AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Education

Information and Communication Technology

5521/6521

ICT2

Mark Scheme

2006 examination – January series

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.

Unit 2 Information: Management and Manipulation

Examiners: the answers given in this mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.

1	*All spreadsheet packages allow users to format the contents of cells.* *State four formats that can be applied to the contents of cells.*	*(4 marks)*
	11.4 – Software; nature capabilities and limitations NB QUESTION IS **STATE** • Alignment **Allow** e.g. left, centre • (type of) font **Allow** e.g. Arial, Times New Roman • size (of font) **Allow** e.g. 12 point • style (of font) **Allow** e.g. italic, bold • colour (of font) **Allow** e.g. red, blue • contents as number • currency • date • time • percentage • fraction • scientific • (no of) decimal places • contents as text • locked • hidden • conditional • custom • ALLOW background or border **Max 4**	

2	*The term used to describe the arrangement of computers in a network is topology.* *Name **two** different Local Area Network (LAN) topologies and draw a diagram to illustrate each one.*	*(4 marks)*
	Topic 11.9 – Network Environments • bus (1) structure <u>must be diagram and match name </u>(1) • star (1) structure <u>must be diagram and match name </u>(1) • ring (1) structure <u>must be diagram and match name </u>(1) **Allow** one mark for a correct diagram **2 x (2, 1, 0)** **4**	

3	*What type of software would normally be used for the following tasks?* *(a) Creating a directory, or folder, on a computer.* *(b) Writing a report.* *(c) Viewing a website.* *(d) Creating an electronic mark book.* *(One word answers are acceptable for this question.)*	*(1 mark)* *(1 mark)* *(1 mark)* *(1 mark)*

	Topic 11.4 – Software: Nature, Capabilities and Limitations
	    (a) operating system/file management utility
	    (b) word-processing (package)/word-processor, DTP
	    (c) (web)browser
	    (d) spreadsheet (package) **ALLOW** database management system
	Examiners just total number of ticks then copy and circle NOT four separate marks	

4	*A file containing sensitive data is stored on a computer system. Access to this file is managed by the use of passwords, entered at a keyboard, and by setting levels of permitted access.*	
	(a) Explain what is meant by *(i) password.* *(ii) levels of permitted access.*	*(2 marks)* *(2 marks)*
	*(b) Give **two** other possible methods of managing access to the contents of this file.*	*(2 marks)*

| | Topic 11.8 – Security of data

 (a)   (i)
 • characters/letters/numbers/letters and numbers/words/codes
 • linked to a specific ID
 • known only to the user/kept secret
 • security method/device

 Max 2

 (a)   (ii)
 • restricts the type of access to the file/ idea of different types of access
 • example of what those types of access could be e.g. full access or read/write, read only/view, append, no access or who would have different types of access

 Allow two different types of access
 Max 2

 (b)
 • Biometric passwords e.g. retina scan, thumb print, voice recognition
 • Removal/safe storage of disks
 • Swipe cards/keys for access to system e.g. for keyboard
 • Users not leaving the file open/leaving workstation unlocked/automatic logout
 • Firewall
 • Encryption
 • File stored on a computer/workstation that cannot be physically accessed e.g. data stored on a standalone computer in a locked room

 Max 2 | |

5	*A theatre booking system uses interactive transaction processing.* *Explain what is meant by the terms interactive processing and transaction processing.*	*(4 marks)*
	Topic 11.5 – Manipulation and/or Processing Interactive processing • Dialogue between user and system/**ALLOW** description of dialogue • System responds to each input straight away Transaction Processing • Each item of data is dealt with as it is submitted • Each transaction is completed • Before the next is begun **Max 4 (Max 3 if only one term is explained) 4**	

6	*A student loan calculator program has just been released for sale. The program calculates repayments on loans between £1000 and £15000.*	
	(a) Explain why it is important that this piece of software is thoroughly tested.	*(2 marks)*
	*(b) State, giving an example of each, **three** types of test data that should have been used during testing.*	*(6 marks)*
	Topic 11.4 – Software: Nature, Capabilities and Limitations (a) • Software functions 'correctly' • All faults/errors are removed / **allow** 'bugs' have been <u>removed</u> • Should work on a variety of hardware/operating systems/platforms • Should be useable by target audience • People will be making vital decisions based on the results • Reputation of software provider **Any 2 x 1** **Max 2** (b) • Normal data (1) and example (1) • Extreme/boundary data (1) and example (1) • Erroneous data (1) and example (1) **3 x (2, 1, 0)** **6**	

7	*A school has decided that the four printers on its Local Area Network need replacing.*	
	(a) For one type of printer that the school might consider purchasing:	
	(i) name the type of printer;	*(1 mark)*
	*(ii) give **one** capability of the named type of printer;*	*(1 mark)*
	*(iii) give **one** limitation of the named type of printer.*	*(1 mark)*
	(b) For another type of printer that the school might consider purchasing:	
	(i) name the type of printer;	
	*(ii) give **one** capability of the named type of printer;*	*(1 mark)*
	*(iii) give **one** limitation of the named type of printer.*	*(1 mark)*
	(c) Should the school purchase four new printers of the same type, or should it purchase two different types of printer? What would your recommendation be and why?	*(1 mark)*
		(2 marks)

Topic 11.7 – Hardware: Nature, Capabilities and Limitations

(a) (i)

- (colour) laser printer /inkjet printer/dot matrix/thermal wax (transfer)/dye sublimation **NOT LASERJET NOT DESKJET but allow marks for (ii) and (iii)**

(ii) capability

- laser printer fast printing, good quality printouts, can purchase models that print on large paper e.g. A3, etc
- inkjet printer good quality printouts, *low initial costs*, can purchase models that print on large paper e.g. A3, can print on a greater variety of media etc
- dot matrix production of multiple copies
- thermal wax/dye sublimation production of very high quality images

(iii) limitation

- inkjet slow printing, can saturate paper, special paper for inkjet printers is required/*more costly, high cost of consumables/ink* etc
- laser printer, large footprint, *high cost of consumables toner/drum etc*
- thermal wax *high cost of purchase, consumables* etc
- dye sublimation *high cost of consumables* etc
- dot matrix, noisy, poor quality of printing etc

NB BOD marks allowed for cost issues this year because this is first year that the question has referred to capabilities and limitations rather than advantages and disadvantages

2   (1 for any reasonable capability and 1 for any reasonable limitation)

(b)   (i)

- Different printer must be different type or have different functionality e.g. b/w laser for (a) colour laser for (b)

(ii) and (iii)

2   (1 for any reasonable capability and 1 for any reasonable limitation)

| | | (c)
• either same type or different type **MUST BE SUPPORTED BY REASON**
• *same type* – e.g. can buy consumables/ink/toner in bulk don't have to keep stocks of each type, no problems if a printer 'goes down' can manage with others/ may obtain discount on purchase price.
• *different types* – e.g. can have variety of paper sizes, just use colour printers for pictures/graphics saving on costs…

0, 2 | |

8	*A common human/computer interface is a Graphical User Interface (GUI).*	
	*State **three** features of a GUI and, for each one, describe how it provides an effective method of communication between the user and a computer system.*	*(6 marks)*
	Topic 11.10 – Human/Computer Interface • icons/shortcuts (1) expansion explaining effectiveness (1) • menus (1) expansion explaining effectiveness (1) • pointers (1) expansion explaining effectiveness (1) • windows (1) expansion explaining effectiveness (1) • Help (1) expansion explaining effectiveness (1) • Drag and drop (1) expansion explaining effectiveness (1) • Popup…..(1) expansion explaining effectiveness (1) • Toolbars (1) expansion explaining effectiveness (1) • Taskbar (1) expansion explaining effectiveness (1) **Any 3 x (2, 1, 0)**	

9	A flat file system is used to store orders taken for birthday cakes. No validation has been used when the data was entered. Examples of records from the file are shown in Figure 1.

Custo mer	Address	Phone No.	Date Order Required	Wt. of Cake	Type of Cake	Theme of Cake	Price	Notes
Susan Smith	38 Rose Road	01234-665577	3/1/2006	2 Kg	Fruit		£35.45	
Pat	27 Ivy Square	01234-897645	4/1/2006	1 Kg	Sponge	Figure 4	£19.99	Pink with Candles
Pat	27 Ivy Square	01234-897645	4/1/206	1 Kg	Sponge	Figure 4	£19.99	Blue with Candles
Peter Patel	19 Holly Lane Wigton	01234-567483	5/1/2006	3.5 Kg	Fruit	Adult Birthday	£55.00	Pale Apricot with flowers
Susan Smith	38 Rose Road	01234-667755	7/1/2006	1.5 Kg	Choco-late Sponge	Train	£25.99	Thomas the tank engine

Figure 1

(a) Giving examples from Figure 1, describe **two** problems that have occurred due to storing the data in a flat file.

(4 marks)

(b) Giving examples from Figure 1, describe **two** problems that have occurred due to the lack of validation when data was entered.

(4 marks)

(c) State, giving a reason for each one, **two** extra fields that could be added to the record structure for the cake orders as shown in figure 1.

(4 marks)

(d) The flat file is to be replaced by a relational database.

What structures would be needed in this database to allow for the effective updating and retrieval of data?

(4 marks)

Topic 11.2 – Verification and Validation
Topic 11.3 – Organisation of Data for Effective Retrieval

(a)
- duplication of data (1) reference to Pat/ Susan Smith (1) name, address 'phone number (1)
- inconsistency of data(1) reference to Susan Smith's phone number (1)
  Max 4

(b)
- date field (1) problems with Pat's date/should have used a format check(1)
- name field (1) only one field Pat's surname/last name not entered (1)
- theme of cake field (1) left blank/should have used a presence check (1)
  Any 2 x (2, 1, 0)

(c)
- Customer name field(1) needs splitting e.g. (1)
- Address field(1) needs splitting(1)
- Order Number field required (1) uniquely identifies order (1)
- Customer Number field required (1) uniquely identifies customer (1)
- Cake Number field required (1) uniquely identifies cake (1)
- **ALLOW** any reasonable field (1) and supporting reason (1)
  Any 2 x (2, 1, 0)   **4**

(d)
- Tables/Relations
- e.g. Customer/Order/types of cake
- Primary Key
- E.g. Customer no, cake no
- Relationships/links e.g.
- Use Cake no in Order/Use Customer no in Order
- As a foreign key

  NOT QUERY/FORM/REPORT/MACRO

  max 4