize / black and white etc Satellite imagery for weather CAD Must be a process e.g. ‘get images from a camera / edit photos / put images on the Internet’ Not ‘downloading pictures’ unless specifically mention a camera. Not ‘store’ or ‘print’ photos <i>Any reasonable answer</i></p>	4

10	(a) OMR school registers, lottery tickets, exam marking (b) MICR number on bottom of cheques / cheque processing (c) OCR application forms, postcodes, utility bills <i>Any reasonable answer</i>	3
11(a)	<i>Any two of:</i> Product Code / Number (<i>not name</i>) Manufacturer's Code / Number (<i>not name</i>) Country of origin Check digit	2
11(b)	<p><i>2 marks for each section</i> <i>5 x [2]</i></p> <p>Methods of data entry</p> <ul style="list-style-type: none"> ▪ Bar code scanning ▪ PDET ▪ Touch sensitive screen ▪ Weighing scales ▪ Keyboard ▪ Kimball tags ▪ Card reader <p>Processing of data</p> <ul style="list-style-type: none"> ▪ Match codes / compare codes ▪ Look up price ▪ Calculates bills / amount paid in and change to given ▪ Cash back ▪ Check digit calculation ▪ Buy one get one free ▪ Monitoring sales patterns <p>Outputs from the system</p> <ul style="list-style-type: none"> ▪ Price goes to screen display ▪ Itemised bills / print receipts ▪ Sound / beep (if justified) <p><i>Note - look for idea of a process not just the name of the device</i></p> <p>Customer payment methods (and services)</p> <ul style="list-style-type: none"> ▪ Debit card ▪ Credit card ▪ Electronic cheque readers and printing / cheque ▪ EFTPOS ▪ Loyalty cards / money-off vouchers / gift vouchers ▪ Cash <p>Stock control systems</p> <ul style="list-style-type: none"> ▪ Updates sales file ▪ Check stock levels against reorder level ▪ Order goods when stock low (not warns the manager to order stock, the system does the ordering). ▪ Monitoring sales patterns (award once only). <p><i>Any reasonable answer in each section</i></p>	10
	Total marks	80

**INFORMATION &
COMMUNICATION TECHNOLOGY**

GCSE PAPER 2

Mark Scheme – Foundation Tier

Question	Answer	Mark	Total for Question																					
1	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><i>Device</i></th> <th style="text-align: center; border-bottom: 1px solid black;"><i>Input</i></th> <th style="text-align: center; border-bottom: 1px solid black;"><i>Output</i></th> </tr> </thead> <tbody> <tr> <td>Printer</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Microphone</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Mouse</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Digital Camera</td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>Graph Plotter</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Monitor</td> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> <p><i>No marks if both columns ticked for any device, unless one is clearly crossed out.</i></p>	<i>Device</i>	<i>Input</i>	<i>Output</i>	Printer		✓	Microphone	✓		Mouse	✓		Digital Camera	✓		Graph Plotter		✓	Monitor		✓	1 1 1 1 1 1	[6]
<i>Device</i>	<i>Input</i>	<i>Output</i>																						
Printer		✓																						
Microphone	✓																							
Mouse	✓																							
Digital Camera	✓																							
Graph Plotter		✓																						
Monitor		✓																						
2	(a) (i) Hard Disc (ii) Floppy Disc	1 1																						
	(b) (i) CD or DVD [accept CD/DVD] (ii) Optical discs are not damaged by magnets <i>Two or more ticks – 0 marks even if one is correct.</i>	1 1																						
	(c) (i) Random Access Memory (ii) RAM is memory RAM is used to store data when the computer is being used <i>Three ticks - two correct answers shown – 1 mark Three ticks – one correct answer shown – 0 marks Four ticks – 0 marks</i> (iii) Run complex programs more quickly <i>Do not accept 'faster' on its own, but 'faster' may be given credit if it is justified. Accept 'hold more data', but not 'storage'. Better / faster graphic handling / video handling Run more programs at once / multitasking.</i>	1 2 1	[8]																					

3	(a)	(i) OCR or scanner (scanned in) [do not accept both] (ii) Light Pen, keyboard (typed in)	2	
	(b)	(i) Can process a loan or return a book much quicker (ii) Can locate a book much quicker <i>Accept also – identify the most read book; what books have been read by pupils; production of library reports; better management statistics; easier to store details of books/takes up less space than a manual system; production of automatic reminder letters; inter-library loans; regular back-ups are easier than on a manual system; less likely to lose data due to filing problems; better security (if qualified); easier to amend records than with a manual system; easier to sort records; access from more than one computer.</i>	2	[4]
4	(a)	Local Area Network	1	
	(b)	(i) Wide Area Network (ii) Supermarket, bank, police (accept also Internet, world-wide games playing).	1 1	
	(c)	Diagram of a star network Fileserver Workstation Printer (accept if attached to PC) Topology, with correct links <i>(If wrong type of topology, no marks)</i>	1 1 1 1	
	(d)	Bus or ring Accept also Token Ring, Distributed (accepted, but not expected) <i>No marks for 'wireless', mesh, tree.</i>	1	
	(e)	(i) Passwords, (ii) Biometrics (fingerprints and retina scans count as two) <i>Accept also voice recognition, access levels, encryption, user names, monitoring the network, firewalls, anti-virus programs, write-protect.</i>	2	[10]

5	(a)	False, True, True <i>No marks if both columns ticked for any statement, unless one is clearly crossed out.</i>	3	
	(b)	(i) Real time processing (ii) Real time transaction (iii) Batch processing	1 1 1	[6]
6	(a)	(i) Personal data should be up to date and accurate (ii) Data to be adequate, relevant, not excessive (iii) Data should not be kept longer than necessary Not to be transferred to countries outside EEC/EU/Europe or without adequate provision Fairly and lawfully processed Kept secure against loss / damage or unauthorised access Processed within the rights of data subjects Must only be used for specified purpose. <i>(Accept slightly different wording if the meaning is clear, but take care with duplication).</i>	1 1 1	
	(b)	(i) Household or personal use (ii) Statistical records <i>Three ticks - two correct answers shown – 1 mark Three ticks – one correct answer shown – 0 marks Four ticks – 0 marks</i>	2	[5]
7		Crime 1 The act of hacking or attempting to hack (to obtain money, information...) Crime 2 Introducing viruses (for amusement / to destroy...) <i>phishing (1 mark) – needs purpose for second mark.</i> <i>Note – 1 mark for crime (hacking/virus) (1 mark for purpose / example - could be implied – only if crime is given).</i>	2 2	[4]

8	(a)	Look for a response that includes the idea that a big / large computer is required to carry out complex calculations	1	
	(b)	(i) air pressure (ii) temperature (<i>do not accept thermometer</i>) accept heat or infra-red (iii) light / sunshine <i>Accept also rainfall, humidity, wind, wind-speed, wind-direction, UV, anemometer</i>	1 1 1	[4]
9	(a)	(i) Analysis (research / feasibility) (ii) Design (planning) (iii) Implementation (create) (iv) Maintenance (evaluation / testing) <i>(Accept any order)</i>	1 1 1 1	
	(b)	(i) Employee No. (Payroll No.) National Insurance No. (ii) Tax code (iii) Rate of pay (iv) Gross pay to date <i>(Accept any other reasonable response)</i>	1 1 1 1	[8]
10	(a)	(i) Windows (ii) Icons (iii) Menus / Mouse (iv) Pointer / Pull down menu <i>Accept also: task bar, toolbar, shortcuts, common help systems, less chance of error / less typing / can be used with a mouse / learn one package and you learn them all, or a reference to GUIs being memory hungry, drag and drop, user friendly, personalised desk top. Award 1 mark for WIMP. 'Easy to use' must be qualified.</i>	1 1 1 1	
	(b)	Menu, command, speech / voice, touch-screen, free-text. <i>Accept DOS/MSDOS, Concept keyboard, Braille keyboard, Forms.</i>	1	[5]
TOTAL				[60]

**INFORMATION &
COMMUNICATION TECHNOLOGY**

GCSE PAPER 2

Mark Scheme – Higher Tier

Question		Answer	Mark	Total for Question
1	(a)	(i) (400Gb) Hard Disc (ii) (1.44 Mb) Floppy Disc	2	
	(b)	CD or DVD Drive [accept CD/DVD]	1	
	(c)	(400Gb) Hard Disc	1	
	(d)	(i) Random Access Memory	1	[8]
		(ii) To temporarily store / hold programs / data. Accept 'when in use' as implying temporarily. Hold programs / data (1 mark). Loading up data / working area (1 mark).	2	
		(iii) Can run complex programs more quickly <i>Do not accept 'faster' on its own, but 'faster' may be given credit if it is justified. Accept 'hold more data', but not 'storage'. Better / faster graphic handling / video handling Run more programs at once / multitasking.</i>	1	
2	(i)	Graphical User Interface (GUI)	1	[3]
	(ii)	Speech / voice, touch	1	
	(iii)	Command line, menu <i>Accept free-text, DOS/MSDOS, Concept keyboard, Braille keyboard, Forms, Interactive white board</i>	1	
3	(a)	False, True, True <i>No marks if both columns ticked for any statement, unless one is clearly crossed out.</i>	3	
	(b)	(i) Real time processing (accept 'real time') (ii) Real time transaction (iii) Batch processing (accept 'batch')	1 1 1	[6]

4	(a)	(i) Alarms (ii) Security locks / bars on windows. <i>Accept fireproof doors / sprinkler systems / inert gas systems, voice recognition, biometrics (fingerprints and retina scans count as two), guards, write-protect tabs, CCTV, camera, do not keep computers on the ground floor.</i>	2	
	(b)	(i) Levels of access (ii) Encryption (not 'encoding') <i>Accept firewalls, read-only, hidden, activity log, user names, monitoring the network, anti-virus programs.</i>	2	[4]
5	(a)	(i) Personal data should be up to date / accurate (ii) Data to be adequate, relevant not excessive (iii) Data should not be kept longer than necessary Not to be transferred to countries outside EEC/EU/Europe, or without adequate provision Fairly and lawfully processed Kept secure against loss Processed within the rights of data subjects Must only be used for specified purpose. <i>(Accept slightly different wording if the meaning is clear, but take care with duplication).</i>	1 1 1	
	(b)	(i) National Security (ii) Law and Order <i>Accept also, Government, police, medical (professions), medical records, hospitals, customs and excise, tax, school pupils' work, domestic use, newsagents, simple data for payroll or accounts, statistical data, small clubs or private member clubs, family history, mailing lists, solicitors.</i> <i>Note – take care with duplication – e.g. Government and immigration = 1 mark.</i>	2	[5]

6		Crime 1 obtaining PIN numbers online to buy goods	2	[6]
		Crime 2 hacking: Trying to access bank accounts other than one's own in order to benefit	2	
		Crime 3 sending an e-mail knowing it contains a virus for amusement or to destroy...	2	
		<p><i>Accept also, looking at other peoples' files for blackmail, fraud, amusement.</i></p> <p><i>Accept credit card fraud (1 mark), phishing / identity theft (1 mark) – needs purpose for second mark.</i></p> <p><i>Crime + Purpose / example (could be implied) = 1+1</i></p>		
7	(a)	Light pen, scanner, barcodes, fingerprint reader, card reader, retina scans, facial imagery	1	
	(b)	(i) Stock, Book or Resource File (ii) Member's File, Borrower's File	1 1	
		<i>Accept 'Fines' / 'Overdue' File</i>		
	(c)	(i) Date (date of loan & date of return worth 2 marks) Duration of loan (ii) Borrower's Number / ID (iii) Book Number, Accession Number	3	
	(d)	<p>One mark per relevant point.</p> <p>Quicker loans and returns</p> <p>Automatic list of late returns</p> <p>Quicker to search for information, e.g. book availability</p> <p>Automatic generation of reminder letters</p> <p>Automatic totals of fines</p> <p>Complex searches for resources</p> <p>Production of library reports</p> <p>Better management statistics</p> <p>It takes up less room / space than a manual system</p> <p>Inter-library loans</p> <p>Regular back-ups are easier than on a manual system</p> <p>Less likely to lose data due to filing problems</p> <p>Better security (if qualified)</p> <p>Easier to amend records than with a manual system</p> <p>Easier to sort records</p> <p>Records are more up to date</p>	4	[10]

8	(a)	(i) Local Area Network (ii) School network / office network / home network / SOHO	1 1	
	(b)	(i) Wide Area Network (ii) Supermarket, bank, police, (accept also Internet, world-wide games playing).	1 1	
	(c)	Fileserver Workstation Printer (accept if attached to PC) Topology with correct links <i>(If wrong type of topology, no marks)</i>	1 1 1 1	
	(d)	(i) Star (ii) Ring <i>Accept also Token Ring, Distributed (accepted, but not expected) No marks for 'wireless', mesh, tree.</i>	2	
	(e)	(i) Cable (ii) Radio waves / wireless (iii) Infra Red Accept also Bluetooth, fibre-optic, microwave	3	
	(f)	(i) Do not write it down (ii) Do not use pet / friends / relations, etc. (iii) Use a mixture of numbers and letters <i>Accept also change it regularly, don't tell anyone, make sure no-one watches you typing it in, always log off, make it a reasonable length.</i>	3	[16]

9	(a)	Look for a response that includes the idea that a big / large computer is required to carry out complex calculations and deal with a large amounts of data. (Accept process data / run faster).	1	
	(b)	(i) air pressure, (ii) rainfall <i>Accept also, temperature (do not accept thermometer or heat) light / sunshine / UV, rainfall, humidity, wind / wind direction, wind speed, anemometer.</i>	1 1	
	(c)	<p>Adv. <u>weather maps</u> of an area can be produced using geographical information system</p> <p>data can be fed into a computer model to vary as weather patterns change and interact. This enables <u>detailed</u> weather forecasts to be made</p> <p><u>more</u> data can be analysed</p> <p>predictions are more <u>accurate</u></p> <p>compare and contrast with previous data is possible</p> <p>predictions can be calculated more quickly</p> <p>Disadv. Too reliant on the system – cannot get a forecast if there is a power/computer failure</p> <p>A fault in the data or variables will give inaccurate forecast (faulty model will give faulty results)</p> <p>Model is not 100% accurate</p> <p>Initial set-up cost (hardware and software)</p> <p><i>(Any three points - 3 marks)</i></p>	3	[6]

10	(a)	Analysis	(i) } (ii) }	Interviews, observations, questionnaires, inspect existing documentation, feasibility report, background, aims and objectives, problems with existing system	2	
		Design	(i) } (ii) }	Identification of hardware, identification of software, flow of data through system, output reports, security, test strategy, alternative methods, processing stages, data structures, input screens, output screens, data validation techniques, data verification techniques, data capture form, system diagrams	2	
		Implementation	(i) } (ii) }	Changeover: direct, parallel, system evaluation, enter data, test plan, produce software (use open-ended software e.g. spreadsheet), install software, staff training, pilot study, phase conversion, produce documentation	2	
		Maintenance	(i) } (ii) }	Keeping new system up to date, error free, updating user and technical resources, documentation, corrective maintenance, perfective maintenance, adaptive maintenance <i>Note – do not credit the same point twice.</i>	2	
	(b)	<p>Master File – contains personal data and historical data. It also includes data such as tax to date, gross pay to date, net pay to date. [Data is permanent, e.g. name, date of birth....]</p> <p>Transaction File – Temporary file, contains data such as employee ID / Payroll Number, hours worked. [Changes every week.]</p>			2 2	

	(c)	Payroll Number / Employee ID / Employee Number / hours' worked <i>Condone NI Number</i>	1	
	(d)	(i) NI Number - <u>if not given in (c)</u> (ii) Rate of Pay (iii) Gross Pay <i>Accept also gross pay to date, tax rate, net pay to date, holiday pay, sick pay, hours' worked - <u>if not given in (c)</u>, overtime, job title, bonuses, pension contribution, date of pay, union contribution, date started, bank account.</i>	1 1 1	[16]
11	(a)	(i) 5 (ii) 6	1 1	
	(b)	A collection / group of (related) records	1	
	(c)	(i) To check if the data is reasonable / sensible (ii) Range check or suitable example. (iii) Data entered into a computer is accurate / copied correctly. When input is checked by the operator against the source material. (Visual check, double entry).	1 1 1	
	(d)	(i) Number / Integer / Autonumber (ii) Boolean (Yes/No, True/False). Accept character / text / multiple-choice	1 1	
	(e)	One mark per relevant point. Access information more quickly (easier access) Complex searches can be made to find information Amending data is easier Different types of reports can be produced Sorts on different fields can be carried out quicker Accessed from more than one point (at the same time) Easier to transfer to other schools Less chance of misinterpretation (handwritten data may be unclear) Better security (if qualified) Allows electronic registration Data can be used in mail-merging (letters to parents etc.) Data can be attached to emails	4	[12]

12	<p><u>Developments</u> ADSL, broadband, modem, ISDN, fast Processors, fibre, wireless, satellite, mobile phone technology, teleconferencing, web cams, games, Internet, digital photography, music, (MP3 – iPod), streaming video files, wireless access points, Bluetooth, PDAs, interactive digital TV.</p> <p><u>Impact</u> Teleworkers - no need to travel to work - environment - less cars on road - save time - more time with family</p> <p>Loss of jobs, retraining, new opportunities Less active population, no (less) socializing No office space required by employers Quicker transfer of data, buying music online, manipulating images, on-line shopping, on-line banking.</p>	4	
	TOTAL	4	[8]
		[100]	

Welsh Joint Education Committee
245 Western Avenue
Cardiff. CF5 2YX
Tel. No. 029 2026 5000
Fax. 029 2057 5994
E-mail: exams@wjec.co.uk
website: www.wjec.co.uk/exams.html

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