

GCE 2005
January Series



Mark Scheme

Computing Specification

CPT1 Computer Systems, Programming and Networking
Concepts

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 to download from the AQA Website:
www.aqa.org.uk

Copyright © 2005 AQA and its licensors. All rights reserved.

COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

The Assessment and Qualifications Alliance (AQA) is a company limited by guarantee registered in England and Wales 3644723 and a registered charity number 1073334. Registered address AQA, Devas Street, Manchester. M15 6EX.

Dr Michael Cresswell Director General

Computing: Unit CPT1

The following notation is used in the mark scheme

- ; - means a single mark;
- / - means alternative word or sub-phrase;
- // - means alternative answer
- A – means acceptable creditworthy answer;
- R – means reject answer as not creditworthy;
- I – means ignore.

1. (a)	bus;		
	R line		1
(b)	star;		1
(c) (i)	<i>(Advantage:)</i>	<i>(Reason:)</i>	
	lower cost//	reduced cabling//	
	more flexible;	easy to add/remove stations;	
	A advantage and reason swapped round		
	A cheaper		
	R Easier to set up		2
(ii)	<i>(Advantage:)</i>	<i>(Reason:)</i>	
	if one <u>cable/wire</u> fails it affects only one computer//	as each computer is directly connected to central computer//	
	simple to isolate faults//	as messages are sent directly	
	different computers can transmit at different speeds// system more secure//	to central computer;	
	network does not degrade when highly loaded;	A each computer has its own line;	
	R collision free <i>unless explained</i>		
	R easy to add / remove computers R reliability R faster		
	R computer/node failure		
	A advantage and reason swapped round		
	<i>Reason mark not dependent on gaining advantage mark</i>		2
		Total	6

2. (a) (i) layer of software which enables users to operate computer;
 interface between user and computer;
 software which allows user to communicate with / manage hardware;
 software to run applications/hardware/programs/computer/packages;
R system on its own as n.e.
 software to make computer/hardware work / used to maintain hardware;
R platform **R** software used to run the system / it (n.e.) **1**
- (ii) operating system;
 utility programs (or any example of one) /library programs/compilers/ assembler/
 interpreter / translator / driver / Graphical User Interface/bootstrap loader;
A BIOS;
A antivirus/firewall software;
R *any programming language* **1**
- (b) (i) program to perform end user task;
A real world task/ program produced by end user/ you *instead of user*; **1**
- (ii) any suitable example e.g. word processor /spreadsheet/Database/payroll /
 Accounts/etc;
A browser **1**
- (c) Software specifically written/ tailor-made for an End user/ them/ company/
organisation;
A custom-made; **R** customised
I for a task/ purpose **1**
- Total **5**

3.	(a)	1	Clock;		
		2	Processor;		
		3	read only memory;	A ROM;	
		4	random access memory;	A RAM;	
		5	data bus;		
		6	address bus		6
	(b)		Address Bus; A 6 if correct in (a)		1
	(c)		Data Bus; A 5 if correct in (a)		1
				Total	8
4.	(a)		integer; R long integer		1
			whole numbers only // cannot have fractions // discrete number;		
			R not a decimal number		1
	(b)		text / string / alphanumeric; R numeric		1
			need a string as number would lose leading zero // not for calculations //		
			because telephone numbers can contain <u>non-digit</u> characters;		1
	(c)		boolean // yes-no // logical // subrange with 2 possible values only;		
			R tick box R string[1] R character		1
			only two possible values; it's a yes/no answer;		1
	(d)		real // single // floating point // float // fixed point; R double R decimal		1
			average may be a fractional number // need decimal point / places;		
			R decimal/decimal number on its own (n.e.)		
			A answer may not be an integer/integral/whole number		1
			<i>Reason marks independent of data types</i>		
				Total	8

5. (a) (i)	52;	1
	(ii) 34;	1
(b)	quicker / easier (for humans) to <u>convert/decode/translate</u> than pure binary// easier to construct electronic displays e.g. calculators; R easier to calculate R easier for humans to understand/ read	1
(c) (i)	'4' // 4 ;	1
	(ii) UNICODE // EBCDIC // EBCD // extended binary coded decimal // extended binary coded decimal interchange code; <i>A minor misspelling of EBCDIC</i>	1
(d) (i)	each pixel stored in several bits/one byte/one word; each colour represented by a different value;	2
	(ii) endpoints // a pair of / two (x,y) co-ordinates // start point, direction and length; type of object / shape; thickness of shape / line; colour of shape/line; A Properties of shape/line on its own;	3
		Total 10

6. (a) (i) Var S: String // Var Count: Integer // Var Size: Integer; 1
- (ii) If Size > 0 // If Size >0 Then // If Size > 0 Then EndIf ; 1
- (iii) S := "fred" // Size := Length(S); 1
- (iv) For Count := 1 to Size Do // For Count := 1 to Size Do EndFor; 1

- (b) (i) 1

Subroutine	Procedure	Function
Length		✓
ToUpper	✓	

2

- (ii) function returns a value // function has a (data) type //
 function appears in an expression //
 function appears on the RHS of an assignment statement;
 procedure does not have to return a value //
 procedure forms a statement on its own; 2

7. (a)

```

x ← 5
y ← 3
Result ← 1
REPEAT
    Result ← Result * x
    y ← y - 1
UNTIL y=0
    
```

x	y	Result
5	3	1
5	2	5
5	1	25
5	0	125

1 mark for each entry in column Y (max 3)

1 mark for each entry in column Result (max 3)

1 mark for not changing value of x (max 1)

7

- (b) calculate 5^3 // calculate $5 \times 5 \times 5$ // calculate x^3 // calculate x^y //
 multiply x by itself y times; 1

8.	(a)	Cables are cheaper // uses fewer wires; Data does not get skewed // out of line/sync; Simpler/cheaper/easier to boost signals; R Cheaper on its own (n.e)	2
	(b)	(i) baud is the number of signal / pulses / voltage changes per second; A rate at which signals / pulses are sent; A rate at which voltage changes; (ii) number of bits per second / bits per unit of time; bit rate = baud rate * number of bits per signal change; R rate at which bits are sent (iii) range of frequencies that can be transmitted;	1 1 1
	(c)	greater bandwidth allows greater bit rate;	1
			Total 6
9.	(i)	hypertext transfer protocol//protocol (used) // set of rules (used); R http format	1
	(ii)	www means it is a web site / web page / is on the web / on a web server; R Internet R world wide web on its own (n.e.)	 1
	(iii)	(org means it is) an organisation/non-profit making; A the type of organisation	 1
	(iv)	the country of origin//based/registered in the UK; A site in the UK R country on its own (n.e.)	 1
	(v)	the folder name//the subdirectory; A the directory;	 1
	(vi)	the file name//the page to be viewed; A the document name	 1
			Total 6
Grand Total			65

END OF CPT1 MARK SCHEME