GENERAL CERTIFICATE OF EDUCATION
TYSTYSGRIF ADDYSG GYFFREDINOL

MARKING SCHEME

INFORMATION TECHNOLOGY (NEW) AS/Advanced

JANUARY 2009

INTRODUCTION

The marking schemes which follow were those used by WJEC for the January 2009 examination in GCE INFORMATION TECHNOLOGY (NEW). 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.

1.a(i)	**1 mark Description of use** *In museums to allow children to gather information / in shops to enter info at POS / mobile phones to dial / display information*	1
(ii)	**1 mark Benefit** *Saves having to type, easier for disabled people to .., no need for mouse and keyboard, quicker to enter information,*	1
	1 mark Description of use *e.g. retina scan / iris recognition to gain access to room, thumbprints to take out a library book / registration systems / for security /instead of or as well as passports*	1
	1 mark Benefit *Individual / difficult to copy / better security(but cannot get in both parts)* *Accuracy* *Can lose smart cards*	1
1(b)	***1 mark example and 2 marks for two problems*** ***Or 2 marks for two examples and one mark for problem*** ***Need to be clear that candidates are discussing input*** ***Speech recognition systems*** *e.g. Voice control in car navigation systems - not brand name* *Security systems* *Control systems* *Telephone ordering system* ***Disadvantages*** *Have to train computer to recognise voice which takes a long time* *Delays in getting commands recognised / rural accents / similar sounding words or commands / background noise / security as people can hear password* ***Natural language interfaces*** *E.g. Giving instruction / asking question such as in expert systems.*	3
2.	Any four from *Accurate (correct) – error free and a true reflection of what it represents,* *correctly targeted – information should be presented to the people who need it,* *understandable – the level of detail and language used should reflect the user,* *complete – information should include all the data needed to make a decision,* *relevant – information should not be included if it has no bearing on the user's needs,* *up to date – information should not be a reflection of an earlier state of affairs* *also accept timely and reliable (if refers to source)(both need to be explained)* NB a plain list of 3 or 4 just gets 1 mark 2 right and 2 terms only gets 3 marks	4
3.	**Any 3 from (just naming gets no marks)** *Presence – requires that a value must be entered, the details of an order are being input, the order cannot be processed unless an order number is entered and the routine will return an error if the box is left empty.* *Format – the data must conform to a prescribed layout, a NI number consists of 2 letters 6 digits and then a letter. If the operator tries to enter a different combination an error is returned. (Input mask)* *Range – the data must be a value that falls between 2 prescribed values, the data of birth of a pupil must lie between 01/09/83 and 31/08/95, any date that falls out of the range is rejected.* *Data type – data must be of a specified type i.e. numerical, text, Boolean, image, data entered for the number in stock must be numerical, if a text item is entered it must be rejected.* *Fixed value (Lookup)(File check) – data must conform to one of the values in a predefined list i.e. for gender only m or f is allowed, entering anything else will result in an error message,* *Check digit – numerical calculation on a code number and comparing it with the final digit, if the same value is not found then an error message is displayed.* *Also accept Length check, Integrity check with examples.*	3 x 2

4.a(i)	query, *A query is when you interrogate a database to find some information. It could be used to find out which items of stock in a database are below a particular limit.* (search, sort, filter, action queries, joining queries (well explained))	3x2
(ii)	report, *This is the way in which the database provides information in an appropriate format for the user. For example, a distribution manager may want a simple printout of drivers' phone numbers, whereas a senior manager might want a monthly summary of sales figures in graphical form* (implication of organising)	
(iii)	import/export *This is when you get information from another application or you transfer information into another application. An example when you transfer information on items sold from a database into a spreadsheet, where a list of area sales are calculated and then the information is transferred back into the database. (Could just discuss import or export)* *(if on the wrong theme max mark is 5)*	
4b	**Any 2 from** *Data integrity: There is no need to change data in more than one table.* *Data redundancy: No piece of data is unnecessarily repeated.* *Data consistency: No risk of the same attribute being stored in a different format in a different file.* *Data only has to be input once hence saving time and money.* *Saves on file size as things are stored only once.* *Flexibility: tables can be combined and queried in a greater number of ways.*	2
5.	Either 5 points or better 3 points well developed Candidates are expected to make suitable points about the following *hardware, software, suitability of the operating system,* *communication and input (GIGO);* *the changes and development of hardware, the nature of computer software, change in circumstances during development, speed of implementation, compatibility, insufficient testing, poor communications with user, abilities of the user,* *poor post-implementation procedures, maintenance procedures,* *cost, hardware, support, security, method of data entry, good analysis of system (system requirements), documentation.* List of 3 or more worth 1.	5
6.	Any 3 from *Computer Fraud: Computers have allowed criminals to go and collect information on cashpoint cards and then transfer this information onto blank cards and obtain money or credit. Identity theft could be a form of computer fraud or could be a separate answer if they talk about illegal immigration or terrorism. (Phishing)* *Blackmail: Criminals hacking into computer systems and obtaining a lot of information, with which they can blackmail people,* *Publication of illicit material. Materials such as hard-core pornography cannot be legally published and sold in many countries. Because of the Internet it can be created in a country where it is legal and then viewed in a country where it is illegal.* *Sabotage: A disgruntled ex-employee can create a worm which then eats its way through a company's data, thus destroying their functionality.* *Scamming getting customers to buy at fake websites.* *Copying protected software/music.* *Other answers could involve; Hacking, Spreading of viruses, Child Protection issues / Paedophilia, Skimming, etc.* **NOT** Data Protection Act.	3x2

7.	**Either six distinct points or 3 well discussed.** **To get more than 4 marks both concepts of LAN and WAN must be discussed.** *X-rays and scan results are now available almost instantaneously across a hospitals LAN from radiography to a consultant's room. This allows quicker and more efficient diagnosis, patients can also be shown the images when they are in their own beds.* *Expert systems such as NHS direct are now available over the web, which allows patients to access information without having to leave their own home and saves doctors from having to deal with minor ailments.* *Doctors' surgeries can now access blood test results from hospital pathology labs across the web, allowing faster and more up to date results, hence allowing more accurate diagnosis.* *Internal communications across a hospital LAN or to consult with an expert in another country quickly via email.* *Videoconferencing from doctor's surgery to a skin specialist for remote diagnosis.* *Patient record keeping systems allowing better internal transfer of information.* *Sharing of resources, e.g. in the US there are four high-voltage electron microscopes. Doctors can send samples for analysis and then view the results via a video link.* *Intranet for internal notices such as job vacancies, forms, documents.* *Automatic stock control of supplies and medicines.*	6
8. a	*Computer games playing is now a multi-dollar industry, good for relaxation. Mobile phones, Music playing (mp3), composing and downloading. Video on demand systems, movie making, digital photography and image manipulation. Home shopping (if you give answers such as 24/7 then it will stop them gaining these marks in (b)), On-line Gambling, Embedded entertainment systems/ watching DVDs. Digital/satellite T.V., social networks.* *Not Booking systems.* 　　*Saves money – can process own photos* 　　*Access to greater variety of channels* 　　*Access to more languages* 　　*Wider range of entertainment available* 　　*Extra educational opportunities* *Possible drawbacks* *Dependency, if the system breaks down, have be repaired by a specialist as too complex and people do not know what to do with their time if the entertainment system is not working. (or to set it up)* *Isolation – can get all your entertainment and travel experiences without leaving the home and meeting people.* *Cost only the haves can afford the best systems.* *Child protection issues.* *Health issues.* *Hacking/viruses coming into the home.* *Closure of cinemas, etc.* *Utility bills increase.* *Addiction.* Max 8 if only drawbacks or benefits. Max 6 if neither drawbacks nor benefits. No marks for repeated items. **7-10 marks** Candidates give a clear, coherent answer discussing benefits and drawbacks with examples to illustrate their points. They use appropriate terminology and accurate spelling, punctuation and grammar. **4-6 marks** Candidates discuss some benefits and drawbacks, but responses lack clarity or relevant examples. There are a few errors in spelling, punctuation and grammar. **1-3 marks** Candidates simply list benefits and drawbacks or give a brief explanation of one benefit or drawback. The response lacks clarity and there are significant errors in spelling, punctuation and grammar. **0 marks**　　No appropriate response.	10

		8
8b	To get all 8 have to make at least 2 points on each (householder, facilities, bank workers) or one well argued. Cannot repeat advantages from (a) *Homeowners can manage their money without leaving their home and do it at a time convenient to themselves. Saves having to queue at a bank.* *Purchase financial goods online, transfer money between accounts, search for best deals, pay bills, check balances, take out loans.* *There are now less bank workers as not many are now needed in the bank to issue cash or transfer money between accounts/ branch closures so have to move. A number who are now employed do different jobs such as advising customers on the best accounts, sorting out mortgages, maintaining on-line banking systems especially with security. etc.* **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 appropriate response.	
9.	**Two marks for benefits, further two marks for expansion. Max 3 if only one benefit.** *e.g.* *Automatic recalculation (1) if data such as rate of pay changes (1)* *Can do what if's (1) to model different costs of parts, etc (1)* *Can draw graphs for reports (1) to highlight cash flow (1) or compare monthly outgoings (1)* *Accurate calculation of wages and bills (1) will increase efficiency/save on time as produced faster (1) Repeated calculations* *Use of templates (1), Mail merge the sheet into a quotation (1) etc.* Speed has to be qualified.	2x2
10a	***MAX 4 marks No mark for naming formula up to two marks for description of what it does (identify and why)x2.*** *SUM, COUNT, MAX, MIN, AVERAGE,* *e.g.* *My Count formula counts the number of numbers in cell range A23 to D23 (1) It can help you work out the mean of a set of numbers (1)* *RAND generates a random number between 0 and 1 (1) in my range it is used to generate the number of sales of hot cross buns in cell e25 (1)* **Must be specific and related to work in their sheet** **Wrong use of formula no marks or if no evidence**	4
10b	***One mark for stating method and identifying it, two marks for advantages to and one mark for a disadvantage*** *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)* **VLOOKUP***, index, etc,* **Combo-box** *Disadvantage: More complex programming model / could have problems with the original tables / update problems.*	4

10c	***One mark for naming a validation technique and second mark for detailed description** x2* *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)* ***Not LIST and SPINNERS***		2x2
10d	***No mark for naming a different process but up to two marks for detailed description x2**.* *Examples could come from: Sort, Search, Macro, 3D referencing, Graph, Output Report (Invoice) / data entry form (Order Form), VB Code, pivot tables, etc.* *e.g. My macro defined the special print settings in the Page Setup dialog box (1) and printed the invoice (1) I used 3-D referencing formulas to summarise monthly data (1) onto the annual summary sheet (1)* *Condone : Single If, Multiple If, Date, Round, Logical operations*		2x2
		Total	**80**