



GCE MARKING SCHEME

INFORMATION AND COMMUNICATION TECHNOLOGY AS/Advanced

SUMMER 2013

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2013 examination in GCE 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.

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

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INFORMATION AND COMMUNICATION TECHNOLOGY

IT1

1. (a)	<p>1 mark for description of any suitable device/method and concrete use, 1 mark for advantage, 1 mark for disadvantage. Needs to be clear that candidates are describing a use of a device. Advantage and disadvantage must be relevant to use. Examples could be from <u>speech recognition</u> or <u>speech synthesis</u> e.g. Voice control in: In-car navigation systems - not brand name – e.g. to plan route. Security systems – e.g. to allow entry. Control systems – e.g. to control lights in a room. Telephone ordering system/appointment systems. Mobile phones – e.g. to dial the phone number of a friend. Doctors can use them to dictate notes directly into a computer. Student dictating an essay directly into word processing software. Advantage: <ul style="list-style-type: none"> • Quicker than typing • Allows people to enter text directly into a computer without using a keyboard • Can perform complicated tasks by dictation. • Can empower disabled. • Uniqueness of voice print/cannot be used by others • Safer when driving as hands free doesn't distract Disadvantage: <ul style="list-style-type: none"> • Problems with regional accents / foreign words • Similar words (homonyms) may be confused (e.g. to, too, two) • Have to speak slowly • Interference from background noise • Colds, etc., affecting voice • Need time to train the system • Differentiating homonyms – their and there, to, two and too, etc. NOT Can't understand the voice NOT High cost of voice recognition equipment.</p>	3
1. (b)	<p>1 mark for description of any suitable device/method and concrete use, 1 mark for advantage, 1 mark for disadvantage. Needs to be clear that candidates are describing a use of a device. Advantage and disadvantage must be relevant to use. In museums to allow children to gather information / in shops to enter info at POS / mobile phones to dial or display information / buying tickets at railway stations ... Advantage Saves having to type, quicker to enter information/fixed list of options Empowering for disabled people to ..., no need for mouse and keyboard, Used in hostile environments because keyboards can get sticky. Frees staff to complete other jobs. Disadvantage Might not have all the options needed. Dirty/damaged screen/ wet fingers Screen requires recalibration. NOT Interactive whiteboards</p>	3

2. (a)	<p>Any four (descriptions or examples) Four points in a list only 1 mark.</p> <ul style="list-style-type: none"> • Correctly targeted – The question should be targeted at the people who are going to use it / no good asking vegetarians about meat eating. • Understandable – The meaning of any information should be clear to the user. / A manager might misunderstand a complex table and order the wrong items. <p>Encoding is not a viable example.</p> <ul style="list-style-type: none"> • Accurate – There should be no mistakes in the data / Wrong postcode will prevent delivery of items. • Relevant – Data has to be related to the task you are trying to investigate. No good collecting information on ice-cream sales in Alaska in the winter if you want to open your kiosk in California. • Up-to-date – Information changes with time and without a date stamp could be too old to be useful. / Using a 5 year old mailing list might end up in letters being sent to dead people or people who have moved. <p>NOT Complete</p>	4
2. (b)	<p>Only use time, human resources and financial cost once each (max 2) must have a different stage with each cost. Two of the following stages with appropriate cost (1+1)</p> <p>Designing/Creating Data Collection sheets e.g. Pay someone to create the forms. Takes time to trial the sheets before using for real.</p> <p>Data Collection e.g. New staff have to be employed to go and ask people questions. Training needed to show the team how to collect the data.</p> <p>Data Entry New staff have to be employed to type in the results of the data collection. OMR devices have to be purchased. It takes time for someone to type in the data which takes them away from another job.</p> <p>Processing e.g. New software/hardware has to be written/purchased to allow the results to be obtained before the data gets out of date.</p> <p>Maintenance/Updating Staff have to be employed to keep the hardware running and to modify the software when legislation changes or bugs are found.</p>	2x2

3.	<p>1 mark for description of crime and further mark for example x2. Do NOT award the same example twice. Hacking into a person's computer account / internet banking account (1) to obtain confidential information about them / to allow them to steal money from them. (1)</p> <p>Creating / Spread a virus which finds bank account details (1) and transmits it to a third party. (1) Creating / Spread a virus which attacks bank computer (<i>cyber attack</i>) (1) so user cannot access account. (1)</p> <p>Phishing to get hold of username and password for their account (1) to steal their identity. (1) / to steal money from their account (Explanation of Phishing or Hacking could be another way of getting the mark) NOTE: Identity theft and blackmail are not crimes under the CMA itself but could be extensions, e.g. phishing in order to blackmail. A candidate can be credited for illustrating, very clearly, two distinct crimes using viruses/hacking.</p> <p>Wording of act is :</p> <ol style="list-style-type: none"> 1. Unauthorised access to computer material. (hacking) 2. Unauthorised access with intent to commit or facilitate commission of further offences. (phishing/blackmail) 3. Unauthorised acts with intent to impair, or with recklessness as to impairing, operation of computer, etc.(spread a virus) 	2x2
4. (a)	<p><u>Pre-prepared</u> page / layout with pictures, words which are going to be reused [1] e.g. Letterhead with company information and logo (common info or set layout), <i>must be clear that a template has been used</i> [1] Stored master document with a <u>pre-defined layout</u> (or implication) which can be used as a basis for other documents, e.g. pre-defined letter for sending information to customers. Invoices / tenancy agreements / contracts / other documents related to a company. NOT Letter headed notepaper</p>	2
4. (b)	<p>Any of:</p> <ul style="list-style-type: none"> • a stored list of instructions which is used to automate a task, code, program • storing a sequence of keystrokes and menu choices which can be repeated by running the macro. • A small program to perform a repetitive task and which can be created and stored for later use by a user. <p>Example (or similar) Letterhead with company info and logo (common info or set layout) e.g. unused template, must be clear that a template has been used. [1] Adding a manager's signature to a letter [1]. Could be used to call up a particular template and automatically position the cursor where data has to be entered [1].</p>	2
4. (c)	<p>Incorporating data <u>automatically</u> from a store into an outline document. [1] (Linked to fields, implied automatic)</p> <p>e.g. Creating a set of letters informing shareholders of the annual general meeting. [1] (Letter must have a real purpose)</p>	2

5. (a) (i)	Validation is a (computer) check to ensure that data is sensible / reasonable / legal (but NOT correct or accurate). or Validation is the automatic checking of data entered into a computer system.	1																											
5. (a) (ii)	<table border="1"> <thead> <tr> <th data-bbox="284 315 550 412">Name 1 mark</th> <th data-bbox="550 315 992 412">Explanation/definition 1 mark</th> <th data-bbox="992 315 1300 412">Example related to school 1 mark</th> </tr> </thead> <tbody> <tr> <td data-bbox="284 412 550 535">Range checks</td> <td data-bbox="550 412 992 535">Data is between stated ranges or Between 1 and 12 Or DoB is right for that Year</td> <td data-bbox="992 412 1300 535">Month on Date of birth</td> </tr> <tr> <td data-bbox="284 535 550 719">Format checks / Input mask</td> <td data-bbox="550 535 992 719">Must be in the correct pre-defined format or is in format e.g. 99/9999, 07/2009, LLNN NLL Or is sensible</td> <td data-bbox="992 535 1300 719">Expiry date on canteen card Date of Birth Postcode</td> </tr> <tr> <td data-bbox="284 719 550 781">OR</td> <td data-bbox="550 719 992 781">Restricted choice of data entry</td> <td data-bbox="992 719 1300 781">Form Group</td> </tr> <tr> <td data-bbox="284 781 550 936">Presence checks</td> <td data-bbox="550 781 992 936">There must be a character present in a particular place Data is required and must be entered</td> <td data-bbox="992 781 1300 936">an @ in an email address Postcode / Email address</td> </tr> <tr> <td data-bbox="284 936 550 1059">Fixed value / drop down list / option boxes / cross-field check</td> <td data-bbox="550 936 992 1059">Select only from a list</td> <td data-bbox="992 936 1300 1059">Mr, Mrs, Ms, Miss, Dr, Form Group</td> </tr> <tr> <td data-bbox="284 1059 550 1122">Length check</td> <td data-bbox="550 1059 992 1122">Must have a certain number of characters / numbers</td> <td data-bbox="992 1059 1300 1122">Phone number must have 11 digits</td> </tr> <tr> <td data-bbox="284 1122 550 1184">Data type</td> <td data-bbox="550 1122 992 1184">Data must be of a specified type i.e. numerical, text (alphanumeric)</td> <td data-bbox="992 1122 1300 1184">School year</td> </tr> <tr> <td data-bbox="284 1184 550 1279">Check digit</td> <td data-bbox="550 1184 992 1279">Doing some maths on a code number to generate an extra number on the end</td> <td data-bbox="992 1184 1300 1279">Roll No UPN</td> </tr> </tbody> </table> <p data-bbox="284 1301 1300 1361">If method is not clearly named or described then you cannot award the rest of the marks as cannot be sure which they are talking about</p>	Name 1 mark	Explanation/definition 1 mark	Example related to school 1 mark	Range checks	Data is between stated ranges or Between 1 and 12 Or DoB is right for that Year	Month on Date of birth	Format checks / Input mask	Must be in the correct pre-defined format or is in format e.g. 99/9999, 07/2009, LLNN NLL Or is sensible	Expiry date on canteen card Date of Birth Postcode	OR	Restricted choice of data entry	Form Group	Presence checks	There must be a character present in a particular place Data is required and must be entered	an @ in an email address Postcode / Email address	Fixed value / drop down list / option boxes / cross-field check	Select only from a list	Mr, Mrs, Ms, Miss, Dr, Form Group	Length check	Must have a certain number of characters / numbers	Phone number must have 11 digits	Data type	Data must be of a specified type i.e. numerical, text (alphanumeric)	School year	Check digit	Doing some maths on a code number to generate an extra number on the end	Roll No UPN	3
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5. (b)	<p data-bbox="284 1375 1300 1413">Any four from: (If only 4 listed points 1 mark)</p> <p data-bbox="284 1413 1300 1473">Hardware – if the system has an old slow processor will take too long to process the data, cost of upgrading</p> <p data-bbox="284 1473 1300 1534">Software - Does the software put a big demand on the system - does it work with other software.</p> <p data-bbox="284 1534 1300 1594">Suitability of the OS if there is a need for quick up to date information, there is no point running it on a batch processing system</p> <p data-bbox="284 1594 1300 1655">Communication - Do the different devices talk properly to each other, does the final system fit in what was requested</p> <p data-bbox="284 1655 1300 1693">Testing - Has the system been checked in all sorts of situations.</p> <p data-bbox="284 1693 1300 1753">Maintenance procedures - Is there someone whose job is to ensure that the data and software is kept up to date. Proper backups.</p> <p data-bbox="284 1753 1300 1789"><i>Other factors could involve description of:</i></p> <p data-bbox="284 1789 1300 1825">Change in circumstances during development</p> <p data-bbox="284 1825 1300 1861">Speed of implementation</p> <p data-bbox="284 1861 1300 1897">Compatibility</p> <p data-bbox="284 1897 1300 1933">Poor communication with the user</p> <p data-bbox="284 1933 1300 1968">Abilities of the user</p> <p data-bbox="284 1968 1300 2004">Post-implementation procedures</p> <p data-bbox="284 2004 1300 2040">Cost</p> <p data-bbox="284 2040 1300 2076">Hardware support / reliability</p> <p data-bbox="284 2076 1300 2112">Memory and processor speed are NOT distinct points.</p>	4																											

6.	<p>1 mark for each description x 4</p> <p>Hatching/rendering: Allows the architect to try out different finishes on the building to see the aesthetic affect/choose the best.</p> <p>Wire drawing: Outline design (perspective) requires less processing to display/permits rapid previewing.</p> <p>Walkthrough: allows the architect to see what the <u>inside</u> of the building will look like.</p> <p>Rotate: allows the architect to see the design from all angles.</p>	4
7. (a)	<p>Two advantages and one disadvantage (1 mark each), such as:</p> <p>VLE/Videoconferencing are examples of distance learning.</p> <p>Advantages</p> <p>Don't have to be in the same location as teacher/pupils who are ill can keep up to date.</p> <p>Students don't have to travel / can work at home/ empowers disabled</p> <p>Can access more courses / allows access to courses not taught in your school.</p> <p>Classes can run with small number of pupils.</p> <p>Shared expertise.</p> <p>Potential cost saving to schools if well qualified.</p> <p>Flexibility of time.</p> <p>Disadvantages</p> <p>Diminish literacy – texting.</p> <p>Cost implication of installation.</p> <p>Lack of personal support (close at hand) / immediacy / no peer interaction.</p> <p>Pupils must be motivated to achieve their goals.</p> <p>Need for equipment at home.</p> <p>Broadband problems (<i>if qualified</i>)</p>	3
7. (b)	<p>Two advantages and one disadvantage (1 mark each), such as:</p> <p>Advantages</p> <p>Pupils work at own pace.</p> <p>Good for pupils with learning difficulties. (customisation)</p> <p>Pupils respond better to automated feedback.</p> <p>Can gauge their own progress / instant feedback / automatic marking.</p> <p>Engaging screens - colour/animation/sound/video.</p> <p>Automatic generation of progress reports.</p> <p>Special adaptations can be built in / Can target specific areas.</p> <p>Materials provided in different formats such as text, voice, video, animations.</p> <p>Have flexibility as to where and when they work, at home, in car, out walking/running.</p> <p>Variety of activities can motivate and maintain interest.</p> <p>Can access material using different hardware e.g. laptop, mobile phone, mp3 player, tablet. (No brand names)</p> <p>Available at any time.</p> <p>Revisit when you need to.</p> <p>Multilingual support.</p> <p>Disadvantages</p> <p>Lack of personal support (close at hand) / no peer interaction.</p> <p>Cost of software/specialist hardware.</p> <p>No collaborative learning.</p> <p><i>Note: same answers cannot be credited twice.</i></p>	3

8. (a)	<p>(Any 2)</p> <ul style="list-style-type: none"> • A barcode is a series of light and dark bars of differing widths (1) • With a code number printed underneath (1) • Made up of country of origin code, manufacturer code, the product code, a check digit. (Any 3) (1) <p>(If PRICE included NO mark.)</p> <p>Advantages (1 mark)</p> <ul style="list-style-type: none"> • Faster to enter data / can read at any angle. • More accurate as eliminates typing errors. • Low printing costs. • Frees staff to do other tasks/staff don't have to manually price goods. <p>Disadvantages (1 mark)</p> <ul style="list-style-type: none"> • Can only be used for the input of numbers. • <u>Equipment</u> is expensive. • Corrupted barcodes can cause delays. <p>(b) Any four of:</p> <ul style="list-style-type: none"> • Code matched on stock database. • One deducted from stock database / Item sold decreases record by 1. • checked against reorder level. • if below automatic level request sent to supplier. • stock delivered. • stock database updated. <p>(c) Must have at least two advantages and two disadvantages to gain full marks</p> <p><u>Advantages:</u></p> <ul style="list-style-type: none"> • Smaller storage / warehouses needed as not much stock held • Store is better able to respond to changing demand • Easier to cope with several small deliveries (less staff) than 1 big one. • Do not run out of fast selling items • Less risk of stock being out of date/waste <p><u>Disadvantages:</u></p> <ul style="list-style-type: none"> • Expensive to introduce/set up • More admin staff as store responsible for own ordering • True stock may differ because of theft, etc. • Cannot respond to unusual demand • Disruption to transport • Communication failure if qualified (not just 'internet down / internet failure') <p>(d) At least one benefit for company and one for customers. If candidates do not indicate to whom the benefit applies, then max mark = 1.</p> <p>Company</p> <ul style="list-style-type: none"> • Always accessible (both) / Available 24/7 (customer). • Low start up and running costs (company). • Save money on rental space. • Cheaper to update website than a catalogue / Easier to update. • Global marketplace. • Other income sources / advertising. • Gain custom by suggesting other items. <p>Customer</p> <ul style="list-style-type: none"> • Available 24/7 (customer but not given twice). • Easier to find information because of search engine. • Greater choice. • Saves on travel costs / shop from home. • Can be used by disabled customers. • Price comparisons. • Read reviews. • Automatically produce shopping lists / favourite items stored for fast re-ordering. • Online discounts 	<p>2</p> <p>1</p> <p>1</p> <p>4</p> <p>6</p> <p>4</p>
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9.	<p>1 mark each for any two general points (max 2), 1 for advantage and 1 for disadvantage.</p> <p>Collect data</p> <ul style="list-style-type: none"> • Large number of measurements such as pressure, temperature, humidity, etc. • Readings from all around the world from satellites, balloons, etc. <p>Derive model</p> <ul style="list-style-type: none"> • From laws of physics. • Models provide a set of equations to solve / Produce a set of equations (mathematical model) which are solved to predict weather twice a day. <p>Test / compare</p> <ul style="list-style-type: none"> • Actual with observed. • Create model / test the model. • What ifs. <p>Advantages</p> <p>Only takes 1 hour to produce a 6 day forecast. Can predict path of hurricanes, etc. Can help farmers plan work / Local councils plan / etc.</p> <p>Disadvantages</p> <p>160 million equations to solve – cost of buying a supercomputer. Long range forecasts cannot be 100% accurate in predictions. Freak storm / unusual patterns difficult to predict.</p>	4
10. (a)	<p>No mark for writing out the formula used. One mark for explaining what formula does and one mark for why the information is required.</p> <p>e.g. DATE: I used Date on page 1, cell A5 to show on which day the transaction occurred to date stamp it for future reference. Single IF: I used the IF formula on page 4 in cell f7. IF (A5 >= 17,"OK", "not old enough") checks the age of the person in A5 and this allows them to apply for a driving licence.</p>	2x2
10. (b)	<p>My VLOOKUP formula in cell B15 scans rows in the stated range for the comparison values</p> <p>it uses the engine size in cell (1)</p> <p>matches engine size in Car table (1)</p> <p>to get the information on performance and capacity (1)</p>	3
10. (c)	<p>One mark for naming a validation technique up to two marks for detailed description or third mark for describing the error message.</p> <p>e.g.</p> <p>I put a range check (1) of between 1 and 9999 (1) on my customer order number (1) to ensure numbers were within the correct range (1)</p> <p>I used conditional formatting (1) by putting a preset formula (1) e.g. to work out the date (1) / which shows the cells which have to be dealt with next (1)</p> <p>I used a length check (1) to set the text length to 10 characters (1) to put a limit on customer Postcode (1)</p>	3

10. (d) (i)	<p>What and why? Graph: The graph on page 8 showed me how money was spent (1) and it allowed me to work out the break even point (1)</p>	2
10. (d) (ii)	<p>What and why? No mark for naming a different process but up to two marks for detailed description x2. Macro, Sort, Search, 3D referencing, etc.</p> <p>E.g. I used 3D referencing with four worksheets in my workbook (see pages 9, 10 and 11), so that I could look up similar sales data for each month (1) contained in the different work sheets (1) and composed the results on the summary (1), etc. My macro shown on page 4 defined the special print settings in the Page Setup dialog box (1) and printed the invoice on page 5 (1) Identify a navigation macro and where is it going to/between (1) this will make it more user friendly / to move backwards and forwards more efficiently (1)</p>	2x2

IT3

1.	<p>One mark for each of any four points relevant to learning to read:</p> <ul style="list-style-type: none"> • Have a minimum amount of text on screen • Use child friendly font/size of font • Use bright colours to attract the child's attention • Have an uncluttered appearance / easy to read clear layout • Involve minimal use of the keyboard / alternative input devices • Use speech synthesis / sound so that they can hear the words • Animation/videos to keep their interest • Instant feedback on their responses • Interactivity - Not by itself, must be qualified e.g. quizzes, educational games • Visual prompts e.g. pictures of a cat <p>Not On screen help / Pop ups / Language - Complexity</p>	4
2.	<p>Requirements: Two marks awarded for requirements The novice user's priority will be ease of learning/intuitive (1) The expert user will want to get the job done in the least possible time (1)</p> <p>HCI: Maximum of four marks for HCI Novice user will need clear navigation structure / Colour scheme making it easier to use i.e. showing routes through a program (hyperlinks) (1) Novice user will use wizards which are not as flexible as setting it out yourself (1) Novice user will use help screens / tutorials to get them out of difficulties / show them how to do things (1)</p> <p>Expert user knows the commands (1) and will find it quicker than clicking through a series of windows (1) (dos window to use ipconfig compared to getting the same information from windows (1)) Increased number of ways of performing the same operation (1) Shortcuts which the experienced user can use rather than going through a series of menus (1) Expert ;Customise the interface to suit their needs (1)</p> <p>Condone well-argued points made about specific application.</p>	6
3.	<p>Examples from any four <u>different</u> categories: Factor (1) Description / Example (1) x 4. If factor unclear or missing can still award the example mark if can be clearly matched.</p> <ul style="list-style-type: none"> • Physical security – this involves protecting hardware and software using physical rather than software methods either to restrict access to the computer equipment or the storage medium -- using physical methods (Locks, guards biometric methods) • Logical (software) methods -- user ids, passwords, levels of access (e.g. who can update web pages) <i>firewalls</i>, encryption. • Continuous investigation of irregularities / Auditing for detection (trailing) - query any transactions that are out of the ordinary for customers, access logs • System Access - establishing procedures for accessing data such as log on procedures, <i>firewalls</i>. • Personnel administration – training (including prevention of accidental misuse) , fitting the employee to the task, ensuring that staff are controlled, staff screening. • Operational procedures - including disaster recovery planning and dealing with threats from viruses, backup, updating antivirus. • Disciplinary procedures – warnings / dismissal / prosecutions etc. <p>Can give <i>firewalls</i> in either place BUT not twice Not: Code of conduct</p> <p>NOT CAMERAS OR CCTV</p>	8

6.	<p>Allow sensible reverse answers but <u>not duplicate</u> points.</p> <p>Dialup:</p> <ul style="list-style-type: none"> • Modem/ dialup is very slow and limits its use - a download on dialup can take minutes compared to broadband. • If only a light user dialup might be cheaper as only have to pay when you are using it * • Can be used anywhere there is a phone line # <p>Broadband:</p> <ul style="list-style-type: none"> • Not available everywhere (blackspots) # • You pay a monthly subscription so more expensive if light user/ whether you use it or not/ easier to budget / not penalised by heavy usage if have unlimited package* • Streaming (fast download time) means that you can use it to listen or watch films or music / less need for buffering / less lag /greater bandwidth • Faster <u>download</u> of information / faster downloading (only award this if there is no other mention of downloading) • It does not tie up your phone line. • More secure as it keeps anti-virus etc up to date automatically • Can make cheap phone calls via the internet. • Makes video conferencing possible. • Don't have to waste time <u>connecting</u> to the internet / <u>Always on</u> <p>Only give one of * or # answers Not 'Can be used anywhere there is a broadband connection'/ not wireless answers</p>	4
7.	<p>Remote management is to do with stations not users</p> <p>One mark for each of any four points:</p> <ul style="list-style-type: none"> • Check to see right number of licences. • Setting regular times for virus scanning/ check virus scanning has been done • Check to see no unauthorised software loaded on machines. • Update software/rebuild software on stations / re-setup stations / re-install software • Log off users who have forgotten to do so. • Send instant messages. • Guide users through problems. • Take control of stations. • Check on hardware to see what needs upgrading. • Check on components to see if any failing. • Shut down stations. • Clear printer queues (remotely) at stations. <p>Condone the following statements</p> <ul style="list-style-type: none"> • See which users are using the network/See who is logged on at the moment. (<i>realtime not auditing</i>) • Check on emails being sent (when should be working). • Check on which sites employees visit. <p>NOT manage passwords / delete files / other tasks normally done at the server</p>	4

8.	<p>Answers have to cover all four sections to get full marks. (Lose one from the max mark if for every section not covered i.e. if only two sections covered max is 6)</p> <p><i>The advantages of teleworking for the employee</i></p> <ul style="list-style-type: none"> • Teleworking makes it easier for people to live and work where they choose, as it is possible for some staff to work from home (less stressful). • It reduces traffic congestion and carbon dioxide emissions and is therefore 'greener' / this has an environmental benefit since there is no commuting to work. • Not having to travel to work saves time/money. • Flexibility of working hours / Work your own hours / Fit around family commitments / No need to take time off to see workmen. • Ideal for disabled. <p><i>The disadvantages of teleworking to the employee</i></p> <ul style="list-style-type: none"> • Home costs such as heating, lighting increase. • Employee may feel isolated. • Some employers may pay teleworkers less as there is more competition for jobs. • No workmates to go out with /socialise. • Boundary between home and work is lost. • Loss of status for some staff – no plush offices, etc. • May not be a quiet place in the house to work/ can get distracted • Passed over for promotion. <p><i>The advantages of teleworking to the employer</i></p> <ul style="list-style-type: none"> • Smaller offices are needed. • Fewer backup staff need to be employed (e.g. cleaners, caretakers) • Staff <u>less likely</u> to spend time off sick. (Not never off sick) • Reduced office overheads e.g electricity, gas, insurance, furniture etc -(either needs <u>office</u> overheads or example not just ' <i>reduced overheads</i>') • Staff may be more amenable to working flexible hours. • Retaining skilled workers / maternity. • Employ workers from a wider pool of talent. • Comfortable environment can lead to greater productivity. <p><i>The disadvantages of teleworking to the employer</i></p> <ul style="list-style-type: none"> • Change to organisational structure may be needed. • Hard to determine how hard staff are working (monitor progress) • Harder for managers to manage the work. • Increased number of sites for ICT equipment may cause more security risks. • Employers usually pay for the employees' ICT equipment. • More difficult to hold meetings face to face. • Health and Safety checks needed on employee home. • More security risks as more sites. 	8
9.	<p>Distributed computing – where a series of computers are <u>networked</u> together (1) and they each work on solving the same <u>problem</u> (1) Each computer shares processing, (storage) and bandwidth (1)</p>	3

13	<p>7-9 marks Candidates give a clear, coherent answer fully and accurately describing three methods used. They use appropriate terminology and accurate spelling, punctuation and grammar.</p> <p>4-6 marks Candidates briefly describe three methods used, but responses lack clarity. There are a few errors in spelling, punctuation and grammar.</p> <p>1-3 marks Candidates simply list methods or give a brief description of one. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.</p> <p>0 marks No appropriate response.</p> <p>Indicative content (3 marks for each of 3 points) One mark for a list. One mark for describing method and two marks for expansion / purpose / specific use A detailed description of a point can be given 2 marks Do not give duplicate answer * Only allow <u>what the system does</u>, <u>problems</u> and <u>future improvements</u> once as they could appear in any of the four techniques.</p> <p>Interviews with managers / users / workers / customers (not 'people') about the current system (1)</p> <ul style="list-style-type: none"> • Interviews with managers normally reveal <u>how the departments works now</u> • Any current <u>problems/issues</u>. • Normally will say how they want the <u>new</u> system to work and what information they want. * • Operational staff can supply fine detail on how the current system works. • Very time consuming as a lot of people have got to be contacted. • Needs skilled interviewers to get the correct information out of people. <p>Observation (inspect/ look at / shadow employee/system) of how the current system operates (1)</p> <ul style="list-style-type: none"> • So that one can understand what they do, • Detail of flow of information • Any time delays, crashes or interruptions /problems/issues with the current system • Can be time consuming and span several weeks before you can see everything. <p>Inspection of records studying the paper based information / electronic logs (produced by the company at the moment) (1)</p> <ul style="list-style-type: none"> • Allows one to see what information is currently held • The way it is communicated between different departments or customers and the company. • Documents include organisational charts, manuals, reports, minutes of meetings and all documentation. • Looking for faults in procedures <p>Questionnaires which are given out to managers / users / workers / customers to gather information on the company (1)</p> <ul style="list-style-type: none"> • Ideal way to collect information as you do not have to waste time talking to people and can stick to the important points without digressing. • State how they want the new system to work and what information they want. * • Audit of employee skills – <u>future</u> training needs. • Economical to reproduce and distribute. • Problem is that people forget to fill them in and hence an incomplete picture. • Response rate from posted surveys is often poor. • Respondents may misunderstand some of the questions/ not be truthful. • Cost involved in hiring people to ask others to fill in questionnaires and collect results can be significant. • Flexibility of when the recipient can answer the questions 	9
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14.	<p>Any 18 valid points</p> <p>Data issues</p> <ul style="list-style-type: none"> • Put a lot of private data on a social networking site / Data has to be given to setup homepage on social networking site. (1) • People tend to share more data than they should as it is their best friend. (1) • Data such as dob, Mother's maiden name, address, phone number etc are given and can be abused (1) • The access to personal data is, in itself, morally questionable. (1) <p>Privacy and security issues</p> <ul style="list-style-type: none"> • People might see your data /Anyone could see your data you don't wish to • Concerns about the level of safeguarding within social networking sites, as there is no real way of checking who you say you are. (1) • Use of alter-egos can be dangerous in that friendships that develop on social networking sites could, in the very worst cases, lead to paedophilia /stalking/grooming and child pornography. (1) • Examples in newspapers of people being refused employment, sacked because their social networking sites show them engaging in 'questionable behaviour'. (1) • Some people will say that this is a valid use of freely available information; (1) • others may say that this is an invasion of privacy and that what you do in your private life is of no interest to your employer. (1) • But what if it is a teacher? And it is corrupting the attitudes of their pupils. (1) • You can set your security settings high • People do not read their terms and conditions • Can sell personal data on to third parties <p>Abuse/ Crime issues cause (1) and if extended consequence(1)</p> <p>Identity theft (1)</p> <ul style="list-style-type: none"> • Information can also be used for identity theft (1) such as creating false passports / driving licences (1) • This info can be used to order goods and services in your name and could contain enough information to answer your secret question. (1) • Hacking -Could mean that bank details could be hacked or computer infected by virus. (1) • Phishing scams – get bank details Spreading Virus • cyber bullying, • trolling, • tagging • inciting crime or violence • You Tube • Addiction to gaming • Twittering can get you into trouble • Pop up adverts from third parties could contain viruses/spyware <p>Uses/Advantages of social networking</p> <ul style="list-style-type: none"> • Enthusiasts believe that it is the easiest and quickest way possible to make friends and widen it across the world. (1) • This may have positive cultural benefits (1) but has taken over face-to-face conversations. (1) • Like email they offer the opportunity to avoid personal embarrassment that could arise when actually talking to people. (1) • Allows people who have similar interests to get together. (1) • Seems that long term relationships and even marriages are happening. (1) • Useful for keeping in contact with family and friends if you live far apart. (1) • Useful for short written communication, sharing of photos, videos. (1) • Now say because of it everyone in the world is within 4 contacts of any other person (1) • Much easier to branch out and form friendship groups than email (1) 	18
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15.	<p>Suitable definition of a relational database, such as: A (large) collection of data items and links between them (1) structured in such a way that it allows it to be accessed by a number of different applications programs (1)</p> <p>A group of tables linked (1) together by primary <u>and</u> foreign keys (1)</p>	2
16.	<p>Data consistency is where the same data has exactly the same value and formatting throughout, (normally because it is only stored once) OR Data consistency is the relationship between the input data, the processed data and the output data as well as other related data. If the system is working properly the data will be correct at each stage and is said to be consistent. OR Data consistency is using one file to hold a <u>central pool of data</u> this means if information is changed in one file it does not need to be changed in another. OR Data being inconsistent in a flat file due to possibility of different formats etc and being consistent in a RDBMS as each record is only stored once so cannot have different attributes.</p> <p>Data which is repeated unnecessarily is called redundant data. OR Data redundancy is where you store an item of data more than once.</p> <p>Data integrity – the correctness of the data. Truthful, Accuracy.</p> <p>Data independence – the data and the applications/programs used to access it are independent/separate. OR New applications can be developed to access the data without changing the data.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
17.	<p>Example of possible tables PATIENT (<u>Patientid</u>, surname, phone, Wardid#, Consultantid#) CONSULTANT (<u>Consultantid</u>, surname, phone, etc) Underline = primary, # = foreign</p> <p>1 mark per table name 1 mark per foreign key 1 mark per primary key</p> <p>If WardID is duplicated then no mark for that key. <u>Condone</u> if Doctor is used in place of Consultant</p> <p>NB No mark for a primary or foreign key which is not labelled.</p>	6

19	<p>One mark for the meaning (patterns / trends / generating new information) Data mining is interrogating the data to find patterns in the data which is stored in the warehouse.</p> <p>Alternative wording for above might be:</p> <ul style="list-style-type: none"> • Is the analysis of a large amount of data in a data warehouse to provide new information? • Is a speculative process investigating potential patterns? • Involves the presumption that dormant within the data are undiscovered patterns / groupings / sequences / associations. • Software uses complex algorithms to search for patterns. • Is drilling down into the mass of data so users can understand it more / discover meaningful patterns. • Is looking for meaningful patterns in a large mass of data and presenting results in tables and graphs. 	1
	<p>Up to two marks for example of use</p> <p>Examples worth 1 mark: Can provide:</p> <ul style="list-style-type: none"> • The company with a list of customers likely to buy a certain product, which they can then use to target with a mail shot. • Comparisons with competitors • Useful 'what if' results from modelling exercises • Predictions for future sales • Analysis of best sites for shops • Analysis of sales patterns • Returned information can be tested for plausibility. • Data if of value can be processed into a report to help decision making. <p>Examples worth 2 marks: (What and Why)</p> <ul style="list-style-type: none"> • Fighting shoplifting in clothing stores – Jaeger used DM to look at transactions and position of item in store (1) – found even with tags most items stolen near doors – led to increased CCTV, more prosecutions and recovery of goods.(1) • Analyse buying patterns / Identification of customer needs – Virgin Media use DM to segment and target customers (1) most likely to buy new services or upgrades. (1) • Could allow company to find a previously unknown relationship between regions of the country and food preferences (1) and they can then target special promotions. (1) <p>The difference here is that the why will refer to a <i>new connection</i> between the data or a new conclusion</p>	2



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