



GCE MARKING SCHEME

**ICT
AS/Advanced**

SUMMER 2015

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2015 examination in GCE ICT. 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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IT1 Summer 2015 MS

1.a	<p>One mark for each specific use, and advantage Use: e.g.</p> <ul style="list-style-type: none"> • Expert using it to find information on network/system configuration • Writing small batch files (in DOS) <p>Advantage:</p> <ul style="list-style-type: none"> • Fast to execute (run) • Don't have to go through menu system/faster to enter commands (not type) • Needs very little overheads (memory/processor) <p>Not Quick to use</p>	2
1.b	<p>1 mark for description of any suitable device/method <u>and concrete use</u>, 1 mark for advantage. Needs to be clear that candidates are describing a use of a device. Advantage must be relevant to use.</p> <p>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. Mobile phones – e.g. to dial the phone number of a friend. Mobile phones – e.g. to search the network Telephone ordering system/appointment systems. Doctors can use them to dictate notes directly into a computer. Student dictating an essay directly into word processing software. Not just 'Hands free system in a car' needs a concrete use</p> <p>Advantage:</p> <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 • Lessens risk of RSI • Safer when driving as hands free doesn't distract <p><i>Advantage must be relevant to use if clear and can be given if mark for use not actually awarded</i></p>	2
1.c	<p>1 mark for description of any suitable device <u>and concrete use</u>, 1 mark for advantage. Needs to be clear that candidates are describing a use of a <u>device</u>. Advantage must be relevant to use.</p> <p>Joysticks to <u>control a plane</u> in a flight simulator, Steering wheels <u>to control a simulation of a car</u>, Motion sensors (accelerometers and gyroscopes) and use Line of motion sensors (camera tracking motion) and use Virtual Reality Interface and use Omnidirectional treadmill and use Game pads ...and use</p> <p>Advantage Saves having to type, quicker to enter information/fixes list of options Greater realism in the game playing/more interactive Greater accuracy/sensitivity/complexity in the movements Aids fitness Not just 'more fun' by itself</p>	2

2.a	<p>Any two (description and example) x2 Term need not be there if description is clear what it is about. No marks just for stating the term.</p> <p><u>Description</u> Correctly targeted - The question should be targeted at the people who are going to use it</p> <p><u>Examples</u></p> <ul style="list-style-type: none"> • If asking for information about motorbikes there is no point asking car drivers. • No good asking vegetarians about meat eating. <p><u>Description</u> Understandable - The meaning of any information should be clear to the user</p> <p><u>Examples</u></p> <ul style="list-style-type: none"> • If the information is in a very complicated format then it will waste time and people could draw the wrong conclusions from it. • A manager might misunderstand a complex table and order the wrong items. <p><i>Encoding is not a viable example</i></p> <p><u>Description</u> Relevant - Data has to be related to the task you are trying to investigate.</p> <p><u>Examples</u></p> <ul style="list-style-type: none"> • There is no point using information about babies from people whose children are in their late teens. • No good collecting information on ice-cream sales in Alaska in the winter if you want to open your kiosk in California. <p><u>Description</u> Up-to-date - Information changes with time and without a date stamp could be too old to be useful OR means that the data is not too old to be useful.</p> <p><u>Examples</u></p> <ul style="list-style-type: none"> • A travel company would not have much profit from using 10 year old data on holiday patterns to decide which resorts to offer this year. • Using a five year old mailing list might end up in letters being sent to dead people or people who have moved. <p>(Time has to be either stated or implied). NOT Complete or Accurate</p>	2x2
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2.b.	<p>(1 mark for process 1 mark for example)x2 NOT aiding the decision making process</p> <p>Process: <u>Can target reasoning and strategy (resources) making to gain advantage over competitors</u></p> <p>Example:</p> <ul style="list-style-type: none"> • 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. • 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. <p>Process: <u>Spot trends</u></p> <p>Example:</p> <ul style="list-style-type: none"> • 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 • A manufacturer spends money developing a new product because they have seen a gap in the market. <p>Award <u>process</u> mark if process is clearly described with different words.</p>	2x2
3	<p>To get full marks there must be at least one advantage and one disadvantage</p> <p>Advantages</p> <ul style="list-style-type: none"> • Monitoring e.g. Parents can monitor what their children are using the computer for. • Parental control of accounts • Can ensure that the antivirus software is kept up to date on all computers. • Central software <u>installation</u> e.g. Easier and quicker to install software as it can be done centrally and then shared out to all the computers without physically going to each one. Not just 'can share data/files'. • Central pool of data/documents e.g. All family members can access data from each other's computers • Central backup • Can all share/control an expensive computer peripherals/Internet access • Internal email/internal instant messaging if justified <p>Disadvantages</p> <ul style="list-style-type: none"> • If virus gets into the system can damage data/programs on all computers very easily • Security worse as there are more access points and if the hacker gets into one machine can then get into any of the machines. 	4

4.	<p><u>Query</u> Definition A query is when you interrogate (search/sort/filter) a database to find some information. Use A search to find all the ‘patients who have asthma because they need a flu injection.</p> <p>Examples need to indicate <u>what</u> looking for and <u>why</u> to show whether the query is appropriate.</p> <p><u>Report</u> Definition 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) NOT ‘It is a printout’</p> <p>Use Producing (formatted) lists of patients who have an operation the next day to organise theatre schedules. A graph to show blood pressure to compare if it is higher or lower than the previous day.</p> <p>A mark for the example can be given if the definition is wrong but their answer involves formatting.</p> <p><u>Import/export</u> Definition Import/export – • The ability of a piece of software to read and use the data produced by a different piece of software. • Transferring data/information from one piece of software/application to another.</p> <p>Use Exporting names and addresses into a word processing program to produce appointment reminder letters.</p>	3x2
5.	<p>One mark for explanation of each advantage and one for example (x4) Advantages - each point must be illustrated with a suitable example. Must explain the advantage for the first mark and not just give the heading</p> <p>Repetitive processing - carrying out the same task to the same standard repeatedly (consistency)(1), e.g. Processing the payroll run on a computer for a large organisation.(1) or mailmerge described.</p> <p>Data storage capacity - Millions of records can be physically stored in a very small hard disc (1) so reducing the need to buy or rent office space with many filing cabinets. e.g. all the information about students in a large college will fit on one small hard drive.(1)</p> <p>Accuracy (with context) - Calculations are carried out accurately(1), e.g. in a spreadsheet if formula and data are correct then calculations will be correct.(1) NOT spell checking or No errors</p> <p>Faster searching - Records can be found instantaneously,(1) e.g. A company can find a sales transaction amongst its hundreds of thousands when a customer queries a delivery instantaneously.(1)</p> <p>The ability to produce different output formats - Information can be produced in tabular or graphical format (1), e.g. a scientist producing a report will include data in a table and to make some of them easier to understand will produce some of them as graphs.(1)</p> <p>Ease of updating data - Errors in data can be quickly changed without the need to retype everything (1) e.g. if someone changes their address the details can be altered quickly</p>	4x2

	<p>without having to re-write the whole record (1)</p> <p>Allows predictive analysis - To gives better management statistics/information to help decision making (1) e.g. analysis of sales patterns will influence choice of stock sent to supermarkets. (1)</p> <p>Security policies can be centrally administered / Easier to back up data - which can be done centrally (1) e.g. Suitable backups can be performed at set times and in one fixed location, e.g. customer orders can be backed up on RAID systems (1)</p> <p>NOTHING to do with handwriting</p> <p>NOTHING to do with data entry or collection</p> <p>List of three gains 1 mark</p>	
6	<p>Any two from: (If only 2 listed points 1 mark)</p> <p>Software - Does the software put a big demand on the system - does it work with other software.</p> <p>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>Communication - Do the different devices talk properly to each other, does the final system fit in what was requested</p> <p>Testing - Has the system been checked in all sorts of situations.</p> <p>Maintenance procedures - Is there someone whose job is to ensure that the data and software is kept up to date. Proper backups.</p> <p>Other factors could involve description of:</p> <p>Change in circumstances during development</p> <p>Speed of implementation</p> <p>Compatibility</p> <p>Poor communication with the user</p> <p>Abilities of the user</p> <p>Post-implementation procedures</p> <p>Cost</p> <p>Hardware support / reliability</p>	2
7.	<p>Main components (1 mark for a description of each)</p> <p>1 mark for a list of three components</p> <p>Knowledge base -- a collection of rules or other information structures derived from the human expert</p> <p>Inference engine -- the main processing element of the expert system/applying rules to the system or situation.</p> <p>User Interface -- is the method by which the expert system interacts with a user</p> <p>Benefits (Any three)</p> <ul style="list-style-type: none"> • 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 • The computer does not 'forget' or make mistakes – remembers obscure cases of heart diseases • Data can be kept up-to-date e.g. adding more results of radiology scans / constant updating • The expert system is always available 24 hours a day • Will never 'retire' - No loss of expertise • The system can be used at a distance over a network. Therefore rural areas or even poorer third world countries have access to experts • Provides accurate predictions with probabilities of all possible problems with more 	3

	<p>accurate advice especially for obscure illnesses</p> <ul style="list-style-type: none"> • Some people prefer the privacy of 'talking' to a computer rather than talking to a GP • Gives the doctor more time to deal with other patients / saves overloading doctors in epidemic/pandemic / more time to deal with serious cases • Can provide a second opinion • It can help train young doctors in unfamiliar diseases. • 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 • Cheaper to update than to train doctors • Training using simulators • Using NHS direct allows self-diagnosis <p>Drawbacks (Any 2)</p> <ul style="list-style-type: none"> • Over reliance on IT system / Loss of doctor expertise • Cost to buy and set up the system • Some people do not like to talk to a computer • People can convince themselves that they are worse than they are from misusing the online version • Lacks the 'human touch' – lack of personal contact • Dependent upon the correct information being given. If data or rules are wrong, the wrong advice could be given. / GIGO • 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 • Expert systems can make absurd errors, such as prescribing an obviously incorrect dosage of a drug for a patient whose weight and age are accidentally swapped by the clerk. <p>Do not award contradictory answers</p>	2
8.a (i)	<p>A barcode is a series of light and dark bars of differing widths (1) With a code number printed (underneath) (1)</p> <p>Made up of country of origin code, manufacturer code, the product code, a check digit. (Any 3) (1)</p> <p>(If PRICE included NO mark.)</p>	2 1
8.a (ii)	<p>Benefit (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 e.g staff don't have to manually price goods. <p>Drawback (1 mark)</p> <ul style="list-style-type: none"> • Can only be used for the input of numbers. • Equipment is expensive. • Corrupted barcodes can cause delays. 	1 1

9	<p>2 marks for benefits <u>in context</u> and 2 for further explanation.</p> <p>Automatic recalculation of <u>wages</u> (1) if data such as rate of pay changes (1) Can do what if calculations for <u>options</u> (1) on staffing or different materials/suppliers (1) Can draw graphs for <u>reports</u>(1) to highlight wages of different departments/compare monthly wage bill (1) Accurate calculation of <u>wages/quotes</u> (1) will increase efficiency/save time (1) Setting up templates for <u>quotes</u> (1) to work quotes out more quickly (1)</p> <p>Max 1 for 'no context' i.e. two from: ability to recalculate; can show graphically by producing various charts and graphs; accurate calculation, perform 'what ifs', set up templates.</p>	2x2
10.a	<p>What (1) and Why (1) Examples: 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 <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. (Both branches of 'IF' for what and why) 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.</p>	3x2
10.b	<p>What does the macro do (1) and Why (1) (i) My macro shown on page 4 defined the special print settings in the Page Setup dialog box(1) so that it printed more quickly as I did not have to set them each time (1) (ii) 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/easier/faster (1)</p> <p>Macro cannot have functionality already included as part of the system (but could be customisation of a built-in function)</p>	2
10.c	<p>What (1) and Why (1) x2 One mark for stating method and field, and one mark for benefit. Has to be different for each, e.g.</p> <p>List boxes / Combo box I used a list box in cell F4 on page 3 to select text from a pre-determined list (on their own example)(1) reducing data entry errors(1) increasing efficiency /speed/ knock on <u>automatic</u> process (1). Option or check boxes (Boolean choice). I used a check box in cell D4 on page 4 to click in the cell for yes/no data placing a tick in the cell (or their own example) (1) increasing efficiency by saving time (1). Spinners I used a spinner in cell G8 on page 6 using a button (on their own example) (1) to let you see how input changes will alter the outputs in a model (1) so you can see different outcomes more easily (1). NOT speed of entry. VLOOKUP and variations I used Vlookup in cell H14 on page 10 to find the price of the product (1) You can update a table of prices without having to rewrite formulas such as multiple IF statements. / Faster to automatically enter data (1) Not 'Error reduction'</p>	2x2

10.d	<p>What and why?</p> <p>No mark for naming a different process but up to two marks for detailed description x2.</p> <p>Graph, Sort, Search, 3D referencing, etc.</p> <p>E.g.</p> <p>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.</p> <p>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>	2x2
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IT3 Summer 2015 MS

<p>1.</p>	<p>Any three of the following, discussed in detail: 1 mark per factor - 1 mark per explanation. (No Factor no mark for extension) If mistake in factor but good extension can gain extension mark. Note: explanations must be distinctly different and match the factor. <u>An example can count as an extension.</u></p> <p>NOT disabled access, layout appropriate to the task NOT Consistent Layout NOT age</p> <p>Expertise of the user/ ability of user / difference between novice and expert user An expert user will need shortcuts so that the task can be completed as quickly as possible whereas a novice will need a number of steps to guide them. <u>NOT age</u></p> <p>Consistency of signposting and pop up information e.g. Every 'Next' should be in the same place using the same icon / navigation around the program should be clear consistent and easy to follow. – intuitive, learn faster</p> <p>Clear navigational structure e.g. It speeds things up if there is a similar route through the programs (if it is clear) as users do not have to keep learning things / Helps users learn their way around the system.</p> <p>Customisable to suit the needs of the user e.g. Makes it more efficient if the user can change items to suit their work preference. Change font size – readability, appropriate to level of user</p> <p>Location of where machine is to be used e.g. No sound in a noisy area. Touch screens in museums / factories / etc (with explanation of why).</p> <p>House Style/Ethos (Not Consistent Layout) e.g. So that it conveys who the organisation is and all the company documents look/feel the same.</p> <p>On Screen / online helpfiles (built in with software) e.g. Rather than wasting time looking in manuals, important if no outside help available when working / tool tips telling the user what to do / interactive user manual that answers general FAQ. / Wizards to take you through the task. No marks if can be read as a Google search</p>	<p>3x2</p>
<p>2.</p>	<p>1 mark per point (have to state need and how helped) to a maximum of 5 marks</p> <ul style="list-style-type: none"> • <u>Visually impaired</u> people can have their screens configured using large fonts. • Magnify areas of the screen for people with <u>poor eyesight</u>. • If a person is <u>visually impaired</u>, then ICT can help them by getting the computer to speak the words when they are being typed in. • <u>Visually impaired</u> people can also use special Braille keyboards to enter the data and can use Braille printers to produce output which other blind people can read. • Visual messages on screen instead of sound for the <u>deaf</u>. • Use of correct colour schemes for <u>colour blind</u> people. • Use large mouse or trackerball for people with <u>poor co-ordination</u>. • Use of speech recognition rather than keyboard/mouse for those who <u>cannot use their arms</u>, etc. • Eye movements (eye typer) for entering text / controlling devices for those <u>who cannot use their arms</u>, etc. • Blow pipes (sip and puff switches) or eye movements for entering text / controlling devices for those <u>who cannot use their arms</u>, etc. • Brainwave controlled devices for physically handicapped with <u>no arm/hand movement</u>. • Condone example of not using frames or patterned backgrounds, or DDA requirements for comments attached to images for <u>blind users</u> • Background colours changed for <u>dyslexia</u> <p>Other examples might be given - Accept any suitable point. Allow repeated need</p>	<p>5</p>

5	<p>Candidates should give two advantages and two disadvantages but condone three advantages and one disadvantage or one advantage and three disadvantages</p> <p>Advantages of Wi-Fi:</p> <ul style="list-style-type: none"> • Allows inexpensive LANs to be set up without cables. • Allows pupils and staff the freedom of working anywhere a signal can be received • Ideal for networks in old listed buildings where cables would not be allowed to be installed • Global set of standards (802.11) (for all devices). • Can use a variety of devices such as tablets, mobile phones, etc • Health and safety – tidier desktop with no trailing cables. <p>Disadvantages of Wi-Fi:</p> <ul style="list-style-type: none"> • Power consumption is high – which means laptops soon exhaust their rechargeable batteries • There may be health problems in using Wi-Fi • There may be security problems even when encryption is used • Wi-Fi networks have a very limited range (e.g. 150 ft) /black spots in buildings • Can get interference if wireless network signals start to overlap • Transmission speed slower than cable. <p>NOT distraction from use of phone NOT broadband issues</p>	4
6	<p>Remote management is to do with stations not users</p> <p>One mark for each of any five 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 / updating • Check on components to see if any failing. • Shut down stations. • Clear printer queues (remotely) <u>at stations</u>. <p>NOT manage passwords / delete files / other tasks normally done at the server OR Monitoring users/access</p>	5

7.	<p>Max of 3 for advantages or disadvantages</p> <p>Advantages (up to 3)</p> <ul style="list-style-type: none"> • Much cheaper as they do not have to pay for transport costs/accommodation for employees • Experts not wasting time travelling • Meetings can be called at short notice without too much planning • Short meetings can be conducted where it would not be feasible for people to travel long distances for such short meetings • Allows people to work from home (teleworking) and still 'meet up'/ have meetings • Allows staff to attend meeting while out of the country /on holiday • Can give you a better visual image of the product • General facial expressions/ body language can be seen over the telephone <p>Disadvantages (up to 3)</p> <ul style="list-style-type: none"> • COST: The cost of <u>specialist/dedicated</u> videoconferencing equipment is expensive to buy, install and maintain • QUALITY: Although documents and diagrams in digital form can be passed around, an actual component cannot; e.g. cannot feel the quality of materials. Physical nuances/body language can be missed. • SIGNAL: Poor image and sound quality (Must be qualified) e.g. restricted bandwidth/failure of connection/buffering/lag/image quality is seldom as you would get with a tv, owing to have to compress and decompress signals over the communication link / need for a good/strong/fast internet connection for it to work <p>NOT problems due to time zones NOT work life balance NOT self conscious</p>	5
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8.

2X3

Indicative content

(3 marks for each of 2 techniques)

One mark for describing method (must have method and with who/what) 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 what the system does, problems and future improvements once as they could appear in any of the four techniques.

Interviews with managers / users / workers / customers (not 'people') about the current system (1) - (who could appear later)

- To find out how departments work overall
- Accountants to find out how specific activities such as payroll are performed
- Identify current problems
- Identify what they want the new system to do and what data is processed and what information is produced
- Can supply fine detail on how current system works, individuals may supply extra information not thought of before / expansions / extra information
- Very time consuming but as a lot of people need to be contacted
- Needs skilled interviewers to get the correct information out of people.
- Have different levels of questions to different people

Inspection of records studying the paper based information / electronic logs (produced by the company at the moment) (1) - (what could appear later)

- To see what information is held at present and how
- To see how communications between different departments takes place now
- To identify any problems or faults in procedures
- e.g. organizational charts, job descriptions training aids and guides, looking at existing files standard letter

Questionnaires which are given out to managers / users / workers / customers to gather information on the company (1) - - (who could appear later)

- Analysts do not waste time with face to face conversations and can stick to the important points without digressing / Quicker to get a lot of data
- The questionnaires can be done without the analyst being there and workers can take their time over their answers,
- They can state how they want the new system to work
- Feasibility of when the recipient can answer the questions
- Workers however may misinterpret the meaning of the questions and give misleading answers/ may not be truthful
- Problem is that people forget to fill them in and hence an incomplete picture.
- Response rate from posted surveys is often poor.
- Cost involved in hiring people to ask others to fill in questionnaires
- Economical to reproduce and distribute.
- Questionnaires must be well designed to obtain the necessary detail.
- Audit of employee skills to identify future training needs
- Allows quick statistical analysis of responses / Quantitative analysis

9.	<p>Description or a clear example (Must relate to the use of ICT) or expansion of any 5 of the following areas: – List gets 1 mark</p> <ul style="list-style-type: none"> • Responsibilities - (what they can do and can't do) • Respecting rights of others • Abiding by current legislation • Protecting hardware and software from malicious damage • Complying with licensing agreements • Authorisation – what parts of the system they can use • Permissions on data access • Security defining rules about password disclosure, data transfer rules • Not using equipment/software for personal use -- and personal use of emails and the Internet 	5
10.	<p>All three of the following methods: One mark for naming, one mark for description and one mark for example x 3</p> <p>Perfective maintenance (1) – improving the performance of the <u>software</u> (1). Examples: 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>Corrective maintenance (1) – bugs in the software which were not discovered during testing may need correcting (1). Example: 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>Adaptive maintenance (1) – software may need to be changed owing to the changing needs of the business or organisation (1). Example: 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 (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>	3x3

11.	One mark for discussion of each factor and one for each further explanation/example saying how a company carries out each one x5		5x2
	Screening potential employees	Ensure staff are monitored Fit employee to the task CRB checks	
	Routines for distributing updated virus information and virus scanning procedures	Ensuring virus signatures are <u>updated</u> daily and distributed around the network when a station logs in. Establish firewalls/ proxy-servers	
	Define procedures for use of removable media, personal backup procedures	How often done, have they got to use special machines, etc encryption of data / memory stick	
	Establish security rights for updating web pages	Who/what /when	
	Establish a disaster recovery programme	Who does what and when, including checking the standby equipment Backup <u>plans</u> , i.e. how often NOT RISKS ANALYSIS	
	Set up auditing procedures (Audit trails) to detect misuse	Who/what /when Contiguous investigation of regularities Query any transaction out of the ordinary	
	Logon on procedures / User id's and passwords / set up user accounts (expansion would be to do with <u>rules</u> for passwords)	Allocating access rights, etc Change regularly Don't write it down Use upper and lower case mix, etc	
	Call back procedures for remote access	Who/what/when or why	
	Establish procedures for training staff	Who/what/when or why	
	<p>Accept any reasonable example or expansion such as who or what or when or how.</p> <p>Note This topic is about establishing procedures. The question is all about the administrative procedures that organisations can put in place to minimise or prevent the threats, which is why we expect answers about updating virus checkers, etc, NOT running virus checks. NOT making sure backups are made, kept offsite, in fireproof boxes, etc, - It is about planning a backup strategy to avoid future problems. NOT establishing a code of conduct</p>		

12	<p>6-8 marks Candidates give a clear, coherent answer fully and accurately describing 6-8 factors or 4 well argued. They use appropriate terminology and accurate spelling, punctuation and grammar.</p> <p>4-5 marks Candidates briefly describe 4-5 factors used or 2-3 well argued, but responses lack clarity. There are a few errors in spelling, punctuation and grammar.</p> <p>1-3 marks Candidates simply list factors or give a brief description of 1-3 or one well argued. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.</p> <p>0 marks No appropriate response.</p> <p>Any eight valid points A well-argued point or detailed example can gain a further mark. If list of four points max 1 mark. If list of seven points max 2 marks. Maximum two marks for repetition of same point Do not give a rehash of questions</p> <p>(See some sample answers at end of answers to this question)</p>		8											
	<table border="1"> <thead> <tr> <th data-bbox="142 683 381 734">FACTOR</th> <th data-bbox="381 683 641 734">POINTS</th> <th data-bbox="641 683 1465 734">Possible extensions</th> </tr> </thead> <tbody> <tr> <td data-bbox="142 734 381 846">Ownership</td> <td data-bbox="381 734 641 846">Who owns the internet</td> <td data-bbox="641 734 1465 846"> <ul style="list-style-type: none"> Because of the increased commercial value of activities on the internet will a few media giants take control and effectively determine content? </td> </tr> <tr> <td data-bbox="142 846 381 1451"></td> <td data-bbox="381 846 641 1451">Intellectual property rights- Ownership rights to data.</td> <td data-bbox="641 846 1465 1451"> <ul style="list-style-type: none"> If you put a joke on the Internet do you own it?/If you see a joke on the Internet can you sell that joke to a professional comedian? 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? Do the Copyright Laws of one country apply to another country?/ The law of individual countries is beginning to address some of the legal issues such as intellectual property rights on the Internet but laws only apply to the country which passed them. International laws may go some way to address misuse of the Internet but this is still a long way off./The growth and exchange of ideas on the Internet has led to many legal disputes and lack of legal clarity as to one's intellectual property rights. </td> </tr> <tr> <td data-bbox="142 1451 381 2056">Control</td> <td data-bbox="381 1451 641 2056"> <p>Lack of policing</p> <p>Censorship</p> </td> <td data-bbox="641 1451 1465 2056"> <ul style="list-style-type: none"> The lack of 'policing' of the Internet also means that the information is not monitored. Illegal downloading of music / films / action starting to be taken to prosecute. In the light of the increase in Internet crime, security scares and increased terrorist activity should the security services be allowed to monitor all Internet traffic. There is little control over the content of the material on the Internet, although some governments (China/Burma/North Korea) have started to control what can be seen. Freedom of speech issues Some organisations and countries create blacklist. Some ISPs ban use of torrent sites </td> </tr> </tbody> </table>	FACTOR	POINTS	Possible extensions	Ownership	Who owns the internet	<ul style="list-style-type: none"> Because of the increased commercial value of activities on the internet will a few media giants take control and effectively determine content? 		Intellectual property rights- Ownership rights to data.	<ul style="list-style-type: none"> If you put a joke on the Internet do you own it?/If you see a joke on the Internet can you sell that joke to a professional comedian? 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? Do the Copyright Laws of one country apply to another country?/ The law of individual countries is beginning to address some of the legal issues such as intellectual property rights on the Internet but laws only apply to the country which passed them. International laws may go some way to address misuse of the Internet but this is still a long way off./The growth and exchange of ideas on the Internet has led to many legal disputes and lack of legal clarity as to one's intellectual property rights. 	Control	<p>Lack of policing</p> <p>Censorship</p>	<ul style="list-style-type: none"> The lack of 'policing' of the Internet also means that the information is not monitored. Illegal downloading of music / films / action starting to be taken to prosecute. In the light of the increase in Internet crime, security scares and increased terrorist activity should the security services be allowed to monitor all Internet traffic. There is little control over the content of the material on the Internet, although some governments (China/Burma/North Korea) have started to control what can be seen. Freedom of speech issues Some organisations and countries create blacklist. Some ISPs ban use of torrent sites 	
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		<p>Hacking</p> <p>Privacy</p> <p>Illicit material</p> <p>Incitement to violence</p>	<ul style="list-style-type: none"> • There is also no control over the people who can access the material on the Internet. • It is relatively easy to capture internet traffic. • Using someone’s wireless Internet connection without permission. • 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. • Is censorship an invasion of privacy by governments? • Do we have the right to the privacy of our emails and data files? • Do we have the right to encrypt our data? • Privacy issues – social networking sites, e-commerce sites, Internet service provider records, e-mail monitoring at work, etc., all erode a user’s privacy. • Tagging issues- People might see your data /Anyone could see your data you don’t wish to • Examples in newspapers of people being refused employment, sacked because their social networking sites show them engaging in ‘questionable behaviour’ • Concerns about the level of safeguarding within social networking sites, as there is no real way of checking who you say you are./Information can also be used for identity theft • Some people will say that this is a valid use of freely available information; • 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. • But what if it is a teacher? And it is corrupting the attitudes of their pupils. • People do not read their terms and conditions • Apply to have private material removed • There are a lot of pornographic images/videos on the Internet. • There are laws covering the production and distribution of this material but as much of this material comes from other countries, where the material is perfectly legal, there is not much that can be done to stop it. • 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. • Encouraging rioting/revolution • Bomb making sites • Discrimination of ethnic/minority groups • Violent videos 	
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		<p>Misuse of Social media</p>	<ul style="list-style-type: none"> • Increased risk of stalking / Mobile phone stalking/grooming / paedophiles • Cyber bullying – in chat rooms, by e-mail, in blogs, by text message is a problem especially for the young. • Using e-mail to give bad news (e.g. redundancy, demotion, firing, etc.) when explaining face to- face would have been better. • Deliberately setting up websites containing incorrect or inflammatory information / suicide sites • Spreading rumours – it is easy to spread rumours using the Internet. You only have to tell a few people in a chat room and the rumour will soon spread. / Spreading lies or malicious rumours.- Trolling • Normally, if someone started a rumour that was untrue and it caused another person distress, then the person starting the rumour could be sued./ When rumours are started over the Internet it is difficult to identify the person responsible. • Using photo editing software to distort reality and you can no longer believe what you see in video, TV, newspapers, magazines and on websites. 	
		<p>Control mechanisms</p>	<ul style="list-style-type: none"> • The main worry adults have is that young children could accidentally access this material. • This means that unless special software (net nanny/ blocking) is used, children can easily gain access to pornographic or violent images /You can set your security settings high • Even with a software filter it is hard to be completely sure material is excluded. • If a site is banned it could make it more popular. • Throttling back internet access • Some ISPs ban use of torrent sites (BUT not twice) 	
		<p>Accuracy</p>	<ul style="list-style-type: none"> • Information is not checked to make sure that it is accurate. • It is therefore up to the users of the Internet to check the material's accuracy. • Plagiarism – copying material without attributing or referencing the source of the information. This could also involve using websites which sell essays or coursework. • What about plagiarism – if you get thrown out of university because you copied an essay of the Internet • Can you sue someone who sells you an essay which is full of factual errors? • Some web sites giving medical advice have been known to give wrong information but they are not held liable. • Magazines can write untrue stories on their websites. • Individuals can spread malicious rumours about people in work related emails and publications. (If not given in misuse of social media; must have a different focus.) 	

Credit any reasonable answer

Sample answers

Censorship

No-one owns the Internet. It is international. Material which would be illegal if published in hard copy form is freely available on the Internet e.g. racist propaganda, bomb making instructions, pornography. (1) Some say the Internet should be censored but **who will do the censoring and how can centralised control be implemented.** (1) If you ban sites will they become more appealing so people will search for them more avidly.

MAX 2 marks for same point

Accuracy

There is no guarantee that any information on the Internet is accurate or true. (1) Some web sites giving medical advice have been known to give wrong information but they are not held liable. (1) Magazines can write untrue stories.

MAX 2 marks for same point

Privacy

It is relatively easy to capture internet traffic. (1) Do we have the right to the privacy of our emails and data files? (1)

Do we have the right to encrypt our data?

MAX 2 marks for same point

13.	<p>Answers must be sentences and not a list. Consequences must match threats. List of consequences 1 mark. List of threats 1 mark.</p> <p>Note: Hacking and viruses are not a threat in themselves. Inserting a virus to deliberately destroy data is sabotage. Hacking to take data is theft.</p> <p>Must have three different consequences for customers or company. No mark for prevention</p>		9
	<p>Threat</p> <p>Terrorism</p> <p>Criminal vandalism/sabotage</p> <p>Theft by Hacker/employee (White collar crime)</p> <p>Natural disasters</p> <p>Accidental altering of data</p> <p>Theft of data</p> <p>Fire</p>	<p>Example</p> <p>Cyber attacks to slow down or prevent online services</p> <p>Attacks on firewalls by viruses to destroy data</p> <p>Deliberate destruction of the physical data</p> <p>Hacking into data to steal company private details Or copying company records onto disc and selling it to rivals / and misuse it for own purpose</p> <p>Floods, earthquakes</p> <p>Overwriting files: accidental deletion of files</p> <p>Stealing storage media containing data</p> <p>Electrical fire in server room</p>	<p>Consequence (could be interchangeable)</p> <p>Loss of reputation</p> <p>Loss of business and income</p> <p>Legal action</p> <p>Costs of recovering data</p> <p>Legal action</p> <p>Loss of business and income Bankruptcy</p> <p>Cost of new hardware</p>

14.	<p>1 mark for factor and second mark for good example or expansion x4</p> <p>Accuracy and relevancy of the data</p> <ul style="list-style-type: none"> • The data used from the transaction systems that supply data to the management system must be accurate. • Avoid information overload by not producing any data that is not needed as this can waste time and make the information harder to use. <p>Flexibility of the system</p> <ul style="list-style-type: none"> • Managers of different sections have different requirements and the MIS must be able to cope with this. • Managers of different parts of the business such as marketing and finance have vastly different needs. • Allows individual project planning. • Managers can set up their own queries quickly. <p>Providing data/information in an appropriate format (form)</p> <ul style="list-style-type: none"> • Managers will need the data presented in the easiest form for them to interpret; some will want it in tabular form and some in graphical. <p>Accessible to a wide range of users</p> <ul style="list-style-type: none"> • Can be used by managers who have a range of ICT skills and knowledge. <p>Give information when required</p> <ul style="list-style-type: none"> • Timing is critical as there is no point in giving good information after the date it is needed for. 	4x2
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18.

Benefits (any 2)

- If data lost on central site it could be reduplicated from local site.
- Allows sharing of the data and the results of processing the data.
- New locations (hotels) can be added to the database without the need for rewriting the entire database.
- Faster response to user queries of the database.
- Non-dependence on one central huge store of data.
- Easy to backup and copy data from one server to another.
- If one server fails then the other servers can be used.
- Reduces network traffic as local queries can be performed using the data on the hotel's server.

Problem	Solution
Problem hacking into local data Computers are located on a number of hotel sites so it is important to ensure only authorised users can access the system.	Can be achieved by using <u>passwords</u> for authorised users, and regularly updating the passwords to increase the levels of security. NOT just username and password -- needs something extra
Hacking into/intercepting transmitted data : Data regularly transmitted between different hotel sites and so data may become corrupt or be tampered with during transmission.	<u>Checks</u> are put in place in order to ensure that the data that arrives is both secure and accurate. <u>Encryption</u> of transmitted data.
Viruses <u>if linked to a local database</u>	Use a <u>firewall and anti-virus software</u>

- NOT** general problems to do with secure access to computer rooms / natural disasters
- NOT** audit logs
- NOT** firewalls for the protection of transmitted data

2

4



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