Mark scheme
June 2003

GCE

Computing

Unit CPT1

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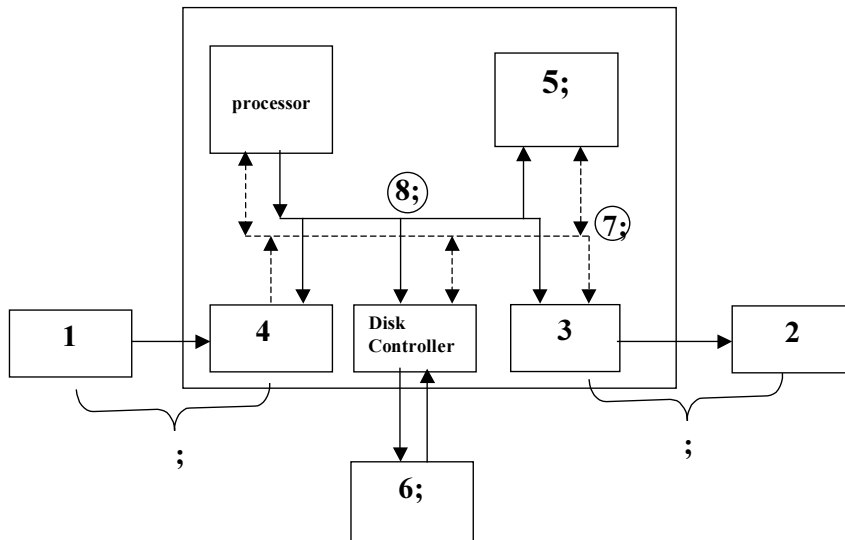
- **; - means a single mark;**

- **// - 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;
    1
R data

(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**

AQA

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**