GCE 2004
June Series

ASSESSMENT and QUALIFICATIONS ALLIANCE

Mark Scheme

Computing
Unit CPT1

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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)		Operating System// any utility// any user interface// library programs// compiler// assembler// interpreter// translator// driver **A** BIOS **R** any programming language	**1**
	(b)	(i)	software written for a specific/ particular/ certain area/problem/task /function; or by example **R** bespoke software	**1**
		(ii)	appropriate to many areas/tasks/functions/problems/uses; or by example	**1**
	(c)	(i)	designed for the specific task// uses less memory/ disc space// does not have unnecessary features; **R** bespoke software	**1**
		(ii)	able to perform many tasks// can be used for many purposes// cheaper to purchase; **I** Fewer errors	**1**
			Total	**5**

2. (a) (i) machine code; or by description
R Low level language **1**

(ii) assembly code / language; or by description;
R Low level language **1**

(b) Pascal / Delphi/ Visual Basic / Basic / Java / Cobol / Fortran / Algol / or any other 3GL;
R Prolog, Lisp, SQL, HTML, XML
A 'C' **1**

(c) Problem oriented;
less code required// less tedious to program//
one to many mapping to machine code;
portable// machine independent;
Quicker / Easier to understand / write / debug / learn / maintain / modularise;
Data types / structures // structured statements // local variables // Parameters // named variables / constants //
English like keywords / commands / syntax ;
R easy to read
Any two **2**

Total 5

3. (a) (i) Read Only Memory; **1**

(ii) Random Access Memory; **1**

(b) (i) Disk Controller; **1**

(ii) Network Interface Card//Network Adapter;
A Network Card **1**

(c) Address Bus;
Control Bus;
Data Bus; **3**

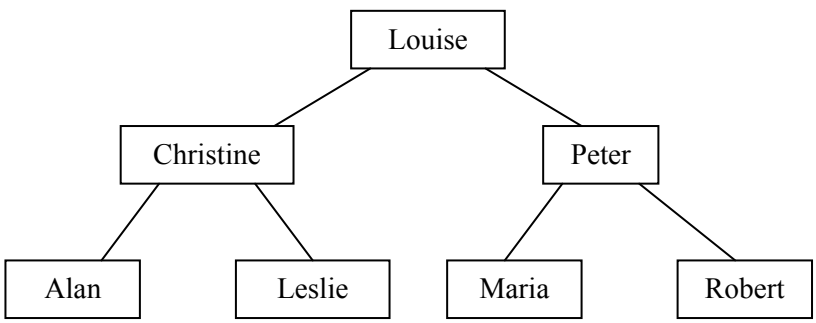
(d) Program stored in main memory;
A RAM/IAS
R ROM
Instructions fetched and executed by processor *(concept)*;
A CPU
Can be replaced by another program;
R cache **2**

(e) (i) The number of 1s (including the parity bit) comes to an even number; **1**

(ii) used to check for errors when data is read / transferred;
Parity bit regenerated / recalculated;
Compared with parity bit;
Any 2 **2**

Total 12

4.



(a) (i) correct position of Louise;
correct position of Christine and Peter;
correct position of Alan and Leslie;
correct position of Maria and Robert;
(If consistent mirror image give full marks) **4**

(b) Root node marked correctly; **1**

(c) Louise, Peter, Maria in correct order (allow follow through from (a)); **1**

Total 6

5.	(a)	(i)	Local Area Network;	**1**
		(ii)	Wide Area Network;	**1**
	(b)	(i)	Intranet // Any example of communication within a building or site; **I** Connection of computers	**1**
		(ii)	Internet// World Wide Web // Any example of communication over a substantial distance; **I** Connection of computers	**1**
	(c)	(i)	A set of rules;	**1**
		(ii)	The rate that signals/ voltage changes are transmitted;	**1**
		(iii)	The number of bits transmitted per second// the number of bits transmitted per time unit; **R** the rate that bits are transmitted; **R** bits of data	**1**
		(iv)	The range of frequencies a medium is capable of transmitting;	**1**
	(d)		Greater bandwidth allows greater bit rate // bit rate proportional to bandwidth;	**1**
	(e)	(i)	Bits transmitted one after the other (along a single channel/ wire/ line); Or by diagram **R** Bits of data	**1**
		(ii)	Bits transmitted (along several wires/ channels/ lines) at the same time; Or by diagram	**1**
		(iii)	Can be transmitted over a longer distance// cabling is cheaper // Less chance of skew;	**1**
		(iv)	Faster transmission;	**1**
				Total 13

6. (a) (i) Analogue to Digital Converter;
A Sound Card **1**

(ii) Stored as a sequence of numeric values;
Each value represents amplitude/height/volume of a signal at that moment;
Sound sampled regularly; **2**

(b) (i) Each pixel represented by a value // image is divided into pixels;
R screen **1**

(ii) Each graphic / drawn element / shape stored individually; **1**

(c) Uses less memory // faster to load / transmit;
Does not deteriorate when enlarged; **2**

(d) (i) Each character stored as a unique code;
Or by example **1**

(ii) ASCII/UNICODE/EBCDIC/BCDIC; **1**

Total 9

7.

Result	Index
0	0
24	1
24	2
57	3
57	4

(a) mark for each correct entry in Result – max 4 marks
A blank as a repeat of the entry above
1 mark for all the entries in Index; **5**

(b) Obtain the largest value; **1**

Total 6

8. (a) (i) Const MaxChars=5; **1**

(ii) Message : Array[1..MaxChars] Of Char//
LastChar : Integer//
Position : Integer//
Found : Boolean;
I var **1**

(iii) Position := Position + 1//
Message[Position] := c//
Position := 0//
Found := FALSE//
Found := TRUE//
Find := Position//
Find := 0; **1**

(iv) If LastChar < MaxChars (Then ….)//
If Message[Position] = c (Then ….)//
If Found (Then …..); **1**

(v) While (Position < LastChar) And Not Found (Do …); **1**

(b) (i) Found;
R var
I type **1**

(ii) Message// LastChar// Position;
R var
I type **1**

(iii) c;
I type **1**

(c) a function always returns one/at least one value //
function name can be used in an expression //
function name can appear on the RHS of an assignment statement //
a procedure can not be used in an expression; **1**

Total 9

END OF CPT1 MARK SCHEME