GCE 2004
June Series

ASSESSMENT and QUALIFICATIONS ALLIANCE

Mark Scheme

Information and Communication Technology 2
(Subject Code 5521)

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available from:

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or

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GENERAL GUIDANCE NOTES FOR EXAMINERS

Overall guidelines

1. All examples accepted should be clearly related to the subject area and should not be "generalised" examples.
2. Attention should be paid to ensure that marks are not awarded for simple restating of the question or the stem, often involving the exact same terms.
3. The answers should be providing evidence of more than "man in the streets" knowledge of ICT.
4. It should be remembered that scripts could be seen after they are marked and so consistency of approach and correct mechanics of marking are essential.
5. Rules on positioning of ticks and marks are to aid in checking and remarking of scripts.
6. Do not expect the candidate to use the exact wording given in the mark scheme. If you are in doubt as to the correctness of an answer given by the candidate, consult your Team Leader.
7. From the examinations for 2003 onwards, where one-word answers are acceptable will be indicated on the question paper. (For 2002 the acceptance or otherwise will be determined at standardisation.)
8. The meaning of ICT-specific words and phrases are as defined by *A Glossary of Computing Terms* (current edition) by the British Computer Society.

Specific marking guidelines

9. The basic rule is one mark one tick. The tick to be positioned at the point where the mark is gained in the answer and definitely not in the margin.
10. The only figures in the margin should be sub-totals for parts of questions and a final ringed total for a whole question.
11. Where questions are divided into parts a, b and so on, and a mark is indicated for each on the paper, a mark should be positioned at the end of the appropriate response in the margin.
12. There should in effect be a mark in the margin at every point there is one on the question paper and a number of ringed totals, which relates directly to the number of questions on the paper.
13. Where a question has only one part, the total for that question should be written once and then again and circled. This allows for easy checking that totalling and transcription of marks is correct.
14. All zero values should be crossed through.
15. All blank spaces should be crossed through with a vertical line through the text space – not in the margin.
16. All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.
17. All blank pages must be crossed through.
18. Where candidates have added extra to their answers later in the script, the total mark should be indicated as including x from Page y. The total mark should be in the position where the answer starts.

19. The use of the following symbols/marks is acceptable:

a. BOD – where the benefit of the doubt is given for the point the candidate is making. This is generally where poor writing or English is an issue. Its widespread use should be avoided.

b. Underlining of subject specific terminology, which is misused or incorrect e.g. encoding rather than encryption, information rather than data.

c. Underlining can also be used to highlight clearly incorrect statements or the use of a generalised phrase such as quicker, user friendly and so on.

d. An omission mark ^ should be used where the candidate has given insufficient information to gain a mark. This is particularly useful when a teacher or student looks at scripts against a mark scheme.

e. It may be appropriate to indicate where the same point has been covered more than once by the use of brackets or an arrow It may be appropriate to indicate where the same point has been covered more than once by an arrow or where a point has been covered in several lines of prose by the use of brackets.

f. The use of letters associated with ticks **may** be used to indicate different areas being marked in a question, particularly to indicate the different bullet points in an essay. THIS WILL BE OUTLINED AT STANDARDISATION.

20. **NO** other symbols or comments should be used.

21. Markers are responsible for checking

a. The transposition of marks to the front sheet

b. That all work has been marked on each script

c. That all marks for individual questions are totalled correctly

d. That the script total is transferred to the box at the top right of the script.

e. That they **clearly** initial the script, under the total at the top right, so it is possible for the Principal Examiner to identify each markers work.

Unit 2 Information : Management and Manipulation

Unless indicated otherwise each bullet point is worth one mark/ denotes an alternative word or phrase

1	*11.5 – Manipulation and/or Processing* *Name **two** types of processing that can be used with a computer system.*	
	• Batch • Transaction / Pseudo-real time • Real-time • Interactive **Max 2** **NOT online**	*(2 marks)*

2	*11.4 – Nature and types of software* *A report is to be produced using a word-processing package. The report is divided into several sections. Each section starts with a heading and finishes with a brief conclusion.* *(a) State **two** features of the word-processing package that could be used to ensure that the headings stand out.* *(b) State **two** features of the word-processing package that could be used to ensure that the final paragraphs containing the conclusions stand out. These features must be different from those stated in (a).*	
	(a) • Bold • Underline • Italic • Font Size (Allow lettering) • Font Type • Centred/Aligned e.g. right alignment, change alignment • Colour • Border/Box • Highlighting/Shading background • Automatically applying a (heading) style ALLOW use of 'Word Art' with BOD **Max 2** (b) • Indented Paragraph • Any from (a) **NOT** already used • ALLOW bullet points **Max 2** **ALLOW one word answers for (a) and (b)**	*(2 marks)* *(2 marks)*

3	*11.8 - Security of Data* *A student is working on an ICT project using the computers at her school and her own computer at home.* *Describe a suitable backup procedure that the student could use.*	*(4 marks)*
	• Take a copy • onto a removable medium ALLOW EXAMPLE (NB NOT CD or CD-ROM or Magnetic Tape) / sent as an e-mail attachment / keep on hard drive or server if original kept on removable medium • On a regular basis • e.g. every week/ every time project is worked on • keeping a spare copy in a <u>safe</u> place • test to see that the backup copy works (1) both at home and at school (1) **max 4**	*(4 marks)*

4	*11.2 – Verification and Validation* *Describe, using examples, **two** types of validation check that could be used by a piece of software to ensure that a **date** is reasonable.*	
	• Format/Character/Type Check (1) description (1) example (1) • Range Check (1) description (1) example (1) • Length Check (1) description (1) example (1) • Presence check (1) description (1) example (1) • Drop down list / Look-up (1) description (1) example (1) ALLOW name of validation check and description if the example is not date related **2 x (3,2,1,0)**	*(6 marks)*

5	*11.5 – Manipulation and/or Processing* *State **three** different forms that data can take, and illustrate your answer with an example of each.*	
	• Text/Alphanumeric/Character/String (1) example (1) • Number/Integer/Real (1) example ALLOW currency as example (1) • Graphics/Pictures/Video (1) example (1) • Sound (1) example (1) • Boolean/logical (1) example (1) • Date/time (1) Example (1) **Need form before allowing example** **3 x (2,1,0)**	*(6 marks)*

6	*11.3 – Organisation of data for effective retrieval* *A large company stores its payroll records in one flat file system, and its departmental staff records in another flat file system. The company has decided to merge both systems into one relational database.* *Describe **three** advantages of using the new relational database instead of the old flat file systems.*	
	• Control over redundancy of data (1) Reducing to a minimum any duplicate data (1) • Increased data consistency (1) Information held more than once is automatically updated by the system / single input principle(1) • Increased productivity (1) as ad hoc reports can be generated to meet particular needs (1) • Relationships between tables (1) allow extraction of linked information (1) • Program data independence (1) structure does not affect the programs which access the data i.e. set up time for new applications is reduced (1) **ALLOW extra mark for example <u>if a point is only worth one mark</u>** e.g. Data is consistent as name and address held only once not in several places **NOT uses less space** **3 x (2,1,0)**	*(6 marks)*

7	*11.1 Data Capture* *An Examination Board has decided to use Optical Character Recognition (OCR) software to convert candidates' examination scripts into an electronic format. Examiners will then receive and mark scripts electronically.* (a) *Describe **two** advantages to the examiner of receiving and marking scripts in this way.* (b) *Describe **two** disadvantages to the Examination Board of converting scripts in this way and sending them to the examiners.*	
	(a) • Easier to read scripts (1) • No problems with handwriting etc (1) • Can be sent by e-mail/on CD R/W (1) • No bulky parcels arriving / Not time dependent (1) • Less chance of scripts being 'lost in post' (1) • as electronic copies have been made (1) • Accuracy of mark totalling (1) • no transcription errors (1) • reduced administration for examiner (1) **Allow valid expansion any point for an extra mark** **Max 4**	*(4 marks)*
	(b) • Expensive to set up/ run (1) expansion or e.g. (1) • Need to ensure that all examiners have suitable computer equipment (1) expansion or e.g. (1) • What happens to scripts that cannot be read (1) expansion or e.g. (1) • Files may become corrupted (1) expansion or e.g. (1) • Undetected changes on electronic copies of scripts (1) expansion or e.g. (1) • Problems with OCR software (1) expansion or e.g. (1) • Delay in marking process (1) time taken to OCR scripts (1) **Any 2 x (2, 1, 0)**	*(4 marks)*

8	*11.4 – Nature and types of software* *A new computer system is sold with a printer, scanner and software. The software includes an operating system, drivers for the printer and the scanner, and an integrated package.* *(a) State **four** functions of the operating system.* *(b) Explain why the peripheral drivers are also needed.* *(c) State **three** advantages of using an integrated package rather than separate applications packages.*	
	(a) • Manages all the other programs in a computer • Manages user communication with the computer • Hides the complexity of the hardware from the user • Handles input/output from attached hardware devices/peripheral control NB includes external communications • Management of security • Resource allocation and scheduling • Memory management • Backing Store management • Management of multitasking/transfer of data between programs • Interrupt handling • Power Management • **Re**boot • Loading user interface/ other software **Max 4** (b) • Provides interface/communication between the operating system/computer/application package and the peripheral • Translates formatting and highlighting information into a form that the printer can understand • Translates scanned images into a form the software/computer can understand • Error messaging (1) e.g. scanner/printer not ready (1) **NOT Compatible** **Max 2** (c) • ease of transfer of skills to different parts of package • Many operations are the same in different parts of the package • common user interface • can transfer data between parts of the package • shorter familiarisation/learning time • less training needed • after learning first package • confidence building for naive users **NOT Easier to use or more user friendly or easier to install** **Max 3**	*(4 marks)* *(2 marks)* *(3 marks)*

9	*11.9 – Network environments /11.10 – Human computer interface* *A graphics design company uses a Local Area Network (LAN). The designers can use their computers "stand alone" or as part of the network. The LAN has a star topology.* *(a) Draw a diagram of the LAN and give **one** advantage of using a star topology.* *(b) Describe **one** advantage to the designers of using their computers in "stand alone" mode.* *(c) Describe **one** advantage to the designers of working on the network.* *(d) The 'Log In' screen (**Figure 1**) and the Desktop (**Figure 2**) are shown on the loose insert provided with this question paper.* *(i) Explain why both a username and a password are needed in **Figure 1**.* *(ii) After logging in to the network, the desktop screen appears as shown in Figure 2.* *Describe **three** ways in which this screen provides an effective human/computer interface.*	
	(a) • Diagram structure • Direction of data flow/labelling of diagram • Problems with one communications link do not affect the others • Performance does not degrade under load **Max 3** (b) • Exclusive use of peripherals (e.g. scanner/printer) • Pictures/animations may contain large amounts of data • Designers may be kept waiting because of network activity • Better security • As data/files not available to others on the network • Can continue to work if server fails • Viruses less likely to be transferred • Work not disrupted by electronic messages **ALLOW extra mark for expansion of point** **Max 2** (c) • Data/information can be <u>shared</u> • Designers can work on same project • Shared software • Shared peripherals • Shared resources • Data transfer is improved • So communications are improved between users • Centralised upgrading / installation of software • Central control of security • Centralised control of backup **ALLOW extra mark for expansion of point**	*(3 marks)* *(2 marks)*

	Max 2	*(2 marks)*
	(d)(i) • User name – to identify user/ give access to own work area/ files etc • Password – to prevent unauthorised access	
	Max 2	*(2 marks)*
	(ii) • Use of icons/shortcuts (1) expansion explaining effectiveness (1) • Use of text (1) expansion explaining effectiveness (1) • Use of colour (1) expansion explaining effectiveness (1) • Use of start button (1) expansion explaining effectiveness (1) • Use of task bar (1) expansion explaining effectiveness (1) • Clear well organised layout (1) expansion explaining effectiveness (1) • Use of pointers (1) expansion explaining effectiveness (1) • Use of clock (1) expansion explaining effectiveness (1)	
	Any 3 x (2, 1, 0)	*(6 marks)*