Mark scheme
June 2003

GCE

Computing

Unit CPT1

The following notation is used in the mark scheme
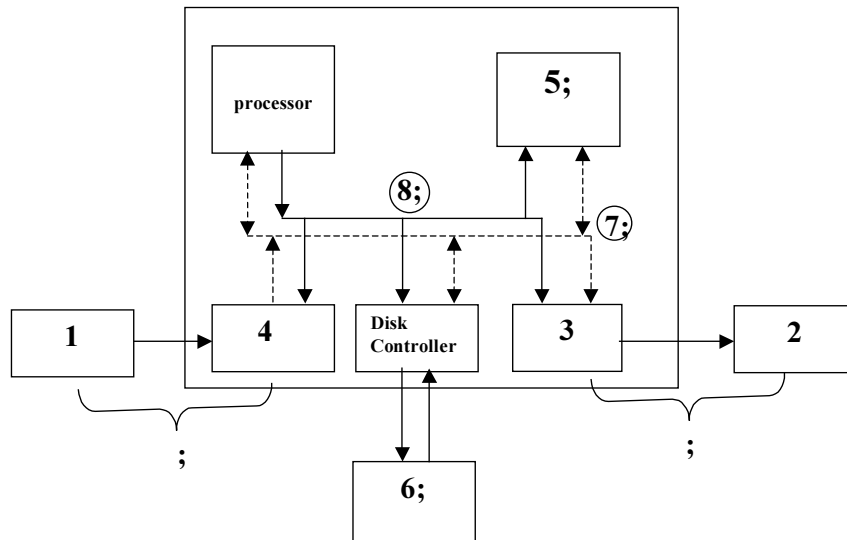
- **; - means a single mark;**

- **// - means alternative response;**

- **/ - means alternative word or subphrase**

- **A. – means acceptable creditworthy answer;**

- **R. – means reject answer as not creditworthy;**

- **I. – means ignore.**

1.   **(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/control/manage applications/hardware/programs/
computer/packages;
                R system on its own as n.e.
software to make computer/hardware work/used to maintain hardware/
computer;
R operating system **R** software used to run the system **R** platform   **1**
A valid example given here can be carried forward to (iii)

        (ii)   program written to perform end <u>user</u> task; **A** real world task/you *instead of user*
program to enable user to do an end-user task; program produced by end
user;   **1**

        (iii)   operating system/utility programs *(or any example of one)*/library
programs/compilers/assembler/interpreter/translator/driver/Graphical
user interface;   **1**
A BIOS; **R** *any programming language*

    (b)   **(i)**   Word processor/spread sheet/database/ DeskTopPublishing/Graphics
package/voice recognition; etc.   **1**

        (ii)   Software written to solve a specific/particular/certain/given problem/task
function;
Or by example: payroll/accounts/weather forecasting, web browser etc;   **1**
R *any programming language*

(c)   (i)   Software specially written/tailor-made for an <u>end user/ them/</u>
<u>company/organisation</u>;   **1**

A custom-made; **R** for a task/purpose

(ii)   **Advantage**: (Exactly) matches end user requirements;

More suited to their needs/tasks // tailored to the needs of the user;

user has input into design;

No unnecessary facilities;   **1**

Disadvantages: Not tried and tested / likely to have more bugs;

expensive to <u>buy</u> (as no wide user base to share cost) ;

takes longer to be available; **A** takes time to produce;

need to specify requirements;

lack of technical/user support/training;

no recommendation possible;

not able to see a demo version;

lack of manuals / documentation; **R** no manuals….

R expensive **A** more expensive;

R cost more to produce

R users needs may change therefore needs updating;   **2**

Total   **9**

2 (a) $1024 / 2^{10}$; **A** 10000000000_2 *(10 0's)*   **1**

(b) (i)   1111111111111111; *(16 1's)*   **A** FFFF;   **A** $65,53\underline{5} / 2^{16}\underline{-1}$;   **1**

(ii)   0000 0000 0010 0101; *accept if leading zeros not given*   **1**

(iii) 0000 0000 0011 0111; *accept if leading zeros not given*   **1**

(c) (i)   0011 0011 1011 0111;;; *accept 37 transposed*: 1011 0111 0011 0011;;;

one mark for parity bits - one mark for each correct character code

f.t. for parity bits: if even number of 1's in each byte ;   **3**

(ii)   parity bit is set when character first generated;

(parity bit is adjusted to make) number of 1's /on-bits even;

parity bit is regenerated / the number of 1's is checked by receiver;

if parity bit does not match / if there are an odd number of 1's an
error has occurred;   **2**

Total   9

3   (a)

                allow names instead of numbers   **6**

    (b)   Machine code instructions/program stored in <u>main </u>memory; **A** RAM/IAS;

               fetched and executed; *(concept)*

               Can be replaced by another program any time;   **2**

                                                   Total   **8**

        R cache

        R ROM

4   (a)   (i)   (Analogue sound) is converted into digital // discrete values;

(Height of analogue wave) sampled;

At regular intervals;

Height/value represented by a number/binary code/binary pattern;   **3**

R MIDI

(ii)   Digital-to-Analogue converter; **A** sound card; **R** MIDI

A D-A Converter; DAC n.e.   **R** A-D converter   **1**

(b)   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;   **2**

Total   **6**

5   (a)   nodes/systems/networks/machines/computers connected/ linked/
communicating;

on different sites; over large <u>geographical</u> area/by satellite/telephone line/;   **2**

R different buildings

   (b)   (i)   modem/ISDN adapter/ADSL adapter; **R** network card   **1**

       (ii)   Browser software; http communication software; Telnet; FTP;
Gopher;SSH;   **1**

          R internet server **R** dial-up networking software

   (c)   (i)   dedicated link;

          constant/permanent connection/fixed line;   **1**

          R private line **R** direct line

       (ii)   only <u>connected</u> while in use/when required; non-permanent connection;

          re-connect to go on-line;

          R public line / shared line   **1**

   (d)   <u>Bits</u> are sent one after another/bits are sent one at a time/ bit by bit /bits sent
singly / bits along a single wire / line;

      R data   **1**

   (e)   (i)   one baud is the number signal/voltage changes per second;

          A rate at which signals are sent; **A** rate at which voltage changes;

       (ii)   number of bits per second / bits per unit of time;

          bitrate = baudrate * number of bits (per signal change);   **2**

          R the rate at which bits are sent *(question paraphrased)*

                                                        Total   **9**

6 (a)   bbc.co.uk; www.bbc.co.uk;   **1**

   (b)   (i)   (hypertext transfer) protocol / protocol used / set of rules used; **R** http
             format

         (ii) www means it is a web site/web page/is on the web; **R** Internet

             on a web server/the machine name;

             world wide web on its own n.e.

         (iii) (bbc is the)) organisation's/company's name/keyword/identifier/ site
             name/site owner;

         (iv) (co means it is a) company; **A** corporation; the type of organisation;

         (v)   uk means the country of origin is the UK/based in UK/**A** site in the UK;

             where it is based/located;

         (vi) history is the folder name/subdirectory

             (which contains a file with default name of index.html);

             OR **A** history is the page/filename of the web sit/part of the site; **A**
             (specific) topic;   **6**

   (c)   (i)   domain name has a single IP address;

             computer looks up domain name on a (domain) name server

             which tells the computer the IP address;

             domain name is user-friendly representation of IP number;

             IP number/address is numerical representation of domain name;

             Domain name maps onto IP address; one-to-one;   **1**

         (ii) 0.0.0.0 / 0;

             to 255.255.255.255 / 2^{32}-1 / 256^4-1; 4294967295;

             each group of digits is in the range 0-255;;   **2**

                                                              Total   **10**

7   (a)   (i)   Var S1: String / Var S2: String / Var Ptr : Integer / Var L : String;   **1**

(ii)   IF S1 = S2;   **1**

(iii)   For Ptr := 1 To 3 Do;   **1**

(b)

(c)

subroutine	procedure	function
copy		Y*;*
concat		Y*;*
print	Y;	

3

S1	Ptr	L	S2
"PAT"			""
	1	"P"	"P"
	2	**"A"**	**"AP"**
	3	**"T"**	**"TAP"**
Printed Output:			**False**

8

if S2 at end contains "PAT" then f.t. for True;

(if S2 does not contain "TAP" check that printer output is correct

depending on what is in S1 and S2 in the candidate's answer)

1 mark for each correct entry, 1 mark for S1 correctly left as "PAT" or empty

Total   14