



MS4
£4.00

GCE MARKING SCHEME

INFORMATION & COMMUNICATIONS TECHNOLOGY (NEW) AS/Advanced

SUMMER 2009

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2009 examination in GCE INFORMATION AND COMMUNICATIONS TECHNOLOGY (NEWY). 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.

IT1

1. Data consists of raw facts and figures. 1
Information is data which has been processed by the computer. 1
Knowledge is derived from information by applying rules to it. 1
- Any appropriate example, such as 9:00, 135/75, 10:00, 135/75, 11:00, 120/60. 1
- To render the data as information, it first must be given a context, e.g. medical – a patient's blood pressure readings, and to make it more understandable it is put into a table. 1
- | Reading time | Patient's BP |
|--------------|--------------|
| 9:00 | 135/75 |
| 10:00 | 135/75 |
| 11:00 | 120/60 |
- The doctor can now apply her knowledge to this information. She can then draw conclusions about the patient's health and take appropriate actions. 1
2. (a) 1 mark for each valid point (one for factor and one for example) x 2 4
Gaining competitive advantage, for example if a company has done an accurate demographic survey then they are in a better position to decide whether they should open a new store or not.
Monitoring progress e.g. a supermarket records the speed and quality of input of a shop assistant at a pos point and if they are doing badly they can be identified.
Targeting resources e.g. it is better for a company selling high performance cars to get a list of current owners from an insurance company rather than waste money sending flyers to everyone.
Looking at trends to see that more people are now buying smaller cars and so a manufacturer would alter their production accordingly.
- (b) Costs (any three from) 3
Data collection, e.g. often companies have to give prizes to get people to return questionnaires or purchasing information from other companies.
Data entry e.g. if data is keyed in, this takes time and operators have to be paid to do it or purchasing of OMR equipment
Data processing e.g. hardware and software need to be purchased to turn the data collected into information.
Data maintenance e.g. an organisation might maintain a database of its customers. The database will only remain accurate and up to date if any changes to customer details are reported and the appropriate records amended. i.e. someone has to contact the customers.
Training staff e.g. to carry out interviews or process data.

3. **Any two of**
1 mark for each type given
1 mark for each advantage

2 x 2

4

Note - Advantages must be different.

| | |
|-----------------------------------|--|
| Internet / search engines | Key word searches Interactive resources Editable information Copy and paste pictures / diagrams into reports Wider choice / variety of information available / vast store of information Up-to-date information Easier / quicker to search for information |
| Email experts / teacher | Books may not be available; email could give faster response |
| Chat to other students / tutors | Real-time Ask further questions if not sure |
| Post questions on bulletin boards | Reach wider audience |
| CD based software | Lighter to carry home Key word searches Copy and paste pictures / diagrams into reports Interactive resources Editable information Wider choice / variety of information available Up-to-date information Easier / quicker to search for information |
| On-line encyclopaedias | Key word searches Interactive resources Editable information Copy and paste pictures / diagrams into reports Wider choice / variety of information available Up-to-date information Easier / quicker to search for information |
| Teletext | Up-to-date information |
| Interactive Television | Up-to-date information |
| Satellite information systems | Real time displays such as Magic Planet |

4. (a) 1 mark in each part for description of feature and second mark for example of use
- (i) animated transition 3x2
 This is when you give an entry effect such as fading when you move from one slide to another.
 In an estate agent, this could be used to highlight some features of a property you are selling via a running presentation. The transition being used to attract a customer's attention.
- (ii) Templates
 Are prewritten slides with design and some basic information already there and it saves you having to create from scratch
 In an Estate Agent these could contain a layout with the company's colour scheme and company logo already placed.
- (iii) Hyperlinks
 These are words or images which when clicked upon take you to another document or image, or to a different part of your current slide. E.g. could be used by an Estate Agent by clicking on a photo to the room information.

Either two distinct points or one well developed.

- HTML allows greater control of the behaviour of text (1) and the positioning of images (1)
- (b) customise the pages / make more unique 2
 Control of flash graphics
 Smaller overheads / less memory / faster to load

5. Any five from (have to have at least one of each for full marks) 5

Advantages

- Messages can be sent across the world for the price of a local phone call.
- You can send not only simple text messages but also attached files in a variety of formats.
- You can use an address book to send the same message to several different people for the same cost as one call.
- The message will arrive much more quickly than conventional mail.
- Don't have to leave the house to send the information / disabled use.
- Documents and attachments are editable.
- Environmentally friendly.
- Can pick it up anywhere.
- Can store a copy.

Disadvantages

- You are reliant on the recipient having suitable hardware and software / Need a computer system to use email.
- There are security and privacy issues. Confidential mail is travelling across a very public network.
- E-mail attachments have proved to be a security 'Achilles heel', providing an entry point for destructive viruses.
- Junk email can clog your system.
- Damage done by email scams / phishing.
- Can't send physical items.
- Users need to be computer literate.
- Removing social interaction.

6. (a) 3 x 1 (one mark for each hazard) 3
RSI refers to a range of conditions affecting the neck, shoulders, arms and hands, when forcing muscles to perform the same action over and over again.
NOT JUST WRIST PAIN
Eyestrain staring continuously at a brightly lit screen all day can lead to headaches, blurred vision, dry and irritated eyes, etc.
Backache problems of the spine associated with being crouched over a computer screen all day.
Similarly for **Stress** (from poorly designed software / lack of training), **EFL radiation** (related to pregnancy), **Thrombosis, Wireless, Epileptic fits.**
Trailing cables can lead to tripping and injury.
Just stating three hazards gains one mark. 3
- (b) Actions 3 x1 (one mark for each action)
Employers should ensure staff have regular breaks every hour and move around.
Provide wrist pads, foot rests, adjustable monitors, adjustable seating which leaves the spine in the optimum position.
Vdu training.
Establish Health & Safety policy.
Ensure that the working spaces are correctly lit, and display screens correctly adjusted with anti glare filters.
7. **Definition one mark. Method one mark. Example one mark.** 3
- (a) Verification is the checking that data has been copied correctly from one medium to another (correctly entered).
Double keying, is when information is entered twice and compared against each other.
In setting up an account, the user will be required to enter their email address and password twice to ensure that the customer can get back into their account. Or when filling in online forms, asked to read through to check before submission.
- (b) Validation is to ensure that the data is sensible and of the right sort. 3
Range check is when you check that the information entered is within 2 specified values.
Could be used in this case to ensure that the date of birth entered is of a person who is over 18 or in fact is possible i.e. Not 30 days in February.
Need to make sure that the check relates to banking and is a sensible one.

8. (a) Two marks for definition. 2
 Expert systems are **rule-based**, specific systems that are designed to **reproduce the role of human expert systems**.

6-8 marks Candidates give a clear, coherent answer fully and accurately describing and explaining at least two distinct advantages. They use appropriate terminology and accurate spelling, punctuation and grammar.

3-5 marks Candidates give explanations of advantages but responses lack clarity. There are a few errors in spelling, punctuation and grammar

1-2 marks Candidates simply list up to three advantages or give a brief explanation of one. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.

0 marks No valid response

Very full answers in any section can be worth two rather than one

Six valid points

- Could discuss NHS Direct (online medical expert system) or a system which could be in a surgery used by a nurse.
- Saves a doctor time by filtering the minor cases.
- Allows the patient to get a quicker diagnosis as do not have to wait to see a doctor.
- Can get the diagnosis without having to leave home.
- Some people can open up more to a computer.
- Some people will not speak to a machine (**do not** give converse).
- Second opinion.
- More knowledge on obscure cases.
- Have to keep it up to date.
- Expensive to buy and set up the system.
- GIGO
- Available 24/7

4

MRI or CAT

Have to have at least one advantage and one disadvantage for full marks.

- (b) Some patients can find them claustrophobic. Have to keep still. Problems with plates / pacemakers / etc. 3D rather than 2D.
 Very expensive to buy, need experts to control them. Waiting lists to have a scan, very high quality images. Less invasive than surgery. Can strip away the layers electronically to get at the real problem. Able to show soft tissue problems.
 Surgeons better prepared for what they are going to find. Exposure to radiation.

6

Database impact

- (c) **5-6 marks** Candidates give a clear, coherent answer fully and accurately describing and explaining at least three distinct points.
3-4 marks Candidates give explanations of points, but responses lack clarity. There are a few errors in spelling, punctuation and grammar.
0-2 marks Candidates simply list up to three points or give a brief explanation of one. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.

Records can be updated instantly, full information available at the bed side without having to fetch and return paper records (i.e. less time wasted on admin)

Reasons

- Infected blood given to a patient now able to track source, who else had the blood.
- Ensure right patient is operated upon. Save doctors' time at the bedside. Can call up a patients' record from anywhere and see things like X-rays online.
- Link with GP surgeries improved so that GP can see what is happening to their patient and consultant can see everything about the patient that the GP knows.
- Better patient tracking. Less storage space needed. Mailmerge of info from database into centrally produced letters. Easier to back up the information.

9. (a) Use of a program to predict the behaviour of a real life system. Answer should have three elements – software / real life / investigative 1
- (b) At least one advantage and one disadvantage. 3
 Cheaper as do not have to physically destroy cars.
 Safer as nobody is really hurt
 Much more flexible
 Can explore different scenarios more easily
 Model could oversimplify the situation and not be accurate enough
 Bad data errors in formulas will spoil accuracy
- IF NO SPREADSHEET EVIDENCE SUBMITTED THEN NO MARKS CAN BE AWARDED. THE LEVEL OF DIFFICULTY ARISES HERE AS THE CANDIDATES NEED TO HAVE EXPERIENCED HIGH LEVEL SPREADSHEET WORK.**
 MAX 4 marks
10. (a) No mark for naming formula up to two marks for description of what it does 4
 e.g.
 My IF .. THEN .. ELSE formula checks to see if the number in cell A23 is greater Than the number in cell A24 (1) If it is it returns the middle value Profit, if not it returns the value False (1)
 My VLOOKUP formula in cell B15 scans rows in the stated range for the comparison values (1) and returns the data from the indexed column (1)
- (b) one mark for stating method, up to two marks for description, up to two marks for advantages to a max of four 4
 e.g.
 List boxes (1) select text from a pre determined list (1) reducing data entry errors (1) increasing efficiency (1) Option or check boxes (Boolean choice) (1) clicking in the cell for yes/no data (1) places tick in the cell (1) increasing efficiency by saving time (1) Spinners (1) use a button to let you see how input changes (1) will alter the outputs in a model (1) so you can see different outcomes more easily (1)
- (c) One mark for naming a validation technique up to two marks for detailed description. Fourth mark for describing the error message. 4
 e.g.
 I put a range check (1) of between 1 and 9999 (1) on my customer order number (1) to ensure numbers were within the correct range (1)
 I used conditional formatting (1) by putting a preset formula (1) e.g. to work out the date (1) for data in another cell (1)
 I set the text length (1) to 10 characters to put a limit (1) on customer Postcode (1) to prevent incorrect data being entered (1)
 Two marks for description of sort process.
No mark for naming a different process but up to two marks for detailed description.
- (d) **Must be a macro used in the candidates spreadsheet.** 4
 Examples could come from: Search, Macro, 3D referencing, Graph, Output Report (invoice) / data entry form (order form), VB code, etc.
 e.g. My macro defined the special print settings in the Page Setup dialog box (1) and printed the invoice (1).
 I used 3D referencing formulas to summarise monthly data (1) onto the annual summary sheet (1).
 Condome: SUM, Max, Min, Average, Count (and variations)



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