



# **GCE MARKING SCHEME**

## **INFORMATION AND COMMUNICATION TECHNOLOGY AS/Advanced**

**SUMMER 2014**

## INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2014 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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**GCE INFORMATION AND COMMUNICATION TECHNOLOGY - IT1**

**Mark Scheme - Summer 2014**

<p>1 (a)</p>	<p>Information is processed data or data in a context or with a meaning. Knowledge is derived from information by applying rules to it.</p> <p><i>Example:</i> Information Race times Swimmer 1 63.6s, Swimmer 2 59.3s, Swimmer 3 59.7s Knowledge: Swimmer 2 is the fastest and consequently wins.</p> <p><i>Example:</i> Information, John's birthday is 11th May 2014 Knowledge, John is 18 and so now he can vote in the next election.</p> <p>The rule must be stated or implied. (answer is likely to show two stages) and evidence of application</p>	<p>1 1 1 1 1</p>
<p>1 (b)</p>	<p><b>(1 mark for process 1 mark for example) x2</b> <b>NOT</b> aiding the decision making process</p> <p><b>Process: Monitor progress</b> <i>Example:</i> A shop analyses the performance of its POS terminal operators and warns operators who are too slow or make too many mistakes. Information obtained by market research and sales figures can help achieve this.</p> <p><b>Process: Can target reasoning and strategy (resources) making to gain advantage over competitors</b> <i>Example:</i> Buy more of a certain commodity because sales are good. Advertising and marketing a product should be aimed at people likely to buy it otherwise it is a waste of time. <i>Example:</i> Information can identify gaps in a particular market which can then, on the basis of sound information be filled. <i>Example:</i> A manufacturer spends money developing a new product because they have seen a gap in the market. A company developed special sized shampoo bottles when airline companies limited the amount that could be taken into the cabin. Information about customers' buying habits is valuable here and can lead to an organisation or company becoming more profitable. Information can tell an organisation how well it is doing compared to its competitors. <b>Example can be worth 2 marks if concept of targeting resources is clear.</b> Example 1: Company decides to spend money on advertising in Area B to promote a particular product. ('... because they have noticed sluggish sales' may qualify for spotting trends mark). Example 2: Information from research is used to identify gaps in a particular market which can then be filled by developing a new product.</p> <p><b>Process: Spot trends</b> <i>Example:</i> Analyse sales data and realise when something is out of fashion e.g. sales of tape recorders or if one region buys more of something than another.</p>	<p>2x2</p>

2	<p><b>Definition 1 mark, name of method 1 mark, description 1 mark.</b>  Validation is the automatic checking of data entered into a computer system.  or  Validation is the checking that the information is sensible/reasonable/legal (<b>BUT</b> not valid).  e.g. Check digit on account number  Range check on date of birth / amount allowed to be transferred  Presence check on certain (specified) field.  <i>Example must be sensible and relevant to online banking.</i>  NOT Presence check on a field that is not sensible.  NOT Length check on names or Postcode.</p>	3
3	<p><b>(Factor 1 mark Extension 1 mark)x3</b>  <b>Any three from: (If only 3 listed points - 1 mark)</b>  <b>Software</b> - Does the software put a big demand on the system - does it work with other software. Relevance to task  <b>Suitability of the OS</b> - If there is a need for quick up to date information, there is no point running it on a batch processing system.  <b>Insufficient testing</b> - Has the system been checked in all sorts of situations / volume  <b>Maintenance procedures</b> - Is there someone whose job is to ensure that the data and software is kept up to date.  <b>Proper backups</b> – maintaining an incremental system  <b>Hardware – e.g.</b> if the system has an old slow <u>processor/memory</u> will take too long to process the data, cost of upgrading  <i>Other factors could be:</i>  Change in circumstances during development  Speed of implementation  Compatibility - Do the different devices talk properly to each other.  Poor communication with the user - Does the final system fit in with what was requested.  Competence of users / poor training  Post-implementation procedures – Do they use training manuals / error logs / auditing procedures.  Cost – of maintaining software upgrades – of developing system – of installation.  Hardware support / reliability -  <i>Care must be taken not to award marks for duplicate reasons.</i>  <i>NOT old software or out of date software unless justified</i>  <i>Nothing to do with data entry</i>  <i>Memory and processor speed are NOT distinct points</i></p>	3x2
4 (a)	<p>For three marks must include design on computer and making object using computer driven machine (design 1 and make 1) (object and process 1)  Examples of 2 mark answers –  • CAM is the use of computers to control the manufacturing process using a design created in a CAD package.  • CAD designs an object using a computer and CAM makes the object using a computer guided machine.  Example for 3 marks - Clothing designed in CAD package and then cut out correctly and stitched by a CAM package - Or similar.  e.g. design and make packaging.</p>	3

4 (b)	<p><b>2 advantages and 1 Disadvantage</b></p> <ul style="list-style-type: none"> <li>• <b>Advantages:</b></li> <li>Can be more accurate than hand-drawn designs - it reduces human error</li> <li>• You can edit ideas, which makes it easier and cheaper to modify your design as you go along</li> <li>• Design can be sent electronically elsewhere instantly</li> <li>• A section of a design can be copied and pasted many times</li> <li>• Can be zoomed in for more detailed sections</li> <li>• Others could refer to hatching, walkthrough, etc</li> <li>• No physical prototype so no wastage</li> </ul> <p><b>Disadvantage</b></p> <ul style="list-style-type: none"> <li>• The software itself can be expensive so initial costs are high.</li> <li>• Staff need to be trained how to use the software, which also adds to costs.</li> <li>• Requires a powerful PC.</li> </ul>	3
5 (i)	<p><b><u>Definition</u></b> A query is when you interrogate (search, sort, filter) a database to find some information.</p> <p><b><u>Example</u></b> A search to find all the patients with breathing problems because they need to be sent flu injection letters. Need to indicate why to show whether query is appropriate.</p>	1 1
5 (ii)	<p><b><u>Definition</u></b> Report – The output from a database in which the results are presented in a way that is controlled by the user. (formatted, i.e. tables / graphs / grouping / statistical summary/ results of searches) <b>NOT</b> It is a printout.</p> <p><b><u>Example</u></b> Producing formatted lists of patients who are in need of screening tests. A mark for the example can be given if the definition is wrong but their answer involves formatting.</p>	1 1
5(iii)	<p><b><u>Definition</u></b> Import/export –</p> <ul style="list-style-type: none"> <li>• The ability of a piece of software to read and use the data produced by a different piece of software.</li> <li>• Transferring data from one piece of software/application to another.</li> </ul> <p><b><u>Example</u></b> Merging names and addresses into a word processing program to produce appointment letters.</p>	1 1

6.	<p><b>Must name the Act.</b>  <b>Max 3 marks for each Act, i.e. name (1) purpose (1) consequence (1).</b>  <b>Cannot use the same consequence twice.</b>  <b>To get the three marks must give at least one consequence.</b>  <b>Can get marks for other Acts.</b>  <b>No more than two marks for naming Acts .</b>  <i>Data Protection Act, Copyright Act, Computer Misuse Act, Malicious Communication Act (Could mention Freedom of Information Act and Intellectual Property Rights).</i></p> <p><b>The Computer Misuse Act</b> (1) was introduced to make it illegal for people hacking into your computer (1) by giving the hackers a fine (of £2000). (1) / the Act also made it illegal to use the information you see for blackmail purposes (1) and you could get a further (£2000) fine and go to prison. (1)</p> <p>Identity theft.  Spreading viruses, etc.  Phishing.</p> <p><b>DPA</b> - The DPA (1) makes companies who keep personal data keep the data secure (1) or they could be heavily fined (1).  Onus on companies in <i>DPA</i> to register.  Currency of data.  Obtain data lawfully.  Used for given purpose.</p> <p><b>Copyright Act</b> - copying software / images / music.  <b>NOT</b> Pornography, Cyberbullying, Paedophilia.</p>	6
7.	<p><b>Electronic Point Of Sale</b> (1)  Barcode scanned (1) then other point from the list below  Code matched.  Price returned to screen.  One deducted from stock.  Reorder level checked.  Automatic reordering.  Print <u>itemised</u> bill.</p> <p>Any two from:  <b>Advantages</b>  Less need for <u>physical security</u> as not have to carry as much cash.  Less time spent waiting in <u>queues</u> so happier.  Gives them additional services e.g. cashback, topping up your phone.  Allows the customer a variety of payment methods.  Allows more special offers – loyalty cards, BOGOF, vouchers.  Allows self -scanning.</p>	5

8 (a)	<p><b>One mark each for naming the three components</b>  <b>Up to five marks for examples, advantages or disadvantages.</b>  <b>Answers have to cover all 3 sections and there has to be at least one advantage, disadvantage.</b></p> <p><b>Main components</b>  Knowledge base.  Inference engine.  User Interface.</p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• The computer can store far more information than a GP. It can draw on a wide variety of sources such as stored knowledge from books, case studies to help in diagnosis and advice on things such as prescriptions / symptoms</li> <li>• The computer does not 'forget' or make mistakes – remembers obscure cases of heart diseases</li> <li>• Data can be kept up-to-date e.g. adding more results of radiology scans / constant updating</li> <li>• The expert system is always available 24 hours a day</li> <li>• Will never 'retire'.-- No loss of expertise</li> <li>• The system can be used at a distance over a network. Therefore rural areas or even poorer third world countries have access to experts</li> <li>• Provides accurate predictions with probabilities of all possible problems with more accurate advice especially for obscure illnesses</li> <li>• Some people prefer the privacy of 'talking' to a computer rather than talking to a GP</li> <li>• Gives the doctor more time to deal with other patients / saves overloading doctors in epidemic/pandemic / more time to deal with serious cases</li> <li>• Can provide a second opinion</li> <li>• It can help train young doctors in unfamiliar diseases</li> <li>• People can do an initial diagnosis from home saving them travel and time costs especially if in a rural area or have long waiting lists to see a GP, e.g. if you suspect your child has a rash you could quickly check the symptoms for meningitis</li> <li>• Cheaper to update than to train doctors</li> <li>• Training using simulators</li> <li>• Using NHS Direct allows self- diagnosis</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• Over reliance on IT system / Loss of doctor expertise</li> <li>• Cost to buy and set up the system</li> <li>• Some people do not like to talk to a computer</li> <li>• People can convince themselves that they are worse than they from misusing the online version</li> <li>• Lacks the 'human touch' – lack of personal contact</li> <li>• Dependent upon the correct information being given. If data or rules wrong the wrong advice could be given. / GIGO</li> <li>• Expert systems have no "common sense". They have no understanding of what they are for, nor of what the limits of their applicability are, nor of how their recommendations fit into a larger context. If MYCIN were told that a patient who has received a gunshot wound is bleeding to death, the program would attempt to diagnose a bacterial cause for the patient's symptoms.</li> <li>• Expert systems can make absurd errors, such as prescribing an obviously incorrect dosage of a drug for a patient whose weight and height are accidentally swapped by the clerk. Example of why is needed to differentiate from GIGO</li> </ul> <p><b>Do not award contradictory answers</b></p>	8
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8.(b)	<p><b>7-10 marks</b> Candidates give a clear, coherent answer describing how blood tracking and body scanning are used in patient care and discuss their advantages and disadvantages. They use appropriate terminology and accurate spelling, punctuation and grammar.</p> <p><b>4-6 marks</b> Candidates state how blood tracking and body scanning are used in patient care and describe some advantages and disadvantages but responses lack clarity. There are a few errors in spelling, punctuation and grammar.</p> <p><b>1-3 marks</b> Candidates simply make brief points and may not give examples, advantages or disadvantages. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.</p> <p><b>0 marks</b> No valid response.</p> <p><b>One mark for each name and one for description. Up to six marks for advantages and disadvantages.</b></p> <p><b>Must refer to body scanning and blood tracking in patient care with examples to get full marks.</b></p> <p><b>MRI:</b> (1) provide a tremendous level of detail on tissue information, i.e. very good for detecting brain tumours.(1) OR <b>CAT:</b> (1) produces a complete 3D model of a patient's bones and internal organs. (1) OR <b>PET:</b> (1) produces three-dimensional image or picture of functional processes in the body (1)</p> <p><b>Advantages</b> Allows (accurate) diagnosis without the need for surgery. Leads to faster recovery. Removes the danger of post operative infections. Surgeon better prepared as knows what he is going to find before cutting open the body.</p> <p><b>Disadvantages</b> Expensive to purchase or expensive to run/maintain (NOT IF IN 8a) Can be claustrophobic. Could result in the loss of traditional diagnostic skills. Have to keep still for long periods in MRI. Health risks – increased risk of cancer –exposure to radiation. Patients with pacemakers and metallic limbs cannot go through scanners. Need for expert training / interpretation. Postcode lottery.</p> <p><b>Blood bar coding</b> (1) allows the tracking of blood from its donation to its use(1) OR</p> <p><b>Bracelet with a barcode</b>(1) worn by patient is matched with bar code on the blood bag / donor (1)</p> <p><b>Advantages</b> Can track a patient / donor if given bad blood (CJD, hepatitis, cross contamination). Better stock control of the blood. Makes sure patient gets the right type.</p> <p><b>Disadvantages</b> Damaged bar codes can cause delays. <b>NO GENERAL DISADVANTAGES</b> e.g. power cuts.</p>	10
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9 (a)	<p>Use of a program to predict the behaviour of a real life system.  <i>Answer should have software and at least one of real life / investigative (what if)</i>          Computer uses a mathematical formula implies use of software.</p>	1
9 (b)	<p><b>Must be at least one advantage and one disadvantage</b></p> <p><b>Advantages</b></p> <ul style="list-style-type: none"> <li>• Cheaper as do not have to physically destroy cars</li> <li>• Safer as nobody is really hurt</li> <li>• Can explore different scenarios more easily</li> </ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"> <li>• Model could oversimplify the situation</li> <li>• Bad data errors in formulas will spoil accuracy</li> <li>• No model is ever 100% accurate</li> </ul>	3

Before starting to mark question 10 look through the spreadsheet printouts to determine how the candidate has identified pages and screenshots.

In reading each answer to questions 10 (a), 10 (b) and 10 (c) look for the page or printout indicated. If you cannot see the item, look at the page (printout) before and after the one indicated. If you cannot see the item then no mark can be awarded.

10a	<p>Two marks for each formula (1 from A and 2 from B)  <b>No mark for naming formula up to 2 marks for description of what it Does. Purpose plus extension or purpose plus detailed description of data used gains both marks. (What and why)</b>  A: SUM, COUNT, MAX, MIN, AVERAGE, RAND  B: Single IF, Multiple IF, DATE, ROUND  <b>e.g.</b>  My Count formula on page 5, cell D24, counts the number of numbers in cell range A23 to D23 (1) It can help you work out the mean of a set of numbers by giving you the number to divide the total by (1). COUNTIF, etc, are also acceptable.  RAND generates a random number between 0 and 1 (1) in my range, on page 10, it is used to generate the number of sales of hot cross buns in cell E25 (1).  <b>NOTE The use of RAND to generate a unique number is incorrect</b>  I used the SUM function (SUM C2:C24) in column C of page 3 to add up all the costs of the different items sold every week (What) to work out my total income (Why).  I used SINGLE IF in cell E14 on page 5 to work out if the account holders were overdrawn =IF (D2 &lt;0, "ACCOUNT OVERDRAWN", "Account in credit") the message "ACCOUNT OVERDRAWN" appears and if the amount is not negative then the message "Account in credit" appears.  I used the DATE function in cell F3 on page 2 to work out the difference in days between when the payment should have been made and when it was actually made so that interest could be charged on the outstanding balance.  <b>NB</b> - NOW or TODAY are acceptable but must refer to a printed invoice otherwise the candidate could use DATE which is also acceptable. DATE function can reduce data entry errors.  <b>Must be specific and related to work in their sheet.</b></p>	6
10b	<p><b>What (1) Further detail (1) Why or customised error message (1)</b>  <b>2 x one mark for the correct name of a method and up to 2 marks for further details.</b>  Any validation method or spinners or drop-down boxes.or tick boxes  <i>Examples:</i>  <ul style="list-style-type: none"> <li>• I used a list box on transport methods on page 4 in cell D3 (1) which meant users were restricted to a set of choices of data (1) to the items in the list such as car, bus, train, bike, walk (1) or speeded up the entry process.</li> <li>• I applied a range check on hotel room number in cell F5 on page 6, (1) by only allowing whole numbers between 1 and 99 to be entered (1), because there are only 99 rooms in the hotel (1) (<i>Alternatively</i> - I created an error message "data must be between 1 and 99". (1))</li> </ul> </p>	2x3
10c	<p><b>What and why</b>  I sorted the names of my customers on page 13 as it made it a lot easier to look for people when their surnames <b>were</b> in alphabetic <b>order</b>. / to make a list ready for Vlookup.</p>	2
10d	<p><b>What and why</b>  I used absolute addressing to help with the use of VAT in my calculations. This can be seen on page 5 cell a13. If the rate of VAT changes all I have to do is to change the value in this cell and it changes the total price of every other component.</p>	2





5.	<p>DPA puts an onus on the council to keep this information secure (1) because of its potential for misuse (1). -- <b>for first mark must mention Act</b></p> <p><b>Examples from any 3 of the following categories (No need to state category):</b></p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• logical (software) methods /System Access-- user ids, passwords, levels of access ( e.g. who can update web pages) <i>firewalls</i>, encryption</li> <li>• continuous investigation of irregularities i.e. query any transactions that are out of the ordinary for customers</li> <li>• personnel administration – training (including prevention of accidental misuse) , fitting the employee to the task, ensuring that staff are controlled, staff screening</li> <li>• operational procedures including disaster recovery planning and dealing with threats from viruses, backup, updating antivirus</li> <li>• staff code of conduct and responsibilities, e.g. Downloading from the internet</li> <li>• disciplinary procedures</li> </ul> <p><b>NOT</b> auditing procedures <b>Not</b> accounts and logs and <b>No</b> marks for a list.</p>	2 3
6.	<p><b>One mark for each relevant point up to a max of 3</b></p> <p><u>1 mark each for</u> Allows the manager or system to manage user accounts <u>by ALLOCATING of access levels</u> to users. (1)</p> <p>Auditing is used to <u>identify abuses</u> of the systems by <u>authorised</u> staff. (1)</p> <p>Auditing investigates instances of <u>unauthorised access</u> (i.e. by hackers). (1)</p> <p>OR another approach is</p> <p><b>DETAILED ANSWER FOR ALL THREE MARKS</b> Auditing keeps records of:</p> <p><b>WHO</b> (usernames) of who logged on (1)</p> <p><b>WHAT</b> (1)</p> <ul style="list-style-type: none"> <li>• details of programs they used</li> <li>• details of files accessed</li> <li>• details of changes made</li> </ul> <p>From which machine</p> <p><b>WHEN</b> the times they logged on and off.(1)</p> <p><b>GENERAL ANSWER</b> worth 1 mark Auditing keeps a record of who has done what on the network. (1)</p>	3





### **School network**

Legal requirements = Data Protection Act, Copyright Act and Computer Misuse Act

Ethics/Code of Conduct = Do not bring in discs from outside  
= Virus scan all discs /Don't spreading a virus  
= Do not misuse email /send abusive email  
= Do not visit pornographic site on the Internet  
= Do not use the printer for personal work  
= Do not copy software for use at home  
= Do not tell anyone else you password  
= Change your password regularly  
= Don't access other people's files/No Hacking  
= Do not copy programs/files  
= Do not steal / damage hardware

Courts will decide legal issues but users need a code of professional ethics by which to conduct their daily computing activities.

### **Users must consider**

1. To what degree should a computer professional be responsible for the output produced by their system?
2. Do computer personnel have the right to use computer equipment for their own private jobs.
3. Should user take responsibility for the impact on society of their computer systems e.g. .job loss, computer privacy, junk mail, computer crime?

### **Codes of Practise and Conduct**

The BCS has a code of professional conduct, set social, moral, ethical standards for its members.

- Members shall complete work on time and to budget and shall advise their client as soon as practical if they cannot do so
- Members shall not disclose for personal gain confidential information
- Members shall not misinterpret or selectively withhold information on capabilities of products, systems or services
- Members must not persuade or give opinions on other products or services they have an interest in

	<p><b><u>1. Disinformation</u></b></p> <p>Not fully informing potential customers or clients of all available facts concerning products or services e.g. imminent introduction of new models.</p> <p><u>Examples</u></p> <p><u>Estate Agent</u></p> <p>Legal requirements = Properties Act  Ethics = a property developer not telling his client the property has subsidence problems or a violent history</p> <p><u>For a hospital treating a patient</u></p> <p>Legal requirements = Data Protection Act  Ethics = response times might be part of the code of practice</p> <p><u>Hardware &amp; software sales</u></p> <p>Legal requirements = Trade Descriptions Act  Ethics = prohibit salespersons from selling hardware and software soon to become obsolete  = ensure salesmen do not pressurise unwilling customers to accept e.g. loyalty cards , instore credit accounts or particular brands</p>	
	<p><b><u>2. Privacy</u></b></p> <p><b><i>Informing data subjects of their legal rights and processes for complying with those rights.</i></b></p> <p>ICT systems have enabled many organisations to hold data on the public. People are not always aware of their rights under data protection legislation and not all organisations are ethical in their use of this data.</p> <p>Legal requirements = Data Protection Act  Ethics = an employee using company data to create mailing lists for his own private home business</p> <p><b><i>Monitoring company emails.</i></b> Electronic monitoring systems can be used to track emails. A systems technician might open other people's emails to detect misuse or simply to be nosey.</p>	
	<p><b><u>3. Employment patterns</u></b></p> <p><b><i>Effects upon the workforce.</i></b></p> <ul style="list-style-type: none"> <li>• ICT has transformed the workplace</li> <li>• Some people have been de-skilled by the arrival of ICT and their skills are no longer required and they loose their jobs</li> <li>• Call centres have caused many people to lose jobs as they have been moved abroad where labour is cheaper leading to ICT 'sweat shops'</li> <li>• Others have gained and have the required skills e.g. computer programmers</li> </ul> <p><b><i>Personal empowerment.</i></b></p> <ul style="list-style-type: none"> <li>• There have been changes in working patterns e.g. teleworking</li> <li>• Businesses are able to reach a wider market via the Internet</li> <li>• Individuals can sell goods on Ebay</li> </ul>	

	<p><b>4. Equity      Information poor and information rich societies</b>  The development of information systems has led to a division between the information rich and information poor societies. Ownership and access to information can often determine which organisations will be successful and which will fail. As these technologies have to be paid for the richer organisations can afford the technology whilst poorer organisation cannot. Consequentially, the rich organisations get richer and the poorer ones get relatively poorer and the gap between them gets greater.</p>	
	<p><b>5. Intellectual property rights Ownership rights to data.</b></p> <ul style="list-style-type: none"> <li>• If you put a joke on the Internet do you own it?</li> <li>• If you see a joke on the Internet can you sell that joke to a professional comedian?</li> <li>• If you scan in the text of the book 'The Da Vinci Code' and put it on the Internet for all to be freely read; are you breaking the law?</li> <li>• Can you sue someone who sells you an essay which is full of factual errors?</li> </ul> <p>The growth and exchange of ideas on the Internet has led to many legal disputes and lack of legal clarity as to ones intellectual property rights. Do the Copyright Laws of one country apply to another country?  Free access principles were applied to 'text of books, music, essays. There is an ongoing argument between organisation trying to protect the earning potential of their products and those who do not want to see the Internet become 'owned and controlled' by a few large corporate organisations as the media has become.</p>	
11.	<p><b>One mark for each factor and one for each further explanation x 3</b>  <b>Context must relate to a Financial company or be neutral</b>  <b>Identify potential risks</b> - e.g. viruses / fire / natural damage / hacking / systems failure / fraud, etc.</p> <p><b>Likelihood of risk occurring</b> - some things such as power cut are inevitable but explosions much less likely - senior managers have to assess the likelihood of each risk occurring and put in the necessary security.</p> <p><b>Short and long term consequences of threat</b> - resources (staff, equipment, etc) need to be directed towards recovering the data / may have to pay compensation / financial loss due to loss of business through not being able to sell mortgages, loans etc etc. / embarrassment/ prosecution / loss of integrity / bankruptcy / cost of replacing equipment.</p> <p><b>How well equipped is the company to deal with the threat</b> (What procedures are in place) - has to be reviewed periodically because of changing needs - disaster recovery programme - backup strategy - cost (how much they are prepared to spend), use of firewalls - use of anti virus.</p> <p><b>NB Should not be talking about Health &amp; Safety.</b></p>	3x2

12.	<p><b>Any two of the following methods: One mark for naming, one mark for description and one mark for example x2</b></p> <p><b>To get example mark must either have name or description</b></p> <p><b>Perfective maintenance</b> (1) – Improving the performance of the software (1).  <b>Examples:</b> Configuring the network management software to improve performance such as improving access times to data, speed at which reports are produced, etc. (1). Software may need to be modified to improve the user interface upon feedback from users who are finding it more difficult to use than it needs to be (1). Developing on-line tutorials and more help screens to help new staff learn the software (1). The software provider provides upgrades which will improve the performance of the software (1).</p> <p><b>Corrective maintenance</b> (1) – Bugs in the software which were not discovered during testing may need correcting (1).  <b>Examples:</b> A piece of software may crash when being used with another piece of software (1). A piece of software may crash when used with a particular item of hardware (1). Software may present a security risk which needs correcting (1). Problems with reports not being printed out properly (1).</p> <p><b>Adaptive maintenance</b> (1) – software may need to be changed owing to the changing needs of the business or organisation (1).  <b>Examples:</b> Software may need altering so that it is more flexible in supplying the managers with information which was not envisaged at the time of development (1). Changes to values such as the percentage rate of VAT or changes to income tax rates will result in changes to the software (1). The organisation expands so the software needs to be altered so it is able to cope with an increased number of users/departments/functions/branches etc (1). Adapting the software to work with newly developed operating systems software or new hardware (1). A new virus threat/hacker threat means that the software will need to be adapted to protect against this (1)</p>	2x3
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13.	<p><b>One mark for description of up to 6 points (have to have at least 1 good factor and 1 poor factor for max marks)</b></p> <p><u>Examples of possible responses</u></p> <p><b>Factors which can lead to a good MIS include the following:</b></p> <ul style="list-style-type: none"> <li>• Accuracy of the information produced usually dependent on the accuracy of the data input</li> <li>• Ability to allow managers to set up their own queries flexibly</li> <li>• Presents the data in an appropriate form, for example a graph, to make it easy to understand</li> <li>• Can be used by managers who have differing experience and skills in the use of ICT</li> <li>• Ability to be transferred to other packages for further processing/analysis such as a spreadsheet package</li> </ul> <p><b>Factors which can lead to a poor MIS include the following:</b></p> <ul style="list-style-type: none"> <li>• Inadequate consultation with managers during the analysis of the system to find out what their requirements from the system are</li> <li>• Lack of training for managers means many managers do not use the system as they should</li> <li>• Inappropriate hardware or software being used. For example, the network may run slowly when processing the information needed when producing MIS reports</li> <li>• Inadequate initial analysis. The system does not do exactly what it should do</li> </ul> <p><b>List of three factors 1 mark (can award twice – once for three good factors and once for three bad)</b></p> <p><b>Factors which make a good MIS</b></p> <ul style="list-style-type: none"> <li>• Accuracy of the data (Not just relevant)</li> <li>• Flexibility of data analysis</li> <li>• Providing data in an appropriate form/format</li> <li>• Accessible to a wide range of users and support a wide range of skills and knowledge</li> <li>• Improve interpersonal communications amongst management and employees</li> <li>• Allow individual project planning</li> <li>• Avoid information overload</li> <li>• Allow speedy decisions for <u>urgent</u> situations</li> </ul> <p><b>Factors which can lead to poor MIS</b></p> <ul style="list-style-type: none"> <li>• Complexity of the system</li> <li>• Inadequate initial analysis</li> <li>• Lack of management involvement in initial design</li> <li>• Inappropriate hardware and software</li> <li>• Lack of management knowledge about computer systems and their capabilities</li> <li>• Poor communications between professionals</li> <li>• Lack of professional standards of software developers</li> </ul>	6
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14.	<p><b>6-8 marks</b> Candidates give a clear, coherent answer discussing advantages and disadvantages of teleworking using suitable examples. They use appropriate terminology and accurate spelling, punctuation and grammar.</p> <p><b>3-5 marks</b> Candidates discuss advantages and disadvantages and may give examples but responses lack clarity. There are a few errors in spelling, punctuation and grammar.</p> <p><b>1-2 marks</b> Candidates simply make brief points and may give an advantage or disadvantage. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.</p> <p><b>0 marks</b> No valid response.</p> <p><b>Indicative content</b></p> <p><b>Answers have to cover all 4 sections to get full marks.</b> (lose 1 for every section not covered)</p> <p><b><i>The advantages of teleworking for the employee</i></b></p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• It reduces traffic congestion and carbon dioxide emissions and is therefore 'greener' / this has an environmental benefit since there is no commuting to work</li> <li>• Not having to travel to work saves time/money</li> <li>• Flexibility of working hours / Work your own hours / Fit around family commitments / No need to take time off to see workmen</li> <li>• Ideal for disabled</li> </ul> <p><b><i>The disadvantages of teleworking to the employee</i></b></p> <ul style="list-style-type: none"> <li>• Home costs such as heating, lighting increase</li> <li>• Employee may feel isolated</li> <li>• Some employers may pay teleworkers less as there is more competition for jobs</li> <li>• No workmates to go out with /socialise</li> <li>• Boundary between home and work is lost</li> <li>• Loss of status for some staff – no plush offices, etc.</li> <li>• May not be a quiet place in the house to work / can get distracted</li> <li>• Passed over for promotion</li> </ul> <p><b><i>The advantages of teleworking to the company</i></b></p> <ul style="list-style-type: none"> <li>• Smaller offices are needed</li> <li>• Fewer backup staff need to be employed (e.g. cleaners, caretakers)</li> <li>• Staff <u>less likely</u> to spend time off sick (<b>Not</b> never off sick)</li> <li>• Reduced office overheads (electricity, gas, insurance, furniture etc) – either needs <u>office</u> overheads or example not just '<i>reduced overheads</i>'</li> <li>• Staff may be more amenable to working flexible hours</li> <li>• Retaining skilled workers / maternity</li> <li>• Employ workers from a wider pool of talent</li> <li>• Comfortable environment can lead to greater productivity</li> </ul> <p><b><i>The disadvantages of teleworking to the company</i></b></p> <ul style="list-style-type: none"> <li>• Change to organisational structure may be needed</li> <li>• Hard to determine how hard staff are working (monitor progress)</li> <li>• Harder for managers to manage the work</li> <li>• Increased number of sites for ICT equipment may cause more security risks</li> <li>• Employers usually pay for the employees' ICT equipment</li> <li>• More difficult to hold meetings face to face</li> <li>• Health and Safety checks needed on employee home</li> <li>• More security risks as more sites</li> </ul>	8
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15.	<p><b>Suitable definition of a relational database, such as:</b>  A (large) collection of data items and links/relationships between them (1) structured in such a way that it allows it to be accessed by a number of different applications programs (1).  <b>OR</b>  A group of tables linked together (1) by primary <b>and</b> foreign keys (1).</p>	2
16.	<p><b>CUSTOMER [CustomerID, Title, Firstname, Surname, Address1 .....]  HIRE [HireID, CarID*, CustomerID*, DateOut, ReturnDate]</b>  Where underscore = primary key and *=foreign key  1 mark per table name = 2  1 mark per primary key = 2 (one of the marks could be for a composite field in HIRE  1 mark each for two foreign keys = 2 (If key duplicated - no mark)  1 mark for 2 extra fields in both tables</p>	7
17.	<p>Either:  Add a link table/form.  Make it a one to many relationship</p>	1
18.	<p><b>Description of any four of the following with an example/extension 4x2</b>  <b>First mark is for term in bold</b>  <b>If the term isn't fully there do not penalise if description is right</b>  <b>(Security) Hierarchy of passwords</b> limits users to various parts of the program.(1) A receptionist would only have access to basic customer details whilst a manager would see all information on the customer account.(1).   <b>(Security) Access rights</b> to parts of the program only certain users can access and change data.(1) A clerk would see all the information on a customer account but be unable to alter the hire rate details whilst a manager could.(1).   <b>Consistency</b> - Data consistency is the relationship between the input data, the processed data and the output data as well as other related data.(1) If the system is working properly the data will be correct at each stage and is said to be consistent.(1)  <b>OR</b>  Data consistency is using one file to hold a central pool of data. / A company may hold all its customer data in one file. (1) This avoids the need to input data twice so that if data is changed in one file it won't need to be changed in another and remains consistent.(1).  <b>OR</b>  Data being inconsistent in a flat file due to possibility of different formats etc (1) and being consistent in a RDBMS as each record is only stored once so cannot have different attributes(1).   <b>Redundancy</b> Data redundancy is where you store an item of data more than once / A company may hold its data in different files.(1) This is wasteful because some data may need to be input twice and if data is changed in one it will need to be changed in the other. / Data which is repeated unnecessarily is called redundant data.(1).   <b>Independence</b> Data independence – the data and the applications/programs used to access it are independent/separate.(1) New applications can be developed to access the data without changing the data / New systems can still use existing data. (1).</p>	4x2

19.	<p>Any 18 points</p> <p><b><u>Gaming</u></b>  <b>Types of service</b>  Buy a disc or online gaming sites some of which some are free but others you have to pay a subscription.</p> <p><b><u>Advantages</u></b></p> <ul style="list-style-type: none"> <li>• Play people all over the world/make new friends</li> <li>• Enhanced 'real life' experience</li> <li>• Team Building skills</li> <li>• Improved co-ordination</li> <li>• Problem solving skills</li> </ul> <p><b><u>Disadvantages</u></b></p> <ul style="list-style-type: none"> <li>• Gambling addiction – gambling can cause many social problems and it is on the rise with the ease with which bets can be made using the Internet</li> <li>• Addiction to computer games – many children spend hours playing computer games and their social skills and schoolwork can suffer as a result</li> <li>• Social isolation. Some people never go out and do not develop social skills they have cyber friends rather than real ones. e.g. you can work, shop or bank from home without ever having to mix with others./ difficult to socialise</li> <li>• Some get addicted to online gambling/poker losing thousands of pounds</li> <li>• Incitement to violence – recent school shootings have been blamed on violent video games</li> </ul> <p><b><u>Email</u></b>  Messages send from one computer to another across a network</p> <p><b><u>THE ADVANTAGES OF EMAIL</u></b></p> <ul style="list-style-type: none"> <li>• You can send attachments with email including text sound and video</li> <li>• Electronic messages are editable and business people can work on documents and plans together without the need to travel/collaborative working</li> <li>• Emails do not need to be printed they save on paper and storage space.</li> <li>• You can use your address book to group send to people <u>at the same time</u> and at the same cost as one telephone call</li> <li>• Email messages are sent and received almost instantly and is much faster than conventional post</li> <li>• Messages can be sent anywhere in the world much <u>cheaper</u> than conventional post / Free accounts</li> <li>• Customise emails with signature and standard messages such as disclaimers</li> <li>• Emails have legal status now</li> </ul>	18
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	<p><b><u>THE DISADVANTAGES OF EMAIL</u></b></p> <ul style="list-style-type: none"> <li>• Cyber bullying – in chat rooms, by e-mail, in blogs, by text message is a problem especially for the young</li> <li>• Distribution of material malicious rumours or news of a sexually or racially offensive nature about the fellow workers/ Abusive emails to colleagues</li> <li>• Using e-mail to give bad news (e.g. redundancy, demotion, firing, etc.) when explaining face to- face would have been better</li> <li>• Have to accept advertising</li> <li>• Junk email can fill mailbox</li> <li>• They have security e.g. Often the mechanism by which viruses are spread /Popups spreading viruses</li> <li>• Black holes</li> <li>• Phishing is an attempt to obtain important personal data from you in an attempt to commit crimes involving stealing from your bank account or setting up false bank accounts with your identity</li> <li>• Pharming is when you share your personal data with a fake website after being</li> <li>• redirected from a legitimate trusted website</li> <li>• Spam is unsolicited emails which are sent to you as a form of advertising. All phishing uses spam email in an effort to get the data they require</li> <li>• Extra large attachments can slow down significantly and block access to urgent emails</li> <li>• Sending spam (i.e. the same advertising e-mail to millions of people) – people waste time deleting spam if the spam filter allows it through</li> <li>• Companies monitoring staff use of the Internet and e-mail. Some organisations will even read personal e-mails</li> </ul>	
	<p><b><u>Mobile phones</u></b>  <b>Services available;(Max 1)</b></p> <ul style="list-style-type: none"> <li>• Text messages (Not abusive texts)</li> <li>• Voice mail</li> <li>• Alarm clock/time</li> <li>• Reminders/ to do list</li> <li>• Change ring tone</li> <li>• Record greeting message</li> <li>• Display photos/ pictures on screen</li> <li>• Radio</li> <li>• Some can receive the Internet</li> <li>• Booking tickets</li> <li>• Apps</li> <li>• Betting</li> <li>• Any other sensible service</li> </ul>	

### **Advantages**

- Can access e-mail, surf the internet from wherever you are (on the move) /use anywhere there is a signal
- Can work more productively because you can do things at once, without having to go back to the office / Can work anywhere in the home or office (teleworking) / employers can always contact you
- Can easily modify your plans – flights, trains, hotels
- Increase in real time collaborative working / voice conferencing / video conferencing
- Multi-function – saves you having to carry many devices e.g. camera
- Available in emergency/urgent situations

### **Disadvantages**

- Affects home / work balance
- Can be very expensive if use a mobile phone for the access
- Many black spots / poor connectivity
- Increased security problems from hacking
- Battery life on mobile devices
- Network overload at peak demand
- Some attachments cannot be opened / worked on
- Work progress hampered by distractions /Distraction from school work e.g. texting in lessons
- Lack of attentiveness could cause accidents / lack of social interaction
- Increased risk of stalking / Mobile phone stalking/grooming / paedophiles
- Sometimes it is possible to connect to the Internet using an open network. The net result of using the network is to slow the network down for legitimate users.
- Health issues from signal
- Annoying others in restaurants / trains /theatres etc
- Cheating and plagiarism

### **GENERAL**

#### **Apply to all but only give once**

- Cyber bullying – in chat rooms, by e-mail, in blogs, by text message is a problem especially for the young.
- Privacy issues / BCC issues / intercepted emails
- Grooming/stalking/paedophiles
- Trolling
- Pornographic images
- Impact on school work
- RSI

#### **Not Hacking in games and email**

#### **Not prevention methods – censorship/net nannies**

#### **Not General Internet Points**



WJEC  
245 Western Avenue  
Cardiff CF5 2YX  
Tel No 029 2026 5000  
Fax 029 2057 5994  
E-mail: [exams@wjec.co.uk](mailto:exams@wjec.co.uk)  
website: [www.wjec.co.uk](http://www.wjec.co.uk)