

November 2003

GCE A/AS LEVEL

MARK SCHEME

MAXIMUM MARK: 90

SYLLABUS/COMPONENT: 9691/01

COMPUTING
Written Paper 1



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- 1 (a) (i) A number of different pieces of **software/programs** that can **share** data
(ii) Contains documentation with the software/software that allows the user to produce something useful
(iii) Generic software can be used in different situations to accomplish different things/general purpose software

(3)

- (b) (i) - Batch processing is the **collecting** together of data **before** being **processed**
- Real time is a process where the output is produced quickly enough to affect the next input.

- (ii) Batch processing, e.g. payroll
- not time sensitive
Real time, e.g. computer game
- the player must be able to affect the game

(6)

2 In each case, the suitable use stated is an example.

- (i) - Prompts operator for inputs/Specified areas for the data/Data entered in order/in format
- Operator taking information over phone
- Does not allow information to be missed out/simple to use
- (ii) - Icons used to stand for options/when selected, command code is run/normally accessed by use of mouse or other pointing device/WIMP
- Non-experienced user/child in school
- Restricts access to certain parts of the system
- (iii) - Set of commands recognised by the OS/typed in at prompt/need to be learned by user
- Technician
- Allows access to whole system/does not use large amount of memory (1 per -, max 3 per dotty, max 9)

(9)

3 13, 18, 19, 21, 21
1 per value with follow through marking from one error and –1 (misread) if more than 5 values given

(5)

- 4 - Comments typed in as part of code
- using special reserved word making clear it is a comment/explains clearly the purpose of code
- Meaningful data names
- so that reference to a complex list is not necessary/less chance of error

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- Indentation of program lines
 - to make it obvious which lines of code go together
 - Modularity
 - splitting code into smaller parts so that the solution is easier to follow
(1 per -, max 2 per method, max 3 methods, max 6)
- (6)

- 5 (a)**
- A member of a **standard** character set/set of codes the computer understands
 - Represented in a single byte/7 or 8 bits used per character
 - Standard nature allows for communication between systems
(1 per -, max 2)
- (2)

- (b)**
- Date/integer
 - Integer
 - Boolean/yes or no
 - Currency/floating pt/real/integer
- (4)

- (c) (i)** Storage space for one data item/one student's name
- (ii)** All the data about all the students in the college
- (iii)** All the data about a single student
- (3)

- 6**
- (Processor) fills buffer/data temporarily stored in buffer
 - then gets on with some other task
 - Data emptied from buffer to secondary storage
 - without holding up processor
 - When buffer empty
 - interrupt sent to processor
 - requesting refilling of buffer
 - from storage device
 - leading to register contents from current job being stored
 - Mention of double buffering
 - Vectoring interrupts
 - mention of priorities
(1 per -, max 6)
- (6)

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- 7 (a) - Network card(s)
- Cable
- Server (of some sort)/hub
- Network operating system/communications software/network versions of applications packages
(1 per -, max 2 for hardware, max 3)
(3)
- (b) - Text based are relatively small files
- because each character only takes one byte

- Graphics tend to be large files
- because each character can take up to 3 bytes
(1 per -, max 1 for idea of size and one for explanation, max 2)
(2)
- (c) Advantages
- sharing of hardware
- sharing of software
- sharing of files
- communication
- students may use any machine to access their work
- installation of software is easy

Disadvantages
- difficulty of securing data
- fault in network can affect whole system
- complexity of the hardware
- need for technical administrator
- spread of viruses
(1 per -, max 2 for advantages, max 2 for disadvantages, max 4)
(4)
- (d) (i) - **Communications** need a set of **rules**
- to govern the way that communication is controlled

(ii) - Individual layers can be altered
- without altering other layers
- when hardware/software is changed
(1 per -, max 2 per dot, max 4)
(4)
- 8 (i) - Custom written is software written specifically for the purpose/designed for one customer
- Off the shelf is generic/covers many problem solutions/ready made/can be bought in a shop
(2)

- Custom written only sensible choice because
- application is a one off
(2)

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- 9 (a)**
- Passive system is one that supplies information without allowing it to be altered
 - Interactive system supplies information and allows it to be altered
 - Interactive system here
 - otherwise operators cannot alter automatic process.

(4)

- (b) (i)** - HCI is the means by which the human and the computer communicate.

(1)

- (ii)**
- Prioritising of information
 - Volume of information
 - Information overload
 - Colour used
 - Colour blindness
 - Sound (not too many)
 - Different hardware, e.g. printer for very important information
 - Placement of hardware
 - Data input techniques
 - Expertise of staff
 - Tasks to be done
 - Type of data representation (textual/graphical/...)

(1 per -, max 5)

(5)

- 10**
- Direct or big bang
 - Old system is turned off and new system is brought on line
 - If it does not work then admin must shut down
 - Training/Files must all be in place
 - Dual running or parallel running
 - Both systems run simultaneously
 - until sure that the new system works/Finds bugs in new system
 - very expensive/time consuming
 - Allows training to be carried out while it is working
 - Phasing/Pilot running
 - Some sections are introduced while others run old system
 - not changed over until running properly
 - allows training to be carried out
 - Key parts of new system run alongside old system
 - until fully tested
 - Problem because full data not tested as in dual running
 - Allows return to original system if new system does not work
- (Note: Allow pilot and phased introductions if it is clear that they are clearly understood)

(1 per -, max 3 per method, max 9)

(9)

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- 11**
- Barcode consists of (pairs of) dark lines
 - of (three) varying thicknesses
 - which combine to give a (character) code
 - used to identify worker
 - OCR is a means of computer reading standard characters/Optical character recognition
 - Light reflected off characters/determines shape of character
 - comparing the values with examples in memory
 - fewer characters the better
 - used for reading times
 - different days signified by different positions on the card
- (1 per -, max 3 per type, max 6)

(6)

- 12**
- Workers will need to do extra work for changeover
 - e.g. preparing new data files
 - Workers will need training in new systems
 - New skills will be learned which will mean
 - workers are better qualified (paid)
 - some workers may (not be able to learn new systems) lose jobs.
 - disruption to routine during changeover
 - jobs will become less paper based
 - adverse effects of things like RSI/sitting at desk all day
- (1 per -, max 4)

(4)