# GCE

## Information & Communication Technology

Advanced GCE **A2 7838**

Advanced Subsidiary GCE **AS 3838**

# Mark Scheme for the Components

# June 2008

# CONTENTS

## Advanced GCE Information and Communication Technology (7838)

## Advanced Subsidiary GCE Information and Communication Technology (3838)

## MARK SCHEMES ON THE UNITS

# The Awarding of Marks for Written Communication

Marks are awarded for the use of accurate spelling, punctuation and grammar according to the following criteria.

**Marks**

| | | |
|---|---|---|
| **Below Threshold Performance** | | **0** |
| **Threshold performance** | Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately. | **1** |
| **Intermediate performance** | Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms with facility. | **2–3** |
| **High performance** | Candidates spell, punctuate and use the rules of grammar with almost faultless accuracy, deploying a range of grammatical constructions; they use a wide range of specialist terms adeptly and with precision. | **4** |

The marks will be awarded on an impression basis and will reflect the candidate's performance in the paper as a whole.

**Rule of thumb**

0      **Award only in rare circumstances eg no written work or minimal, which is not in sentences and is spelt incorrectly, without use of appropriate technical terms.**

0      Questions answered using statements or single words only.

0      Candidates use some sentences and some technical words. Some errors in grammar and spelling.

0      Candidates use sentences correctly, with few errors in grammar. Some technical words used appropriately and with limited spelling errors.

0      Almost perfect use of grammar, technical vocabulary and spelling.
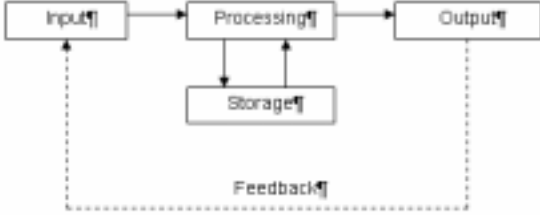
The 'norm' will probably be 3 marks. However, do not be afraid to award 4 marks if appropriate.

# 2512 ICT Information, Systems and Communications

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| 1 | (a) | | Define the term data.<br><br>Two from:<br><br>• Numbers and letters/alphanumeric characters **(1)**<br>• Without meaning **(1)**<br>• Raw facts and figures **(1)**<br>• Unprocessed **(1)** | **[2]** | There are two available marks, one mark for each statement.<br><br>Allow alternative words as appropriate (eg string for numbers and letters)<br><br>Do not allow examples |
| | | | | | |
| | (b) | | Identify **two** different methods of representing information.<br><br>Two from:<br><br>• text/writing/books/symbols/table **(1)**<br>• pictures/graphics/images/drawings/symbols/graph **(1)**<br>• sound **(1)**<br>• video **(1)**<br>• light **(1)** | **[2]** | There are two marks. The methods must be different – only one mark allowed per line.<br><br>Only award one mark for symbols, - be aware which line it is on and do not award mark for same line.<br><br>If they give a description and it is understandable from the description what is meant then award the mark. |
| | | | | | |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| | (c) | | State what is meant by the terms semantic and syntactic. | | If they give an example which indicates meaning then allow the mark. |
| | | | (i) Semantic – meaning **(1)** | **[1]** | |
| | | | (ii) Syntactic – rules **(1)** | **[1]** | If they give an example which indicates rules then allow the mark. |
| | | | | | |
| 2 | (a) | (i) | Give **two** methods of verification.<br><br>Two from:<br>• double entry **(1)**<br>• manually (checked) / proof reading **(1)**<br>• looked up **(1)** | **[2]** | Two marks for two different methods.<br>Must be method not definition.<br>Allow descriptions if it is obvious what is meant.<br><br>**Not** computer checking |
| | | | | | |
| | | (ii) | Describe why verification cannot ensure that the data is correct.<br><br>Two from:<br>• if the source is incorrect **(1)** entered data will be incorrect **(1)**<br>• if double entry same mistake made **(1)** computer will not pick up error **(1)** | **[2]** | There are two marks – they are paired – do **not** allow cross over of the pairs.<br><br>Must imply **same** mistake twice on entry |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| **(b)** | **(i)** | | Identify **two** costs that the riding school will incur when using the computer to produce the leaflet.<br><br>Two from, allow examples (NOT proprietary software names and NOT computer):<br><br>• hardware /printer /scanner **(1)**<br><br>• software /word processing /graphics software **(1)**<br><br>• consumables /ink /paper /electricity **(1)**<br><br>• manpower /designer /trainer for software. **(1)** | **[2]** | Two identified, one from each line. There is a mark for the generic cost or a specific example of the cost.<br><br>These are examples, if sensible allow other examples for each.<br><br>**Not** printing costs, too vague<br><br>"Paying someone" = manpower |
| | | | | | |
| | **(ii)** | | The production of the leaflet follows the stages of input, process, output, storage and feedback.<br><br>Draw a diagram to illustrate how the stages are related.<br><br>If no diagram **max 1 mark** but must include all stages and description of all data flows.<br><br>• **1 mark** for Input, Processing Output, Storage (in correct order) linked together<br>• **1 mark** for feedback linking Output to Input<br>• **1 mark** for correct direction of flow (arrows)<br>•  or other appropriate terms for input/processing/ output/ storage/feedback. | | An unlabelled diagram will score no marks.<br><br>If it is not a diagram it will score no marks.<br><br>First mark doesn't require arrows and doesn't need to be in a straight line as long as they are sequential.<br><br>Second mark does not need label feedback<br><br>Check labels carefully |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| | | |  | **[3]** | Note, other terms which are reasonable are acceptable in place. |
| **3** | | | Explain why the company needs both types of reporting systems.<br><br>Four from:<br><br>•    not all reports need deductions **(1)**<br><br>•    may just want presentation of information **(1)**<br><br>•    technical skill of employees **(1)** not all can use reporting systems **(1)**<br><br>•    not enough data may be available **(1)** to make deduction. **(1)**<br><br>•    standard reports based on historical data **(1)**<br><br>•    rules and probabilities predicts future data **(1)** | **[4]** | Where there are two marks on a line, the second is dependent on the first.<br><br>The candidate may not write them in order – this is acceptable and the marks can be awarded but the dependence must exist. |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| 4 | (a) | | Identify **two** hardware upgrades that would improve the performance of the computers. For each upgrade, describe why it will improve performance.<br><br>Two from, **two marks each**, examples:<br><br>• overclocking processor **(1)** increase number of instructions per second **(1)**<br><br>• larger hard drive **(1)** store more data/swap file **(1)**<br><br>• faster hard drive **(1)** retrieve data faster so less delay **(1)**<br><br>• more RAM **(1)** more data stored with faster access **(1)**<br><br>• motherboard with faster bus **(1)** speed of transfer of data increased **(1)**<br><br>• additional/faster processor**(1)**process more data in same amount of time**(1)** | **[4]** | These are examples. The upgrade is worth one mark to a maximum of two identified.<br><br>**Not** New without qualification<br><br>The second mark for each upgrade is **Why/How** it improves performance.<br><br>Examples are given here – there are other correct answers. |
| | | | | | |
| | (b) | | The internet café has a number of physically disabled customers.<br>Identify **two** input devices suitable for computer users who do not have the use of their arms.<br><br>Two from, examples:<br><br>• head pointer **(1)**<br><br>• puff suck switch **(1)**<br><br>• microphone **(1)**<br><br>• foot mouse **(1)**<br><br>• eye typer **(1)** | **[2]** | There are two marks here – this is not an exclusive list but any answer given MUST be for a person who has no arms and for INPUT.<br><br>Allow other terms if clear eg mouth stick, blow suck and tongue joystick |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| (c) | (i) | | What is the difference between a back-up and an archive of data?<br><br>Two from:<br><br>• back-up is copying data **(1)**<br><br>• archive is moving data **(1)**<br><br>• archive is offline **(1)** | **[2]** | The key difference is one is copying and the other is moving. They must specify which is which to get the marks. |
| | | | | | |
| | (ii) | | Why is it necessary to back-up data?<br><br>One from, examples:<br><br>• so if a mistake is made the original can be retrieved **(1)**<br><br>• if a file is deleted it can be replaced **(1)**<br><br>• in case original file is lost / corrupted **(1)** | **[1]** | These are examples.<br><br>This is worth one mark – any valid example can be given a mark. Viruses need expansion – if you have a virus you need to retrieve from before you were infected. |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| 5 | (a) | (i) | Identify characteristics of a real-time operating system.<br><br>Two from:<br><br>• react fast enough/no time delay **(1)**<br><br>• to influence events **(1)**<br><br>• data reflects real world data **(1)**<br><br>• immediate updates of data **(1)** | **[2]** | Any two of these to gain marks. Examples are acceptable but the marks are awarded for the characteristics listed within the example. |
| | | | | | |
| | | (ii) | Identify characteristics of a distributed processing operating system.<br><br>Two from:<br><br>• several linked computers **(1)**<br><br>• each perform a part of the processing **(1)**<br><br>• results returned [to control computer] to be assembled **(1)** | **[2]** | Any two of these to gain marks. Examples are acceptable but the marks are awarded for the characteristics listed within the example. |
| | | | | | |
| | (b) | (i) | Describe a natural language user interface.<br><br>Two from:<br><br>• can be typed **(1)**<br><br>• can be spoken/voice recognised **(1)**<br><br>• use of reserved words **(1)** | **[2]** | Any two from, allow a description of an actual natural language user interface for both marks.<br><br>**Not** written |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| | | (ii) | Describe a menu user interface.<br><br>Two from:<br><br>•    context sensitive **(1)**<br><br>•    cascading/hierarchal **(1)**<br><br>•    pop up or drop down **(1)**<br><br>•    greyed out unavailable options **(1)**<br><br>•    series of options **(1)**<br><br>•    closed list **(1)** | **[2]** | Any two from, allow a description of an actual menu user interface for both marks. |
| | | | | | |
| | (c) | | Identify **two** utilities that could be included in system software.<br><br>Two from, examples:<br><br>•    compression tools **(1)**<br><br>•    file exporters **(1)**<br><br>•    defragmentation **(1)**<br><br>•    anti-virus **(1)**<br><br>•    text editor **(1)** | **[2]** | These are examples – there are others. Do not award for proprietary software names (including ZIP).<br><br>Allow descriptions if clear what the utility does.<br><br>**Not** drivers or configuration software |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| 6 | (a) | | For the following set of data give an appropriate data type.<br><br>• First name          text/alphanumeric/string/character **(1)**<br><br>• New customer?     boolean/YN **(1)**<br><br>• Telephone number   text/alphanumeric/string/character **(1)** | **[3]** | If long list given mark first answer only<br><br>Allow alternatives for first name.<br><br>Allow true/false, 0/1, yes/no<br><br>For telephone number do not accept numeric. |
| | | | | | |
| | (b) | | The hairdresser could use a relational database. Give one other type of database he could use.<br><br>One from:<br>• flat [file] **(1)**<br><br>• hierarchal/tree **(1)** | **[1]** | Allow use of diagrams instead of names.<br><br>**Not** distributed |
| | | | | | |
| | (c) | | Describe the difference between user and supervisor modes.<br>Two from:<br>• user – basic access only/restricted **(1)**<br>• supervisor – additional rights **(1)** | **[2]** | Two marks, the focus is on the difference between them – limited right on user as opposed to supervisor.<br>Allow examples of different rights. |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | **(d)** | | Describe how customer data can be accessed using indexed sequential access with at least **two** sets of indexes.<br><br>Four from, allow example:<br><br>• identify what to search for/search for SMITH **(1)**<br><br>• search first index/search for letter S **(1)**<br><br>• find location of second index **(1)**<br><br>• search second index/search for SM **(1)**<br><br>• find location of data **(1)**<br><br>• search data/go through until SMITH found **(1)**<br><br>• searches performed sequentially **(1)**<br><br>• if gone past where data should be – not present **(1)** | **[4]** | These must be four points IN order - if they miss a step out, do not penalise as long as the sequence they give is correct and works.<br><br>Allow a diagrammatic description. |
| | | | | | |
| **7** | **(a)** | | Identify **two** characteristics of a LAN.<br>Two from:<br>• geographically local **(1)**<br><br>• direct connection possible **(1)**<br><br>• cables/wireless owned by school **(1)**<br><br>• share resources / share printers/share hardware **(1)** | **[2]** | There are two identification marks.<br>Geographically local = same site (NOT local area)<br>Geographically local must be quantified |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| | **(b)** | | Why is communication needed between computers? <br><br> One from, allow examples: <br> •     to share files **(1)** <br> •     to transfer data **(1)** <br> •     to send emails **(1)** | **[1]** | Allow the mark for any valid example of something that a computer can do when it is networked. |
| | | | | | |
| | **(c)** | | Describe how analogue signals are converted to digital signals. <br><br> •     signal sampled **(1)** <br> •     read as a voltage level **(1)** <br> •     voltage level converted to binary **(1)** | **[3]** | These steps can be written diagrammatically and awarded marks. <br><br> No marks for input or output of signal |
| | | | | | |
| | **(d)** | | Define bandwidth. <br><br> One from: <br> •     volume of data over time **(1)** <br> •     capacity of a communication channel **(1)** <br> •     the range of frequencies that can pass over a given transmission channel **(1)** | **[1]** | Any one from the list given – allow alternative phrases or diagram. <br><br> Note it is volume of data – not speed against time. <br><br> Must be implication of time |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| 8 | (a) | | Describe **three** disadvantages, to the users, of networking the computers together<br><br>Three from, **two marks each**:<br><br>• processing power can be used by other people slowing the computer **(1)** affecting the amount of work the user can do **(1)**<br><br>• resources may not be available such as scanner and printer **(1)** so the user cannot complete the tasks when they want to **(1)**<br><br>• updates from main server may appear and interfere **(1)** stopping the user performing their work **(1)**<br><br>• company/NM can monitor use **(1)** loss of respect / privacy for user **(1)** | **[6]** | These **MUST** be to the **user**, there are two marks each, one for the identification and one for the disadvantage.<br><br>Examples only are given – allow any sensible response. |
| | | | | | |
| | (b) | | Explain the advantages of using a bulletin board instead of email for the discussions.<br><br>Three from examples, **two marks each**:<br><br>• bulletin boards show threads of discussions **(1)** emails might not be collected together in a discussion / difficult to follow discussion **(1)**<br><br>• multiple people can comment on a discussion board and all can see it **(1)** only the person receiving the emails can see all the replies **(1)**<br><br>• Parts of the discussion can be private and restricted to individuals **(1)** all individuals who receive emails can see the discussion **(1)**<br><br>• Discussion boards can collect groups of attachments together for a specific topic **(1)** with email the attachments are linked to an email **(1)** | **[6]** | These are examples. The marks are for the advantages of a given feature from bulletin board over email. They need, for both marks to give the feature, give the advantage in the bulletin board and why it is an advantage – they can give the negative side of email and still get the mark. |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| 9 | (a) | | Identify **four** of the principles of the DPA.<br><br>Four from, data must be<br><br>1    fairly and lawfully processed **(1)**<br><br>2    processed for limited purposes **(1)**<br><br>3    adequate, relevant and not excessive **(1)**<br><br>4    accurate/up to date **(1)**<br><br>5    not kept for longer than is necessary **(1)**<br><br>6    processed in line with your rights **(1)**<br><br>7    secure **(1)**<br><br>8    not transferred to countries without adequate protection **(1)** | **[4]** | They cannot mix and match. i.e if they say fairly processed, they can have the mark. If they also give lawfully processed they cannot have the mark again – one mark per principle. Principle 8 must not be awarded without adequate protection. |
| | | | | | |
| | (b) | | Identify different solutions for the following health problems:<br><br>(i)    carpal tunnel syndrome: one from, examples wrist rest/5 minute break every hour/ergonomic keyboard/adjustable chair **(1)** | **[1]** | The same solution cannot be given for both.  Allow appropriate solution.<br><br>**NOT** regular breaks, must be quantified. |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| | | (ii) | fatigue: one from, examples 5 minute break every hour/appropriate lighting **(1)** | | The same solution cannot be given for both. Scoris will show you both answers to allow you to mark this. |
| | | | | | Allow any other appropriate solution. |
| | | | | **[1]** | **NOT** regular breaks, must be quantified. |
| | | | | | |
| | **(c)** | | Identify **two** statements that should be in a code of conduct.<br>Two from, examples:<br>• contribute to society and human well-being **(1)**<br>• avoid harm to others **(1)**<br>• be honest and trustworthy **(1)**<br>• be fair and take action not to discriminate **(1)**<br>• honour property rights including copyrights and patent **(1)**<br>• give proper credit for intellectual property **(1)**<br>• respect the privacy of others **(1)**<br>• honour confidentiality **(1)** | **[2]** | These are examples, allow any reasonable statement that would appear in a code of conduct.<br><br>Must be a statement not generic advice |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | | | |
| **10** | | | Discuss the impact on individuals of the use of mobile communications devices. | | |
| | | | | | |
| | | | **High 8-11** | | There is an additional mark which can be awarded at any level for a conclusion. This must be a reasoned conclusion. |
| | | | The candidate is able to discuss clearly the impacts **and** consequences. | | |
| | | | Candidates will show a detailed level of understanding and be able to explain in detail both the impacts **and** consequences of more than one position. | | The essay is more than a list of points – it should be a detailed and comprehensive discussion demonstrating an awareness of the issues, the impact of the issues and the consequences of those impacts. The consequences and impacts must be related and should not be flippant or superficial. |
| | | | Logical arguments are produced to demonstrate a clear understanding of the question. | | |
| | | | Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion. | | |
| | | | There may be a reasoned conclusion. | | |
| | | | Subject specific terminology will be used accurately and appropriately. | | |
| | | | **Medium 4-7** | | |
| | | | The candidate is able to explain superficially the impact(s) **and** consequence(s). | | |
| | | | Candidates will show a limited understanding and be able to explain at least one impact **and** one consequence of a given position, however explanations may lack specific detail and/or concentrate on either an impact of consequence with a limited explanation of the other. | | |
| | | | The explanation, though informed, may stray from the point but specific knowledge will be evident. | | |
| | | | Some specific terminology will be used. | | |

| Question | | | Mark Scheme | Mark | Additional Guidance |
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| | | | **Low 1-3**<br><br>The candidate is able to describe superficially the impact **or** consequences.<br><br>The information may be poorly expressed and may be in the form of a list of points.<br><br>Subject specific terminology may be limited or missing. | **[11]** | |
| | | | | | |
| | | | | **QWC [4]** | |

**Examples of essays marked as banded response**

| | |
|---|---|
| The discussion may involve the following: | |
| Points may include: <br><br>     Loss of freedom, annoying to other people, possible health risks, criminal activities – theft, social implications. | Point **(impact)** is something that has / could happen to the individual. |
| Expansions may cover: <br><br>     Use of mobile phone to find out where someone is, with children always know where they are, if they are late or missing can be located – putting parents minds at ease, allowing them more freedom to grow up without restrictions. <br><br>     Health risk – using mobile phone when driving, can cause accidents or loss of licence – job problems if driving essential; <br><br>     Use of cameras on mobile devices and instant uploading has meant that news is more personal and up to date, wider variety of sources for news agencies to use and chance to make money by selling it.  Social unacceptability of taking photos without permission. | Expansion **(consequence)** is the effect of that impact on the individual |

# 2514 Practical Applications of ICT

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| 1 | (a) | | **Describe two advantages and one disadvantage of using a word-processing package.** | | Award a maximum of 2 marks for each advantage/disadvantage described. |
| | | | | | The answers can be generic usage of a WP package. |
| | | | **Max 2 for each advantage** | | |
| | | | **Advantages: eg** | | The answers given are examples as there are many advantages and disadvantages. Use the answers given here to judge the level of answers being looked for. |
| | | | The user can keep going back to the document and amending it (1) without the need for re-typing/rewriting the whole document (1) | | |
| | | | Documents can be saved (1) and reused/referred to (1) | | Do NOT award marks for the identification of features. |
| | | | Security/back-up (1) data held in a document will be safer than on paper (1) | | |
| | | | The quality of the final document can be very high (1) software features/spell check/grammar check can be used (1) | | |
| | | | Ability to save in a common file format .txt (1) | | |
| | | | Use of mail merge facility (1) to personalise documents (1) | | |
| | | | **Max 2** | | |
| | | | **Disadvantages: eg** | | |
| | | | If security/back ups are not completed (1) vital documents may be lost (1) Software features/wizards/templates (1) can make all documents look the same (1) | **[6]** | |
| | | | | | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | **(b)** | | **Describe a template**<br><br>**Any 4 from:**<br><br>Standard document with pre-set layouts (1)<br><br>Determines the basic structure and setting of a document (1)<br><br>Formatting defined (1) font size/colour/style (1)<br><br>Page formatting (1) margins/size/layout (1)<br><br>Standard text defined (1) eg date/time/headers/footers (1)<br><br>Position of standard graphics (1) eg BBT logo (1) | **[4]** | The answers to this question MUST relate to the use of templates not style sheets when creating a document. Answers should not be credited marks for the use of templates for creating anything else eg web pages. |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| 2 | (a) | | **Explain one advantage and one disadvantage of using an image of a bird table from an image library.** | | The focus of this question is the use of images from an image library. |
| | | | **Advantage Max 2** | | Award up to 2 marks for the advantage and up to 2 marks for the disadvantage. |
| | | | Images are readily available (1) | | |
| | | | Do not have to create from scratch (1) | | |
| | | | Images do not have to be designed (1) | | Candidates should provide an identification of the advantage/disadvantage for the 1st mark before a 2nd can be awarded. |
| | | | Image can be used immediately (1) | | |
| | | | Designer/graphic artist does not have to be employed (1st) saves money (1) | | |
| | | | | | The 2nd marking points can be, if they are appropriate, matched with any of the 1st points. |
| | | | **Disadvantage Max 2** | | |
| | | | Image will not be unique (1) other companies may be associated with the image already (1) | | |
| | | | May be unable to find an appropriate image (1) time/money may be wasted looking for image (1) | | |
| | | | Image may be of poor quality (1) BBT may be unable to change/enhance the image (1) | | |
| | | | Images may be copyrighted (1) may have to pay/seek permission to use image (1) | [4] | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | (b) | | **Describe how the following features could be used to modify the image.** | | Each feature is worth Max 2 marks. |
| | | | **Fill** | | The focus of the question is on how these features can be used to modify the image taken from the image library. |
| | | | Fills an enclosed area (1) of an image or part of an image with colour (1) | | |
| | | | Colour can be constant (1) or can have an effect (1) | | Do NOT credit answers that explain the software specific process of using these features. |
| | | | **Soften** | | |
| | | | Reduces the harshness of the image (1) | | |
| | | | Can blur the edges of an image (1) | | |
| | | | Reduce contrast of adjacent pixels (1) | | |
| | | | **Sharpen** | | |
| | | | Used to define the edges in an image (1) | | |
| | | | Corrects blurring (1) introduced when scanned (1) or photographs (1) | | |
| | | | Increase contrast of adjacent pixels (1) | **[6]** | |

| Question | | Answer | Mark | Exemplification |
|---|---|---|---|---|
| | | | | |
| | (c) | **Explain how grouping the text could be used when modifying the logo.** | | The image is that taken from the image library with text having been added to it to create the logo for BBT. |
| | | **Any 4 from: eg** | | |
| | | Text can be placed in frames (1) grouping can make all frames behave as one (1) | | The focus of the answers must be on the grouping of the text that has been added. |
| | | Frames, when grouped can be moved (1) resized (1) | | |
| | | Grouping preserves the arrangement (1) | | |
| | | Changing colour to all text within a frame (1) | | |
| | | All text can be rotated at once (1) | **[4]** | |
| | | | | |
| | (d) | **Explain why different file types are needed.** | | The focus of the question is the file types of the **text** and **image** used in the logo. |
| | | **Any 4 from: eg** | | |
| | | The user knows the file type (1) so can open the correct software (1) | | Do not award marks to answers that explain how the files can be combined. |
| | | An application program recognises the file type (1) and can interpret the data (1) | | |
| | | Reduces non-usable file types (1) | | |
| | | Is impossible for one file type to be used for all types of data (1) | | |
| | | Can search by file type (1) different file types have different extensions (1) eg JPEG/DOC (1) | **[4]** | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| 3 | (a) | (i) | **The presentation can be produced on overhead transparencies (OHTs) or as a slideshow using presentation software.**<br><br>**Describe two advantages of using OHTs for this presentation**<br><br>**Max 4 from:**<br>Only need OHP (1) no computer (1)<br>OHTs more reliable (1) less to go wrong (1)<br>Do not need to be confident with software (1)<br>Simple to change slides (1)<br>Can skip/change order of slides (1) without audience noticing (1)<br>Can write on OHTs (1) in response to audience participation (1) | **[4]** | This question is based on the use of OHT's as used in a presentation.<br><br>Candidates need to identify an advantage for 1 mark before a second mark can be awarded for exemplification.<br><br>The presentation is to be given at an exhibition and so answers should be able to be applied to this.<br><br>The focus of part (i) of the question is on the use of OHT's. |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | (ii) | | **Describe two advantages of using presentation software for this presentation**<br><br>**Max 4 from:**<br><br>Can use sound (1) to emphasise a point/maintain interest (1)<br><br>Can use video/animation (1) to emphasise a point/maintain interest (1)<br><br>Can be used as a continuous presentation (1) use automatic slide transition (1)<br><br>Position of presenter (1) can be anywhere in room (1)<br><br>Can use other software (1) returning to presentation with minimum disruption (1)<br><br>No chance of dropping slides (1) getting them out of order (1)<br><br>Handouts can be produced (1) which follow the order of the slide show (1) | **[4]** | Whilst the focus of part (ii) of the question is on the use of presentation software. Do not credit answers that give brand names eg PowerPoint.<br><br>**Any examples given in answers must relate to BBT – not just a vague reference to a company.** |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | (b) | | **Describe one advantage and one disadvantage of using a wizard to create this presentation.** <br><br> **Advantage Max 2:** <br><br> Speed with which an item is created (1) <br><br> Standard formats to choose from (1) <br><br> User-friendly approach (1) e.g. step by step, inexperienced/novice users (1) <br><br> Corporate image can be maintained easily (1) <br><br> Do not need high level of technical ability to create complex presentations (1) <br><br><br> **Disadvantage Max 2:** <br><br> Presentation may look similar to other companies (1) <br><br> Wizard may offer you options you do not want (1) may not include options you do want (1) <br><br> Lacks scope for customisation (1) <br><br> May not see the presentation till the end (1) | **[4]** | The answers, to be awarded any marks, must relate to the use of a wizard for creating a presentation. <br><br> Award up to 2 marks for the advantage and the disadvantage. <br><br> Do not allow marks for advantages which are also repeated as disadvantages. This would be marked as a R – repeat |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | (c) | | **State three reasons why manual transition is the most suitable transition method for this presentation.**<br><br>**Any 3 from:**<br><br>Managing Director/speaker is giving presentation (1)<br><br>An action from the speaker/the presenter has to interact with the presentation (1) to move onto next/previous slide or skip slide (1 )<br><br>Presentation can be advanced by various methods (1) mouse click/button click/pointer (1)<br><br>Can allow audience participation (1) presentation does not progress until presenter advances (1)<br><br>enables questions/discussions with audience (1) | **[3]** | The answers must relate to manual transition being used to deliver the presentation.<br><br>They can give the negative side of automatic transition and still get the mark. |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| 4 | (a) | | **The spreadsheet interface has been tailored using forms, menus and macros.** | | If candidates simply list points relating to the advantages of tailoring the user interface then a maximum of 3 marks can be awarded. |
| | | | **Explain the advantages, to BBT of tailoring the spreadsheet interface.** | | If advantages are fully explained then there is 1 mark for the identification of the advantage and further marks can be awarded for the explanation given. |
| | | | **For example:** | | The answers must relate to the tailoring of a spreadsheet interface in the context of the question – calculation of the total cost of customers order. The question has identified that forms, menus and macros have been used – candidates need to do more than simply state these to be awarded the 1st marking point. |
| | | | Buttons can be used (1st) to start a process/eg print an invoice (1) saves time of user (1) | | |
| | | | Increased usability of interface (1st) user does not need to perform complicated tasks (1) | | |
| | | | Actions frequently performed (1st) can be carried out using a macro (1) eg totalling of order/adding deliver costs (1) | | |
| | | | Forms can be used to provide data entry tools (1st) eg help/messages/ validation (1) | | |
| | | | Drop-down boxes/option boxes/fill-in boxes (1st) assist on data selection/input (1) | | |
| | | | Menus provide choices available to user (1st) eg pop-up/full-screen/pull-down (1) options not available' greyed out' (1) | | |
| | | | Same user interface can be used on many spreadsheet (1st) user familiarity (1) can use any spreadsheet without additional training (1) | **[6]** | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | **(b)** | | **Describe, giving examples, how form controls can be used to assist the staff to enter data into the spreadsheet.**<br><br>**Any 6 from:**<br><br>Use of buttons (1st) used to make data entry simple (1)<br><br>Validation controls (1st) only valid entries can be used (1)<br><br>Formulas (1st) ensure that invoice totals are correct (1)<br><br>Data from other worksheets/work books (1st) can be imported into the invoice (1)<br><br>Check box (1st) options can be ticked (1)<br><br>Option button (1st) to select options and give values (1)<br><br>Drop down box/combo box (1st) restrict items to be selected (1)<br><br>List box (1st) to give a list of valid options (1)<br><br>Spinners (1st) to change the values incrementally (1) | **[6]** | Candidate need to provide examples of the form controls that can be used as well as a description of how these can be used. The focus of the question is on the staff using a spreadsheet to enter data.<br><br><br>Candidates should be awarded the 1st marking point for the identification of the form control and further marks can be awarded for the explanation given.<br><br><br>Needs further exemplification. If only examples of form controls given. Max 3. |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| **(c)** | | | **Explain the terms rows, columns and worksheets as used in a spreadsheet. Give an example of how each could be used by BBT.** | | Each of the features required can be awarded up to 3 marks. |
| | **(i)** | | **Rows**<br>A range of cells (1) that go across/horizontal a spreadsheet (1)<br>Identified by eg numbers (1) | | 2 of these are available for the description whilst the 3<sup>rd</sup> is available for the example. To be awarded the 3<sup>rd</sup> mark the example given **must** relate to how BBT can use the feature. |
| | | | **Example:**<br>eg used to show different types of bird tables | **[3]** | Accept diagrams fully labelled which illustrate the answer. |
| | **(ii)** | | **Columns**<br>A range of cells (1) that go down/vertical a spreadsheet (1)<br>Identified by eg letters (1) | | Examples should not include references to customers or suppliers – must be in the context of an order |
| | | | **Example:**<br>eg different columns to show different sales over a given time (1) | **[3]** | |
| | **(iii)** | | **Worksheets**<br>All the cells on a sheet (1)<br>A single sheet of rows and columns (1) in a spreadsheet (1)<br>a single sheet in a workbook (1) | | Examples could be written in the description section and/or the other way round |
| | | | **Example:**<br>eg different worksheets for different months/years/suppliers (1) | **[3]** | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| 5 | (a) | | **Explain the benefits of using dynamic data in the new website.** | | If candidates simply list points relating to the benefits of using dynamic data in the website then a maximum of 3 marks can be awarded. |
| | | | Dynamic data can be changed/regularly updated (1) BBT can change data when required (1) | | |
| | | | The shops will be able to interact (1) and see images of the bird table (1) | | If benefits are fully explained then there is 1 mark for the identification and further marks can be awarded for the explanation given. |
| | | | Shops will be able to place orders and see final order cost (1) prices/ delivery charges/VAT can be changed by BBT (1) | | Answers could relate to BBT (**the company**) or the shops (**the customer**) use of the data |
| | | | Information on web site will be up-to-date (1) save frustration if a bird table is withdrawn from sale/new bird tables are introduced (1) | | |
| | | | | **[6]** | |
| | | | | | |
| | (b) | (i) | **Identify two problems that the shops may experience if they type the key words 'bird tables' into the search engine.** | | The focus of this question is on the shops searching for the BBT website. |
| | | | **Any two from, for example:** | | |
| | | | Will find sites that are not Beautiful Bird Tables (1) | | Two problems should be identified, 1 mark for each. |
| | | | Search may find results from all over the world (1) | | |
| | | | Site may not be found (1) | | |
| | | | Many results may be found (1) | | |
| | | | Search may return unrelated sites (1) | **[2]** | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| | | (ii) | **Identify two methods that could be used to improve the results of the search.** | | The methods identified do NOT have to link to the answers given in b(i). |
| | | | **Any two from, for example:** | | |
| | | | Search can be improved by use of the company name/Beautiful Bird Tables (1) | | Two methods need to be identified, 1 mark for each. |
| | | | Need to add '+UK' to find Beautiful Bird Tables based in UK (1) | | The answers must relate to the shops searching for BBT. |
| | | | Use of logical operators (1) | | |
| | | | Use of grouping (1) use of 'advanced search' functions (1) | **[2]** | |
| | | | | | |
| | (c) | | **BBT want to see the trend in sales over a period of one year following the implementation of the website.** | | Mark first answer only |
| | | | Bar/line (1)          Correct answer only (COA) | **[1]** | |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| 6 | (a) | | **Explain two reasons why a database is used to store and handle these records.** **Any 2 from:** Query/search facilities (1) for example: specific customers can be found (1) Production of reports (1) commonly used reports can be programmed into d/b (1) Can be linked to WP (1) use for mail merge (1) Data entry can be validated (1) reduces risk of user error (1) | **[4]** | Candidates need to identify a reason for 1 mark before a second mark can be awarded for exemplification. The question asks for 2 reasons, 2 marks are allocated to each reason given. **Not** – 'to link tables', relationships or forms |
| | | | | | |

|  |  | Question | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
|  | **(b)** |  | **Primary and foreign keys are used in the database. Explain the terms:** |  | These are the definitions of primary and foreign keys. |
|  |  |  | **Max 2 for each** |  | There are 2 marks allocated to each definition. |
|  |  | **(i)** | **Primary Key:** <br> A PK is a <u>unique</u> (field) (1) is used to identify a record/entity (1) which prevents data duplication (1) | **[2]** |  |
|  |  | **(ii)** | **Foreign key** <br> A FK is a field in a table (1) that is the PK of a second table (1) | **[2]** |  |

| Question | | | Answer | Mark | Exemplification |
|---|---|---|---|---|---|
| | | | | | |
| **(c)** | **(i)** | | **State the primary key of the BIRDTABLE entity** | **1** | Correct answers only |
| | | | Stock_ID (1)  (COA) | | |
| | **(ii)** | | **State one foreign key** | **1** | |
| | | | Stock_ID/Shop_ID (1)  (COA) | | |
| | **(iii)** | | **State the relationship between the SHOP and ORDER entities.** | **1** | |
| | | | One SHOP to Many Orders/1:M (1) | | |

                                                                **[86]**

**Quality of written communication**                       **[4]**

                                            **Total**     **[90]**

# 2515 Communications Technology and its Application

**1**   **(a)**   One mark for point, one for expansion eg
- operation of new hardware/software (1) to deal with orders (1)
- updating database (1) on fulfilment of despatches (1)
- dealing with customer enquiries (1) made online/email (1)    **[Max 2]**

  **(b)**   Must be advantage to *bookshop owners*
One mark for point, one for expansion eg
- customers can access shop from beyond local area (1) so wider client base (1)
- orders are received immediately they are placed (1) not reliant on post (1)
- system available 24/7 (1) greater return on fixed overheads (1)    **[Max 2]**

  **(c)**   Must be advantage to *customers*
One mark for point, one for expansion eg
- able to find books more easily (1) through online search/browse tools (1)
- able to use online payment services (1) giving greater flexibility (1)
- faster despatch of orders (1) as they are received instantly (1)
- able to access shop at all times (1) without having to wait for it to open (1)
- do not have to leave home (1) beneficial to disabled users (1)
- make comparisons of prices/stock availability (1) to find the best deal (1)    **[Max 2]**

  **(d)**   Must be disadvantage to *customers*
One mark for point, one for expansion eg
- concern over security of payments (1) due to online fraud issues/lack of human contact (1)
- lack of personal touch (1) /unable to physically examine the book(1) unable to ask 'fuzzy' questions (1)
- possible threat to bookshop if successful (1) as bookshop may decide to move wholly online (1)
- digital divide (1) not all customers have access to the internet (1) /not all customers can use online interfaces (1)    **[Max 2]**

  **(e)**   **(i)**   One mark for point, one for expansion eg
- dummy orders (1) processed and data checked (1)
- user trials (1) for HCI (1)
- different hardware(1) for compatibility (1)
- alpha testing (1) testing within bookshop (1)
- beta testing (1) testing outside of bookshop eg by customers (1)
- extreme data values (1) to test validation routines (1)
- testing against expected results (1) for verification of correct processing (1)    **[Max 2]**

**(ii)** One mark for point, one for expansion eg
- user feedback (1) evaluating satisfaction (1)
- stock checks (1) evaluating turnover of stock (1)
- page hit analysis (1) evaluating HCI and navigation (1)
- financial (1) evaluating return on investment (1)
- checking against requirements specification (1) to ensure compliance (1) **[Max 2]**

**2** **(a)** Any 2 from, eg
- obstructions eg furniture (1)
- walls (1)
- other electronic equipment (1)
- height of base station antenna (1)
- antenna orientation (1)
- reflections (1)
- distance from base station (1) **[Max 2]**

**(b)** **Two** advantages. One mark for point, one for expansion eg
- can move computers round house (1) without running cables (1)
- can work anywhere (1) without being fixed to particular desk (1)
- easier to add new devices/expand accessibility (1) as no other hardware needed (1) **[Max 4]**

**(c)** **(i)** **Router**

One mark for point, one for expansion eg
- transfers data (1) between wireless LAN and Internet (WAN) (1)
- maintains routing table (1) to select devices in house to send data to (1) **[Max 2]**

**(ii)** **Print Server**

One mark for point, one for expansion eg
- accepts files from computers (1) sends them to printer (1)
- no need for physical printer connection on each computer (1) can send data over network to be printed (1) **[Max 2]**

**(iii)** **Repeater**

One mark for point, one for expansion eg
- amplifies/ retimes the signals (1) before passing them on (1)
- extend the range of the network (1) by retransmitting the signal (1) **[Max 2]**

**(d)** One mark for point, one for expansion eg
- measure of the capacity(1) of a network/communications channel (1)
- maximum amount of data (1) in a given time (1)
- 8 MBits per second (1 only)
- A measurement of the volume of data (1) per second (1)
- Rate of transmission (1) in bps (1) **[Max 2]**

**(e)** One mark for point, one for expansion eg
- bandwidth affected by length of cable (1) quality of cable (1) quality of connectors (1) electrical interference (1) **[Max 2]**

**(f)**    2 from
takes longer (1) as upload speed < download speed/asymmetric (1)     **[Max 2]**

**(g)**   **Ring**

Benefit
- Low cost due to simple cabling (1)
- Less likelihood of collision as data travels one way only (1)
- Faster data transfer as uni-directional (1)
- No requirements for switches/hubs (1)

Drawback
- Failure of one node affects whole network (1)
- Harder to extend network as physical cabling needs to preserve ring structure (1)
- More difficult to set up initial cabling (1)

**Bus**

Benefit
- No requirements for switches/hubs (1)
- Easy to add extra nodes/terminals/as main cable can be extended (1)
- Easy to cable (1)
- Low cost due to simple cabling (1)

Drawback
- If the main cable fails, whole network/segment is affected (1)
- Likelihood of data collisions (1)
- Restrictions on length of cables between terminators/need repeaters (1)
- Terminals required at both ends of backbone (1)
- Difficult to identify/locate problems if whole network goes down (1)

**At least one benefit and one drawback for each for max marks.**     **[Max 6]**

**3** **(a)** **(i)** **One** advantage. One mark for point, one for expansion eg
- wider range of programmes(1) not dependent on one company (1)
- portable (1) not dependent on fixed link (1)
- accessible anywhere (1) not dependent on terrestrial transmitter range (1) **[Max 2]**

**(ii)** **One** disadvantage. One mark for point, one for expansion eg
- needs line of sight (1) trees etc may block signal (1)
- weather may interrupt (1) loss of signal (1)
- lack of other services (1) eg high speed internet (1) **[Max 2]**

**(b)**
- event captured by cameras/programme mixed on site (1)
- scrambled (1)
- streamed via uplink to satellite (1)
- received at user's satellite dish/set top box (1)
- validate that user has paid (1)
- descramble (1) **[Max 4]**

**(c)** One mark for point, one for expansion eg
- increased customer satisfaction (1) presented with a number of choices (1)
- operator has some initial info (1) from choices made (1)
- route to correct department (1) saves time/increased customer satisfaction (1)
- provision of information on menus (1) eg pre-recorded messages of customer support (1)
- less staff training (1) telephone system will answer most queries (1)
- less staff (1) costing less money (1) **[Max 4]**

**(d)** Intranet is/Internet is not eg
- accessible only by authorised users (1) whereas the internet is openly accessible (1)
- specialised coverage (1) whereas the internet covers numerous subjects (1)
- controlled by company (1) whereas the internet cannot be policed (1)
- selected documentation offered to authorised users (1) documents freely available on the internet (1)

Accept other sensible differences.
To gain a mark, a full description of a difference is required. **[Max 3]**

**(e)**
- date/time (1)
- caller's number (1)
- menu choices made (1)
- operator ID (1)
- duration (1) **[Max 3]**

**4** **(a)** **(i)** • underlying form still visible (1) so can return to it to check info (1)
  • no loss of data if errors appear (1) as underlying data is not overwritten (1) **[Max 2]**

  **(ii)** • highlighted text next to entries
  • text at foot of page
  • speech/sound
  • graphics **[Max 2]**

  **(iii)** One mark for point, one for expansion eg
  • give customer confidence (1) so that they will continue (1)
  • eliminate errors so that data (1) is 'clean' (1)
  • not allowed to continue (1) until errors dealt with (1) **[Max 3]**

**(b)** One mark for feature, two for how it helps (one for point, one for expansion) eg
  • consistent size/colour/layout (1) allows faster data entry (1) as customer is not looking for where to enter (1)
  • help features (1) so customer is not put off (1) if something is not understood (1)
  • readable colour scheme/font/logical progression/essential points only/lack of clutter (1) so that customer is not frustrated (1) and cannot follow what has to be done (1)
  • alternative devices supported /ALT tags on buttons/images etc (1) to allow for accessibility (1) and comply with DDA (1)
  • validation built in (1) so that errors are reduced (1) and customer is guided (1)
  • use of menus/dropdowns (1) to speed up data entry (1) and force particular choices (1) **[Max 9]**

**5** **(a)**
- signal sent from phone (1)
- routed to directory services company (1)
- routed to available operator (1)
- operator takes data (eg name/address) (1)
- keyed into database system (1)
- number looked up (1)
- reported to operator (1)
- reported to caller (1)
- possible call connect (1)
- possible text number to caller (1)
- possible speech output (1) **[Max 4]**

**(b)** Eg
- name (1)
- address (1)
- initial(1)
- town (1)
- postcode/street(1) **[Max 2]**

**(c)** One for point, one for expansion eg
need to spell name accurately (1) as no human intervention with experience of name spellings
may not have such sophisticated software as at call centre (1) so cannot do complex searches (1)
lack of experience compared to operator (1) may be unable to use software (1)
need to be able to access website (1) may be inconvenient (1)
calls can not be connected immediately (1) user must transcribe the number and then make the call (1) **[Max 4]**

**(d)** One for point, one for expansion eg
- better screens (1) results easier to find/read (1)
- greater bandwidth (1) faster return of searches (1)
- better applications (1) more support/options/flexibility (1)
- better networks (eg on underground, in-flight) (1) greater coverage/access (1)
- different interface eg stylus/touchscreen/voice (1) greater access (1) **[Max 6]**

# 2517 ICT Systems and System Management

**1** **A company manages properties which are rented by students at a university.**

**The company collects the rent, looks after the repairs to the properties and advertises vacancies when they occur. A database contains details of the properties, students renting the properties and the employees working for the company.**

**(a)** **(i)** **Define the word data.**

Data is a set of characters (with no meaning/context) (1)
Data is raw facts before they have been processed (1) **Max [1]**

**(ii)** **Give <u>one</u> example of data that might be collected by the company.**

**eg**
120708 (1)
45.50 (1)
Green (1) **Max [1]**

**(iii)** **Give <u>one</u> example of information which the company might pass to a student renting a property.**

**eg**
Your rent is £450.50 per week (1)
Your managing agent is Mr Green (1) **Max [1]**

**(iv)** **Give <u>one</u> example of information which a student might pass to the company.**

**eg**
I will vacate the property on 12<sup>th</sup> June 2008 (1)
I want my door painted green (1)
My mobile telephone number is 0777 77123 (1) **Max [1]**

**(b)** **The company uses a personnel system.**

**Describe the role of the personnel system in this company.**

**eg**
To keep a record of all individuals employed by the company including name/address/NI number/etc (1)
To record the salary level of those employed (1)
To keep a history of the posts held by the employees (1)
To help the managers make judgements on promotions (1)
To look after equal opportunities (1)
Managing training opportunities (1)
Discipline and grievance procedures (1)
Monitoring performance/appraisal (1) **Max [4]**

**(c)** **Explain the need for the information produced by the database to be effectively managed.**

**eg**
Because decisions will be made (1) based on the information (1)
Future developments can be planned (1) more effectively if the data is properly managed (1)
Data needs to be accurate/up-to-date (1) otherwise rooms may stand empty/profit is lost/tenants are turned away (1)
The information needs to be kept secure (1) so that rivals/hackers do not compromise the company (1)
The information needs to be kept confidential (1) because of the Data Protection Act (1) **Max [4]**

**(d)** **When the employees of the company search the database they use parameter queries and complex queries**

**(i)** **Describe a complex query and give an example that might be used by the company.**

Description
A query which searches using more than one (1) parameter/value/keyword (1)
A query using Boolean values (1) such as AND/OR/NOT (1) **Max [2]**
Example
eg
Searching for all students called Sedgwick at 1 Hills Road (1) **Max [1]**

**(ii)** **Describe a parameter query and give an example that might be used by the company**

Description
The parameter query uses a value to search by (1) which is inserted at the time of the search/static in the query (1)
Uses the SQL WHERE term (1) **Max [2]**
Example
eg searching for a house in a particular post code area and typing in CB1 2EU at the time of the search (1) **Max [1]**

**2**    **The company has decided to obtain a system that can be used by students to search for properties to rent.**

      **The system will be based in the reception area of the company's office. A project team will work on the new system.**

      **(a)**    **Identify the responsibilities of**
           **(i)**    **a project manager**
                e.g.
                oversees the team (1)
                sets deadlines (1)
                resource management/budgeting (1)
                allocates tasks/presents plans (1)
                provides reports/interacts with managers (1)
                ensures a task is finished before the next stage is started (1)     **Max [2]**
           **(ii)**    **a programmer**
                writes the programs (1)
                tests the programs (1)
                writes technical documentation (1)                     **Max [2]**

      **(b)**    **Identify <u>three</u> output devices for this system and in each case state its purpose eg:**

           Monitor (1) to visually note the information from the system (1)
           Speaker (1) to sound a warning if errors are made (1)
           Printer (1) to record hard-copy of the information to take away (1)     **Max [6]**

      **(c)**    **Discuss the factors involved in the effective design of the speech input/output system. You should consider cognitive psychology and artificial intelligence in your answer.**

| High 6-7 | The candidate is able to discuss clearly the impacts **and** consequences. <br><br> Candidates will show a detailed level of understanding and be able to explain in detail both the impacts **and** consequences of more than one position. <br> Logical arguments are produced to demonstrate a clear understanding of the question. <br> Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion. <br> There may be a reasoned conclusion based upon prior discussion. <br> Subject specific terminology will be used appropriately and accurately. |
|---|---|
| Medium 3-5 | The candidate is able to explain superficially the impacts **and** consequences. <br><br> Candidates will s how a limited understanding and be able to explain both the impact(s) **and** consequence(s) of a given position, however explanations may lack specific detail and/or concentrate on either impact(s) or consequence(s) with a limited explanation of the other. <br> There may be a reasoned conclusion. <br> Specific knowledge appropriate to the discussion will be evident. <br> Subject specific terminology will be used accurately. |
| Low 1-2 | The candidate is able to explain superficially an impact **or** a consequence. <br><br> The information will be more than a list of points. <br> Subject specific terminology may be limited but will be used. <br> Ideas may be poorly explained or be logically disjointed. |

*This question should be marked in the following way.*
**I**      *Given for relevant points made by the candidate.*
**C**      *Given for a consequence for the company or the student of implementing this system.*
*If the candidate gets only Is or Cs they stay in band L – marks 1-2*
*If the candidate gets at least one I and one C they go straight to band M –marks 3-5*
*With an I and a C they are considered for band H-marks 6-7*
*A well argued conclusion should take a candidate to band M*

*A rule of thumb is that they will be at the top of the band if they have mentioned both cognitive psychology and artificial intelligence.*

<u>Examples of Impacts (**I**)</u>
*Remember the system is for **students** to use to search for properties to rent.*
<u>Cognitive psychology:</u>
- Studying the way that people think which will allow the most efficient design of the speech input system
- If we consider the way they think then we will produce a system that will be easy to learn.
- Inputs will be talking to the machine in a normal voice.
- Outputs will be sound in the form of artificial speech
<u>Artificial intelligence</u>
- Will allow the software to predict what is being entered into the system
- It deny/query conflicting entries such searching for properties in areas where no properties exist
- Should offer properties near to the students university
<u>General factors</u>
- Output speech should be clear
- Interface should be intuitive to use
- Headphones/microphones should be clean/sterilised/disposable

<u>Examples of consequences (**C***)* (</u><u>which are underlined)</u>
- A good system will make the company seem innovative and attractive/ forward looking to the students <u>so the firm will get more customers</u>.
- If the system is easy to use with the minimum of training the students will <u>enjoy using it and recommend the company to their friends</u>
- The employees in the company <u>can get on with their work without interruptions </u>form anxious students who cannot get the system to work.
- If the system recognises different accents/bad grammar and so on it will be <u>treated with confidence and respect</u>.
- If the output is a reasonable sounding <u>speech the students will treat the system with confidence.</u>
- If the voice output from the machine sounds funny or makes ridiculous grammatical errors the students <u>will treat it with derision and not take the results seriously</u>
- The system must use artificial intelligence to know that for instance one student will only want one bedroom or <u>confidence will be lost in the company</u>

**Max [7]**

**(d)**    **The managers use computer aided learning (CAL) to teach staff how to use the property management database.**

      **Explain how CAL may be useful to both the staff and management**

      **eg**
      The learner feels positive (1) as there is much feedback (1)
      The way through the topic (1) is set by responses to the previous questions (1)
      It can be used at home or on holiday (1) making it more convenient to the learner (1)
      Provides automatic reporting (1) which can be accessed by management (1)
      Can be used at any time (1) convenient to the learner (1)
      Working time does not have to be lost (1) making it a more efficient method of training (1)
      They can work at their own rate (1) so faster employees do not get frustrated. (1)
                                                  **Max [6]**

**3** **Every month a newsletter is sent by the company to the students. The newsletter is personalised.**

   **(a)** **(i)** **Explain why batch processing would be the best method for producing the newsletter.**

          **eg**
          The processor is carrying out a large number (1) of the same task (1)
          No intervention is necessary from the user (1) once the process has begun (1)
          The printers are very busy all day (1) It is sensible to run the batch at night (1)
          The response is not required immediately (1) as the newsletter can be prepared over time. (1)     **Max [4]**

     **(ii)** **Explain why real-time processing would be the best method for the system used to search for properties.**

          **eg**
          The user will expect the system to respond immediately (1)
          The information supplied must be up-to-date (1) or it would be worthless (1)
          The user would need to know straight away (1) if a room was available and having booked it the system should block others from booking the same room (1)     **Max [4]**

     **(iii)** **Identify <u>one</u> other type of processing method.**

          Interactive/transaction (1)     **Max [1]**

   **(b)** **The company is considering upgrading the word processing software that it used to create the newsletter. Explain the factors that must be taken into account when deciding whether to upgrade the software.**
      **eg**
      The staff may need to be trained to use the new software (1) causing disruption/expense to the company (1)
      The new software must be compatible (1) with the old or older work cannot be used (1)
      Systems used by competition need to be studied (1)
      The cost of the new system/licence (1) must be evaluated against potential benefits (1)
      The benefits of the new software (1) must outweigh the advantages of the old (1)
      The new software must run successfully on the old system/will the existing hardware run the new system? (1)     **Max [4]**

   **(c)** **A new word processor is chosen.**
      **The company is to install this word processor using direct installation.**
      **Explain why this is the most appropriate method of installation.**
      **eg**
      Disruption is kept to a minimum (1)
      Fast method (1) as the change can take place over a weekend/when no-one is working (1)
      No dependence on the old system will remain (1)
      Work created on the new word processor may not load on the old one (1) so there is no point in keeping the old one (1)     **Max [4]**

**(d)**    **Discuss the support required by the staff from the managers before and after the installation of the new word processor.**

| | |
|---|---|
| High 5 | The candidate is able to discuss clearly the impacts **and** consequences. <br><br> Candidates will show a detailed level of understanding and be able to explain in detail both the impacts **and** consequences of more than one position. <br> Logical arguments are produced to demonstrate a clear understanding of the question. <br> Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion. <br> There may be a reasoned conclusion based upon prior discussion. <br> Subject specific terminology will be used appropriately and accurately. |
| Medium 3-4 | The candidate is able to explain superficially the impacts **and** consequences. <br><br> Candidates will s how a limited understanding and be able to explain both the impact(s) **and** consequence(s) of a given position, however explanations may lack specific detail and/or concentrate on either impact(s) or consequence(s) with a limited explanation of the other. <br> There may be a reasoned conclusion. <br> Specific knowledge appropriate to the discussion will be evident. <br> Subject specific terminology will be used accurately. |
| Low 1-2 | The candidate is able to explain superficially an impact **or** a consequence. <br><br> The information will be more than a list of points. <br> Subject specific terminology may be limited but will be used. <br> Ideas may be poorly explained or be logically disjointed. |

*This question should be marked in the following way.*
**I**     *Given for relevant points made by the candidate.*
**C**    *Given for a consequence for the company or the student of implementing this system.*
*If the candidate gets only **I**s or **C**s they stay in band **L** – marks 1-2*
*If the candidate gets at least one **I** <u>and</u> one **C** they go straight to band **M** –marks 3-4*
*With an **I** <u>and</u> a **C** they are considered for band **H**-marks 5*
*A well argued conclusion should take a candidate to band **M***

<u>Examples of Impacts (**I**) and consequences (**C**) (which are underlined)</u>

**eg**
The company will involve the staff in discussions about the expected changes. <u>This will make them more likely to accept the new word processor</u>

Training sessions can be given <u>which will ensure that the staff feel confident about the new word processor</u>

Constant support from the company should emphasise the benefits of the new word processor and reassure the staff that their jobs are not in jeopardy. <u>This would make the staff loyal and efficiency would increase.</u>

User guides/documentation should be available so staff have a problem solver to hand. <u>This would make them independent and more confident and thus of more use to the company</u>

In conclusion if the changeover is managed carefully there should be no loss of confidence on behalf of the staff or the customers                                   **Max [5]**

**4**    **(a)**    **The company expands into several towns. The management find it difficult to meet and use video conferencing to help them. Describe video conferencing and explain how this kind of system can aid the management.**

            **eg**
            Video conferencing is the use of communications links (1) to conduct meetings between people who are geographically separated (1)
            The links include voice and pictures. (1) Hardware such as webcam/microphone are needed (1)
            It is cheaper for the company than having to pay travelling expenses (1)
            The managers will spend less time away from the offices (1) meaning that they can spend more time with the customers (1)
            There is less chance of bad decisions (1) owing to manager tiredness from travelling (1)
            The company could hold meetings more often (1) because no time is wasted in travelling between venues (1)
            Meetings can be called more frequently (1)
            The conferences can be recorded (1) for future reference/legal reasons.(1)    **Max [6]**

     **(b)**    **The managers use a Management Information System (MIS). Describe MIS and explain how this kind of system can aid the management.**

            **eg**
            Provides understandable amounts of management-level information (1) from larger collections of data (1)
            This processed information (1) may take the forms of graphs/charts/tables (1)
            Helps to manage deadlines/budgets (1)
            Can help to forecast trends. (1)
            The management is able to make decisions quickly (1) based on the summaries produced automatically by the MIS (1)                       **Max [4]**

**5**    **(a)**    **Explain the importance of communication between managers and employees when managing the changes.**

         **eg**
The staff feel neglected/undervalued (1) if they are not consulted (1)
The staff may become worried that they are in danger of losing their job/not coping with new equipment (1) if they not included in regular talks with management (1)
The staff may have some good ideas (1) which could benefit the company when the changes occur (1)                                             **Max [4]**

   **(b)**    **Discuss developments in hardware and software that could**

- **help the students choose suitable properties to rent using a system based in the reception area of the company's office**

- **help the students keep their properties clean, tidy and secure once they have moved in.**

| High 7-9 | The candidate is able to discuss clearly the impacts **and** consequences. <br><br> Candidates will show a detailed level of understanding and be able to explain in detail both the impacts **and** consequences of more than one position. <br> Logical arguments are produced to demonstrate a clear understanding of the question. <br> Ideas will be expressed clearly and fluently using specific knowledge to support and inform the discussion. <br> There may be a reasoned conclusion based upon prior discussion. <br> Subject specific terminology will be used appropriately and accurately. |
|---|---|
| Medium 4-6 | The candidate is able to explain superficially the impacts **and** consequences. <br><br> Candidates will s how a limited understanding and be able to explain both the impact(s) **and** consequence(s) of a given position, however explanations may lack specific detail and/or concentrate on either impact(s) or consequence(s) with a limited explanation of the other. <br> There may be a reasoned conclusion. <br> Specific knowledge appropriate to the discussion will be evident. <br> Subject specific terminology will be used accurately. |
| Low 1-3 | The candidate is able to explain superficially an impact **or** a consequence. <br><br> The information will be more than a list of points. <br> Subject specific terminology may be limited but will be used. <br> Ideas may be poorly explained or be logically disjointed. |

*This question should be marked in the following way.*
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***C***     *Given for a consequence for the company or the student of implementing this system.*
*If the candidate gets only **I**s or **C**s they stay in band **L** – marks 1-3*
*If the candidate gets at least one **I** and one **C** they go straight to band **M** –marks 4-6*
*With an **I** and a **C** they are considered for band **H**-marks 7-9*
*A well argued conclusion should take a candidate to band **M***

*A rule of thumb is that they will be at the top of the band if they have mentioned all of the renting system, keeping their properties clean, tidy and secure.*

Examples of Impacts (**I**)

System in the reception area

- Developments of holograms allow the students to view rooms in three dimensions before choosing them.
- Students failing to pay their rent are automatically prevented from using the system
- Software is able to spot erratic or silly questioning of the system and send warnings to managers.
- Students should have read-only access to their records on the company database to be able to monitor their own records from the Internet.
- Walk-throughs of vacant rooms/introductions to future house mates are available on the Internet.

Properties clean tidy and secure

- Robotic cleaning devices keep the students rooms clean.
- CCTV cameras linked to special software can examine the walking patterns of people outside the student residence and warn of those deemed to be of criminal disposition.
- Automatic lawn mowers cut the grass when sensors sense the grass is too long.
- Burglar alarms automatically alert the company/police if an intruder is detected at the property.

Examples of consequences (***C)***

- Students find the perfect property
- The properties are always clean and tidy so the company saves money on redecorations
- Because they have the perfect property/flatmates they do not move so the firm has less administration to do
- Students feel safe in their flats
- Students have more time to study because the cleaning is done by robots
- The gadgets could go wrong leaving the company with lots of expenses.
- Innocent people are arrested because of the CCTV system.
- The ideal flatmate system is abused by students not wanting to rent but needing an on-line dating system
- Students lose a valuable thesis when the automatic vacuum cleaner goes berserk and fail their course.

**Max [9]**

**QWC [4]**

**[Total: 90]**

# Grade Thresholds

**Advanced GCE (Subject) (Aggregation Code(s))**
**June 2008 Examination Series**

**Unit Threshold Marks**

| Unit | | Maximum Mark | A | B | C | D | E | U |
|------|------|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| **2512** | Raw | 90 | 58 | 52 | 46 | 40 | 35 | 0 |
| | UMS | 90 | 72 | 63 | 54 | 45 | 36 | 0 |
| **2513** | Raw | 120 | 100 | 91 | 83 | 75 | 67 | 0 |
| | UMS | 120 | 96 | 84 | 72 | 60 | 48 | 0 |
| **2514** | Raw | 90 | 61 | 55 | 49 | 43 | 37 | 0 |
| | UMS | 90 | 72 | 63 | 54 | 45 | 36 | 0 |
| **2515** | Raw | 90 | 55 | 50 | 45 | 40 | 35 | 0 |
| | UMS | 90 | 72 | 63 | 54 | 45 | 36 | 0 |
| **2516** | Raw | 120 | 100 | 88 | 76 | 65 | 54 | 0 |
| | UMS | 120 | 96 | 84 | 72 | 60 | 48 | 0 |
| **2517** | Raw | 90 | 56 | 50 | 44 | 38 | 33 | 0 |
| | UMS | 90 | 72 | 63 | 54 | 45 | 36 | 0 |

**Specification Aggregation Results**

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

| | Maximum Mark | A | B | C | D | E | U |
|------|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| **3838** | 300 | 240 | 210 | 180 | 150 | 120 | 0 |
| **7838** | 600 | 480 | 420 | 360 | 300 | 240 | 0 |

The cumulative percentage of candidates awarded each grade was as follows:

| | A | B | C | D | E | U | Total Number of Candidates |
|------|:---:|:---:|:---:|:---:|:---:|:---:|:---:|
| **3838** | 4.5 | 17.5 | 38.9 | 63.4 | 83.7 | 100.0 | 4130 |
| **7838** | 5.6 | 22.9 | 50.4 | 77.3 | 94.7 | 100.0 | 2498 |

For a description of how UMS marks are calculated see:
http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

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