



GCSE MARKING SCHEME

**INFORMATION & COMMUNICATION
TECHNOLOGY**

JANUARY 2012

INTRODUCTION

The marking schemes which follow were those used by WJEC for the January 2012 examination in GCSE INFORMATION & 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.

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

UNIT 1

Q	Answer	Mark												
1(a)	One mark for each correct letter circled/highlighted	1												
	B E C	1												
	<i>If more than one letter selected in a row then no mark for that row</i>	1												
1(b)	Any four of:	1												
	Clip Art / picture / image	1												
	Border / border art (accept any answer which includes border)	1												
	Table	1												
	Bold Font (Accept bold text BUT NOT bold, font or text by itself)	1												
Italics														
Font size / text size														
Word Art														
2	One mark for each correct ticked box													
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 33%;">1</td> <td style="width: 33%;">5</td> <td style="width: 33%;">9 ✓</td> </tr> <tr> <td>2</td> <td>6 ✓</td> <td>10</td> </tr> <tr> <td>3 ✓</td> <td>7</td> <td>11</td> </tr> <tr> <td>4 ✓</td> <td>8</td> <td>12</td> </tr> </table>	1	5	9 ✓	2	6 ✓	10	3 ✓	7	11	4 ✓	8	12	
	1	5	9 ✓											
	2	6 ✓	10											
	3 ✓	7	11											
4 ✓	8	12												
<div style="border: 1px solid black; padding: 5px; margin-left: 20px;"> <i>If tick all boxes no marks If tick two or three boxes in a row, i.e. 1, 5 and 9 2, 6 and 10 3, 7 and 11 4, 8, and 12 then no mark for that row</i> </div>	1													
	1													
	1													
3(a)	One mark for each correct ticked box													
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 33%;">1</td> <td style="width: 33%;">5 ✓</td> </tr> <tr> <td>2 ✓</td> <td>6</td> </tr> <tr> <td>3</td> <td>7 ✓</td> </tr> <tr> <td>4 ✓</td> <td>8</td> </tr> </table>	1	5 ✓	2 ✓	6	3	7 ✓	4 ✓	8					
	1	5 ✓												
	2 ✓	6												
	3	7 ✓												
4 ✓	8													
<div style="border: 1px solid black; padding: 5px; margin-left: 20px;"> <i>If tick all boxes no marks If tick two boxes in a row, i.e. 1 and 5, 2 and 6, 3 and 7, 4 and 8, then no mark for that row</i> </div>	1													
	1													
	1													
3(b)	One of:	1												
	<ul style="list-style-type: none"> See a bird's eye view of your house Plan the quickest route Look at surrounding area when you buy a property Overlay mapping Demographic analysis Locates where you are (locate me) Can help you when you are lost Gives directions from position A to B Gives estimated time from A to B / shows how long it takes from one place to another To show height above sea level / terrain of landscape Can show maps of the area / View a place before you arrive Can track your phone if you lose it / Can be tracked if lost Identify local places of interest / petrol stations / etc Can show where traffic cameras are <p>Answers must be qualified NOT 'to see how long it takes' or 'to see what the area is' NOT general advantages e.g. Easier to carry / Can take it anywhere NOT satellite navigation or anything to do with weather</p>													

Q	Answer	Mark												
3(c)	<p>Any 4 points:</p> <ul style="list-style-type: none"> • always connected / no need to connect / CONDONE faster connection speed • can use telephone at the same time • much higher bandwidth / data transfer rate • can watch video / can listen to radio in real time • can use wireless / can use anywhere round the house • can videoconference • faster to upload/download web pages / faster to upload/download files / faster to access the internet / browsers will find search results more quickly <p>DO NOT GIVE mark for It is faster/quicker – must be qualified with a reason why, i.e. faster to ... It is wireless Can trip over wires You can connect many computers to broadband but only one to dialup Anything to do with cost</p>	4												
4(a)	<p>One mark for each correct ticked box</p> <table border="1"> <tr><td>1</td><td>✓</td></tr> <tr><td>2</td><td>✓</td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> </table> <div style="border: 1px solid black; padding: 5px; margin-left: 100px;"> <p><i>If tick all boxes no marks If tick three boxes then max one mark</i></p> </div>	1	✓	2	✓	3		4		1 1				
1	✓													
2	✓													
3														
4														
4(b)	<p>One mark for each correct ticked box</p> <table border="1"> <tr><td>1</td><td></td></tr> <tr><td>2</td><td>✓</td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td>✓</td></tr> <tr><td>5</td><td>✓</td></tr> <tr><td>6</td><td></td></tr> </table> <div style="border: 1px solid black; padding: 5px; margin-left: 100px;"> <p><i>If tick all boxes no marks If tick five boxes then max one mark If tick four boxes then max two marks</i></p> </div>	1		2	✓	3		4	✓	5	✓	6		1 1 1
1														
2	✓													
3														
4	✓													
5	✓													
6														
4(c)	<p>e.g. ringtones, e-books, e-tickets, vouchers, music, songs, mp3 files, videos, apps, software, photographs, manuals, user guides, computer games</p> <p>Do NOT give for an object e.g. CD, DVD, books</p>	1												
4(d)	<p>Credit card, debit card, secure payment sites, direct debit, online bank account</p> <p>Do NOT accept brand names e.g. Visa, Mastercard, Paypal NOT Bank card</p>	1												
5(a) Auto	<p>One mark for each correct ticked box</p> <table border="1"> <tr><td>1</td><td>✓</td><td>2</td><td></td></tr> <tr><td>3</td><td></td><td>4</td><td>✓</td></tr> <tr><td>5</td><td>✓</td><td>6</td><td></td></tr> </table> <div style="border: 1px solid black; padding: 5px; margin-left: 100px;"> <p><i>If tick all boxes no marks If tick two boxes in a row, i.e. 1 and 2, 3 and 4, 5 and 6, then no mark for that row</i></p> </div>	1	✓	2		3		4	✓	5	✓	6		1 1 1
1	✓	2												
3		4	✓											
5	✓	6												
5(b)(i)	<p>Same email sent to more than one person at the same time</p>	1												

Q	Answer	Mark
7(b)	FWD 20 RIGHT 90 (Accept LEFT 270 and follow through) FWD 15 RIGHT 90 FWD 5 GRAB FWD 5 RELEASE <i>All lengths correct 1</i> <i>All angles correct 1</i> <i>Grab and release correct 1</i> Accept the possibility that students will give measurements for the Robot travelling the middle of the path, e.g. FWD 18.5, RIGHT 90, FWD 14, etc. Accept use of units, e.g. FWD 20 metres	3
8(a)	Any two of: Braille keyboard Touch screens / on screen keyboard Microphone Pipes / sip and puff Specialist mouse balls Virtual Reality glove Thought headset Touch pad Joystick Concept keyboard Foot mouse Head mouse Pointer tool Do NOT accept webcam	2
8(b)	Any two of: On screen keyboard, on screen magnifier, text to voice, larger icons, change resolution, change colours, large fonts, plain backgrounds, make brighter/change contrast, screen filters	1 1
9(a)	7	1
9(b)	Membership number Accept Membership no. or Memb. No.	1
9(c)	To make each record unique / unique identifier	1
9(d)	Consistency of data – fewer errors typing one letter NOT less errors. Faster to enter data (must be qualified) NOT faster alone Saves memory/storage space NOT space alone	1 1
9(e)	One mark for each correct field and search criteria x 2 One mark if both fields are correct but search criteria incorrect One mark if both search criteria are correct but fields are incorrect Search criteria must be spelt correctly Gender = F Membership Fees Paid = Yes	1 1

Q	Answer	Mark						
9(f)(i)	02/14/2010	1						
9(f)(ii)	<p>One mark for identifying error e.g. Typed in 02/14 instead of 02/04 or transcription error. NOT 'typed in wrong' NOT 'This mistake was done by a typing error'</p> <p>One mark for description and one mark for expansion e.g.</p> <table border="0"> <tr> <td><i>Description</i></td> <td><i>expansion</i></td> </tr> <tr> <td>Drop list for month</td> <td>1,2,3, ...,12</td> </tr> <tr> <td>Range Check</td> <td>between 1 and 12 / there are only 12 months</td> </tr> </table>	<i>Description</i>	<i>expansion</i>	Drop list for month	1,2,3, ...,12	Range Check	between 1 and 12 / there are only 12 months	1 2
<i>Description</i>	<i>expansion</i>							
Drop list for month	1,2,3, ...,12							
Range Check	between 1 and 12 / there are only 12 months							
9(f)(iii)	<p>One mark for stating up to two advantages and a further mark for a related example of each advantage. Must be related to the club</p> <p>Can search for a member (1) to change address (1) to check if member has paid (1) Validation techniques (1) to reduce data entry errors (1) A database is more secure (1) Can set a password on db (1) to prevent unauthorised access (1) Can mail merge (1) letters to members of an away trip (1) Can backup data more easily (1) in case of accident / fire / theft (1) Variety of output reports (1) Faster/easier to update e.g. adding a record / deleting a record / editing a record / sorting a record (1) NOT easier to search unless qualified</p>	4						
10	<p>One mark for method. OMR, Smart cards, Swipe cards, Biometrics (finger print, retinal scan, etc), Radio, PC, Online system, Mobile devices</p> <p>Advantages must match method. Any two advantages from:</p> <ul style="list-style-type: none"> • capture pupil attendance accurately • capture pupil attendance automatically • work out patterns of attendance • provide different reports quickly • minimal loss of teaching time • cannot misuse system as id is unique (biometrics) • staff can access data on any computer <p><i>Can allow advantages if method is incorrect</i> NOT 'saves paper'</p>	1 1 1						

Q	Answer	Mark
11	<p>7-9 marks Candidates give a clear, coherent answer listing four important items of data with a full discussion including four advantages and one disadvantage. They use appropriate terminology and accurate spelling, punctuation and grammar.</p> <p>4-6 marks Candidates list some important items of data and discuss several advantages or disadvantages but responses lack clarity. There are a few errors in spelling, punctuation and grammar.</p> <p>1-3 marks Candidates list some items of data and make brief points. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.</p> <p>0 marks No valid response.</p> <p>Indicative content Any four of: Date of performance Time of performance Seat / premier seat / gallery Number of tickets Film / show Location of cinema Cost Method of payment 3D or not Special Offer deals Age</p> <p>Discussion of any four advantages from: Can book 24/7 Check availability Check / compare prices Read review prior to booking Less chance of double booking Loyalty scheme Alternatives Select particular seats Lower price for booking in advance Easier for disabled who don't have to leave home to book Save on travel costs (must be qualified) e.g. of going to the theatre to book Save travel time (must be qualified) e.g. rather than going to the theatre to book Don't have to turn up as early to queue up as tickets already purchased Pre-order tickets for films not yet released</p> <p><i>Do NOT accept anything which could be done by phone</i></p> <p>Discussion of any one disadvantage from: Pay booking fee Not everyone has internet access Online fraud/fake websites/credit card details can be stolen Can't use cinema deals online NOT increased job losses</p>	9
	TOTAL	80

UNIT 3

Qu	Answer	Marks
1	One mark for each correct answer Input Output Input Output	1 1 1 1
2(a)	One mark for each correct answer (i) Pixels (ii) Objects (iii) Larger (iv) Smaller (v) Lose quality (vi) Keep quality	1 1 1 1 1 1
2(b)	One mark each for any two from: Zoom Selection Transforming Sizing Scaling Copying Moving Cloning Brush settings Layering Red-eye Spot clearing Skew Rotate Distortion Colour palette Contrast Brightness Text	1 1
2(c)	One mark each for any three from: Justify colour – red/green combinations House style Patterned graphics Layout (accept only once e.g. size on screen / footprint) Uploading time / size of file Optimisation Purpose Animation File format Check copyright Resolution of the image	1 1 1
3(a)	Ring	1
3(b)	One mark for each correct answer True True False True	1 1 1 1
3(c)	One mark for each correct answer Routers Gateways Bridges	1 1 1

3(d)	One mark each for any two from: Passwords Physical locks Biometric access restrictions Train users Keep backups? Use a firewall Use virus checking software / keep virus checking software up to date Access rights	1 1
4(a)	One mark for each correct answer GUI Menu Command line Touch screen	1 1 1 1
4(b)	Voice Biometrics	1
5(a)	Moving text / moving image	1
5(b)i	Any two of the following: Photographing or filming <u>live/real object</u> action Tracing each frame to create life like motion Gives a <u>cartoon</u> like appearance	1 1
5(b)ii	Moving an object a small amount each time between taking photographs Using still images and making them appear to move	1 1
5(c)	Any two of the following: A frame rate that is too slow will have a similar effect where it appears to <u>stop and start</u> A higher frame rate means that your animation <u>plays smoothly</u> If the frame rate is <u>too fast</u> it will <u>blur the details</u> of the animation N.B. NOT a higher rate will affect the size of your film/movie	1 1
6(a)	One mark for each correct answer C D B A	1 1 1 1
6(b)	One mark for either of: Verification To check it was not typed incorrectly	1
6(c)i	Any one of: Don't have to leave home Can buy 24/7 Wider choice Cost savings passed on to customers as cheaper goods Disabled people can do their own shopping Free music downloads	1
6(c)ii	Any one of: Worries about security of credit/debit card details Harder to check quality when ordering / not of CD quality Loss of social aspect of shopping Fraudulent sites Downloading viruses Illegal music downloads	1
7(a)	One mark for each correct answer C B A	1 1 1

7(b)i	<p>One mark each for any three from:</p> <ul style="list-style-type: none"> Data should not be kept longer than necessary Data should not be transferred to countries outside EU or without adequate provision Data should be fairly and lawfully processed Data should be kept secure against loss Data should be processed within the rights of the data subject Personal data should be accurate and up to date Data should be adequate, relevant and not excessive Data must not be used other than for the lawful stated purpose <p><i>Accept slightly different wording if the meaning is clear, but take care with duplication</i></p>	<p>1 1 1</p>
7(b)ii	<p>Any two of the following:</p> <ul style="list-style-type: none"> Family and household affairs Accounts, wages and pensions Prevention or detection of crime Collection of taxes Medical records 	<p>1 1</p>
8(a)	<p>Any two of:</p> <p>Banking</p> <ul style="list-style-type: none"> • Cheque processing – paying bills – obtaining cash • EFTPOS – paying for goods at checkout • ATMs – obtaining cash • Card services – Credit / Debit / Smart cards • Homebanking / telebanking <ul style="list-style-type: none"> ○ view statements / check balance ○ transfer money between accounts ○ make payments ○ apply for loans • Bluetooth / wi-fi services – key encryption for remote banking <p>e-commerce systems</p> <ul style="list-style-type: none"> • Selling / buying goods online • Advertising/selling goods internationally <p>Payroll</p> <ul style="list-style-type: none"> • To work out pay • To work out deductions • Can print payslips • Can produce financial reports <p>Expert Systems</p> <ul style="list-style-type: none"> • A medical diagnosis expert system • Medical screening for cancer and brain tumours • Matching people to jobs • Training on oil rigs • Diagnosing faults in car engines • Legal advisory systems • Mineral prospecting • GUI helpline 	<p>1 1</p>

8(b)	<p>Any one of the following but Method must match one of uses in 8(a)</p> <p>Banking</p> <ul style="list-style-type: none"> • Example MICR – cheques • Scanning – swipe cards • Touch screen • Keypads • Remote keys – (wireless) <p>e-commerce systems</p> <ul style="list-style-type: none"> • Keyboard • Mouse selection (click/drag to shopping basket) • Touch screen • Online form filling <p>Payroll</p> <ul style="list-style-type: none"> • Clock cards • Time sheets / keyboard • OMR • OCR • Radio tags <p>Expert Systems</p> <ul style="list-style-type: none"> • Keyboard • Touch screen • Voice • Sensor 	1
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8(c)	<p>Any two of the following but advantages must match chosen application</p> <p>Banking</p> <ul style="list-style-type: none"> • Cheque processing <ul style="list-style-type: none"> ○ Accuracy (read accuracy 100%) ○ Security - Difficult to forge ○ MICR speeds up data entry • EFTPOS / Card services – Credit / Debit / Smart cards <ul style="list-style-type: none"> ○ Pay by credit card automatic transfer from one account to another ○ Don't need to carry money ○ Can make international transfers ○ Volume of transactions • ATMs <ul style="list-style-type: none"> ▪ Provide 24-hour services for the customers ▪ Customers can access ATM's in many locations ▪ Cuts down on queues in banks / faster service for customers <i>(Not shorter queues at the ATM)</i> ▪ Save on staff costs ▪ Allows staff to concentrate on other work e.g. selling mortgages, etc ▪ Increased sales ▪ Increased security • Homebanking / telebanking <ul style="list-style-type: none"> ○ Security – encrypted data / user names / passwords ○ Can check 24/7 ○ No need to travel to bank / saves travel costs/time • Bluetooth / wi-fi services <p>e-commerce systems</p> <ul style="list-style-type: none"> • Can sell 24/7 • Customers can check availability • Customers can check/compare prices • Online discounts / savings • Can change prices from day to day (fluid) • Low start up and running costs compared to traditional shops • Fewer staff needed • Online catalogues more easily updated • Global marketplace <p>Payroll</p> <ul style="list-style-type: none"> • Accurate calculations • Display reports in various formats • Fewer staff needed • More secure – no cash on premises <p>Expert Systems</p> <ul style="list-style-type: none"> • The computer can store far more information than a human. It can draw on a wide variety of sources such as stored knowledge from books case studies to help in diagnosis and advice. • The computer does not 'forget' or make mistakes. • Data can be kept up-to-date. • The expert system is always available 24 hours a day and will never 'retire'. • The system can be used at a distance over a network. So rural areas or even poorer third world countries have access to experts. • Provides accurate predictions with probabilities of all possible problems with more accurate advice. • Some people prefer the privacy of talking to a computer. 	1 1
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8(d)	<p>Any two of the following but disadvantages must match chosen application</p> <p>Banking</p> <ul style="list-style-type: none"> • Cheque processing <ul style="list-style-type: none"> ○ Cost of installing MICR readers ○ Loss of banking staff ○ Crumpled cheques cannot be read ○ Limited range of characters ○ Cheques not filled in correctly are rejected causing delays • EFTPOS <ul style="list-style-type: none"> ○ Cost to provider ○ Card fraud ○ Could forget PIN ○ Wrong amount of money issued ○ Card could be retained ○ Card might get damaged • ATMs <ul style="list-style-type: none"> ○ Could be attacked/security ○ Could forget PIN ○ Wrong amount of money issued ○ Card could be retained ○ Card might get damaged • Card services – Credit / Debit / Smart cards <ul style="list-style-type: none"> ○ Could forget PIN ○ Wrong amount of money issued ○ Card could be retained ○ Card might get damaged • Homebanking / telebanking <ul style="list-style-type: none"> ○ Card fraud / hacking accounts ○ Identity theft ○ Can't make deposits ○ Phishing scams ○ Could forget pin number ○ Hacking (if qualified) • Bluetooth / wi-fi services <p>e-commerce systems</p> <ul style="list-style-type: none"> • Network downtime can be expensive • Increased competition from further afield/abroad • Cost of delivery may make goods expensive • Reliance on third party delivery companies who may be unreliable. • No personal contact • Initial cost of purchasing system • Local stores / high street stores closing down <p>Payroll</p> <ul style="list-style-type: none"> • Cost of hardware and software • Over reliance on system • Problems with training / software • Data entry errors <p>Expert Systems</p> <ul style="list-style-type: none"> • Over reliance upon computers some doctors could be de-skilled by over dependence upon computer advice. • Fewer medical staff could be needed • Lacks the 'human touch!' – lack of personal contact • Dependent upon the correct information being given. If data or rules wrong the wrong advice could be given. 	1 1
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9(a)	One mark for Sensor and one mark for output device these must match named control system and be appropriate Example responses Greenhouse Temperature sensor – motor / fan / heater Moisture sensor – motor / tap / sprinkler Car Parking Proximity sensor – speaker / motor / automatic barrier	1 1
9(b)	One mark for each sensible, suitable process Example responses Greenhouse A temperature is too high B turn on fan C turn on heater Car Parking A If car park full B keep barrier closed / speak 'full' message C open automatic barrier	1 1 1
9(c)	One mark for any of: Automatic Doesn't need human supervision No human error Accurate readings Operates 24/7 Increased security Can work in hazardous environments	1
9(d)	One mark for any of: Cost of setting up System might break down / faulty sensor / powercut	1
10(a)i	Checking data is sensible / reasonable / within stated ranges	1
10(a)ii	One mark for each of: (I) Hash total (II) Batch Total	1 1
10(b)	One mark for either of: Range check Format check / 999	1

11	<p>8-10 marks</p> <p>4-7 marks</p> <p>1-3 marks</p> <p>0 marks</p>	<p>Candidates give a clear, coherent answer fully and accurately describing the benefits and drawbacks of teleworking and videoconferencing. They use appropriate terminology and accurate spelling, punctuation and grammar.</p> <p>Candidates describe some aspects of the benefits and drawbacks of teleworking and videoconferencing but responses lack clarity. There are a few errors in spelling, punctuation and grammar</p> <p>Candidates simply give a brief description of some benefits and/or drawbacks of teleworking and/or videoconferencing. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.</p> <p>No valid response.</p> <p>Answers have to cover four areas (benefits and drawbacks of teleworking and videoconferencing) to get full marks. Max seven marks if only three of areas included. Max four marks if only two of areas covered.</p> <p>Guidance One mark for each benefit and drawback of teleworking and videoconferencing. Accept each point once only. Additional marks for development, expansion or good example.</p> <p>Indicative content</p> <p>Teleworking</p> <ul style="list-style-type: none"> No time spent travelling to work Greener less pollution Can fit around family commitments Can sometimes work own hours Ideal for disabled/housebound people Lower costs, no parking, etc Can live where you want Ideal for disabled people Cost of equipment can be expensive Less stressful No need to take time off when workmen calling May feel isolated at home / No workmates to socialise with Home heating / lighting costs higher Some teleworkers paid less than office workers Others in the house may disturb work Loss of status – no fancy office <p>Videoconferencing</p> <ul style="list-style-type: none"> Less time away from home / Improved family life Can be anywhere in the world No hotel bills / travelling expenses Improved productivity as no wasted travelling time Less stressful without delays at airports, road works, accidents Meetings can be called at short notice without much planning Specialist equipment is expensive Poor image and sound quality People can be self conscious and not perform well Digital documents can be passed around but objects cannot Lack of face to face contact may be a disadvantage 	10
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WJEC
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