AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Education

Computing 5511/6511

CPT1   Computer Systems, Programming and Networking Concepts

Mark Scheme

2006 examination – January series

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.

Instructions to examiners

The following forms of notation should be used on candidates' scripts:

- **Ticks - To indicate what is accepted as correct or creditworthy, placed in the body of the answer, and on diagrams;**

- **Underscoring – To identify errors/irrelevance in written answers;**

- **Crosses – to indicate a wrong answer;**

- **Brief comments – placed at suitable points in the body of the text to amplify the marking;**

- **BOD – means benefit of the doubt and is used where the candidate's answer has been given a mark on the balance of probabilities that the candidate's answer has met the requirements of the mark scheme even though it could be interpreted differently;**

- **NE – means not enough and is applied to an answer that falls short of what is required;**

- **O/S – means outside the mark scheme. The candidate's answer is creditworthy but the answer does not match any of the answers on the mark scheme for the particular question. Nevertheless a mark is awarded;**

- **C/F – means carried forward. This arises when a candidate offers an answer which is not creditworthy in one question but is creditworthy in a later question. The mark is carried forward to the question which is creditworthy;**

- **C/B – means carried back. This is similar to a carry forward but the mark is carried back to an earlier question.**

- **T/O – means talked out. The candidate's answer is contradictory.**

- **^ - means missing term or symbol.**

- **F/T – means followed through. If a candidate made a mistake in the earlier part of an answer, mar the answer using the correct method on their answer from the earlier part.**

The following notation is used in the mark scheme

- **; - means a single mark;**

- **A - means an acceptable creditworthy answer;**

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

- **I – ignore**

- **/ - means alternative word or sub-phrase**

- **// - means alternative answer.**

General Rules for Marking
Ignore Abbreviations
Ignore Brand Names

1 (a)

Software	Description (letter below)
Route planner software	B / D;
New point of sale software for Supermarket X's checkout terminals	B;
Translator software for the Java programming language	C;
Spreadsheet software	A;

4

(b)　　*Library program ...*
previously written program code;
program code available from third parties;
program routines previously saved/compiled;
code which can be incorporated into current/future developments;
program files which are used by other/many applications　　　　　　MAX 2

R. system software / utility programs

Total 6

2.
(a)
(i)　　functions always <u>return</u> some value when called;
procedures <u>may</u> return a value;
functions appear in expressions;
procedures do not appear in expressions;
procedures name alone makes up the statement / call <name>　　　　MAX 2

(ii)　　anything named which is plausible;
examples could include: computation / formatting / string handling;
2

R. software features / button events / DLL
A. Dynamic Linked Library

(b)
(i)　　True / Yes / 1 ;　　　　　　　　　　　　　　　　　　　　　　1

(ii)　　False / No / 0 ;　　　　　　　　　　　　　　　　　　　　　　1
(iii)　Error ;　　　　　　　　　　　　　　　　　　　　　　　　　　　1

(c)　　program / constant / function / procedure / module / unit / user defined type / record / label / object / class ;
MAX 2
(d)

Advantage of an Interpreter:
- should allow <u>faster/easier</u> program development // <u>faster/easier</u> testing / debugging / finding errors ;
- correcting mistakes is less time consuming ;
　　　MAX 1

Advantage of a compiler:
- the executable code/object code/program will <u>run</u> faster ;
- once the executable file has been produced no further action ;
- software distribution requires no further software to be available to the user ;
- prevents tampering of the code by users other than the developer ; MAX 1

Total 11

3.
(a)   assembly language/code/program //
         second (generation) ; 1

(b)   machine code //
         first (generation) ; 1

(c)   (memory) address / location ; 1
         R. Line number

(d)   assembler ; 1

(e)   1-to-1 (mapping between instructions/op code/numbers written in assembler and their machine
         code equivalent) / each assembly instruction translates into one machine code instruction 1

(f)   <u>error</u> / error list / error report / error count / highlight statement(s) illegally formed // / instruction
         count // symbol table ; 1

Total 6

4.
(a)   electrical/electronic/physical components/parts of <u>computer</u>/system ; 1
         A. any example e.g. motherboard

         R. peripherals
(b)
- C – **processor / CPU**;
  B - <u>faster</u> execution of program instructions / programs ;
     simultaneous processes possible ;
     A. computer runs faster

- C – **(main) memory / RAM** ;
  B - more programs resident in memory ;
     reduces main memory to disc data transfers / programs execute faster ;
  R. stores more data

- C - **secondary/disc store / hard disc** ;
  B - more programs/data can be permanently stored / available ;
     faster access/loading speed ;

- C – **motherboard** ;
  B - allows for faster execution of programs / connection of new I/O ports (e.g. USB / Firewire) ;

- C – **(3D) graphics/video card** ;
  B - display of high resolution / 3-D graphics / maximise the benefits possible from some software / better quality images //
  dedicated processor ;

- C – **Sound card** ;
  B – better quality sound / surround sound

- C – **Modem** ;
  B – External communication / e.g. connect to the Internet

- C – **Network card / NIC** ;
  B – communication with other PCs // provides some external communication/connection ;

- C – **CD drive** ;
  B – higher read/write speed

- C – **DVD drive** ;
  B – increased storage / e.g. higher quality media ;

  R. Router / Cache

  MAX 4

(c)   **A** Sound card / Graphics card / Modem / Network card / Main memory if not given in (b)

- C - **new I/O port**   **A**. example e.g. TV input / USB;
  B - connection to devices which were not previously possible / connection to an additional device e.g. a second parallel printer ;

  R. Motherboard / CPU/ hard disc / CD drive / DVD drive

  MAX 2

  Sound card
  B - to output audio on the PC (for the first time) - accept as a B. for (c) only

  Total 7

5.
(a)
(i)   *Definition of information …*
        Processed data / data with structure / organised data / data which have been sorted / data given a context (and therefore meaningful to the recipient) //
        Any form of communication which gives understandable/useful knowledge to the person receiving it ; MAX 1

(ii)   The printed reports sent to tutors (provide information on each student) ;
        some specific detail e.g. whether or not a student was present on a particular day ;   MAX 1

(b)
(i)   Any example which illustrates primary <u>data</u> capture

        UPC code/Barcode captured EPOS terminal ;
        Scanned image captured directly from some OCR/OMR document ;

Character data keys in data value at keyboard ;
Personal data captured from swipe card/chip and pin /credit card ;
          MAX 1
The source must be either stated or implied

(ii)   Any example where the data is being <u>clearly</u> used for some <u>secondary purpose</u> ;
         e.g. The same EPOS captured data is used to produce sales analysis information ;   MAX 1

Total 4

6.
(a)   (i)   **Do not mark this part**
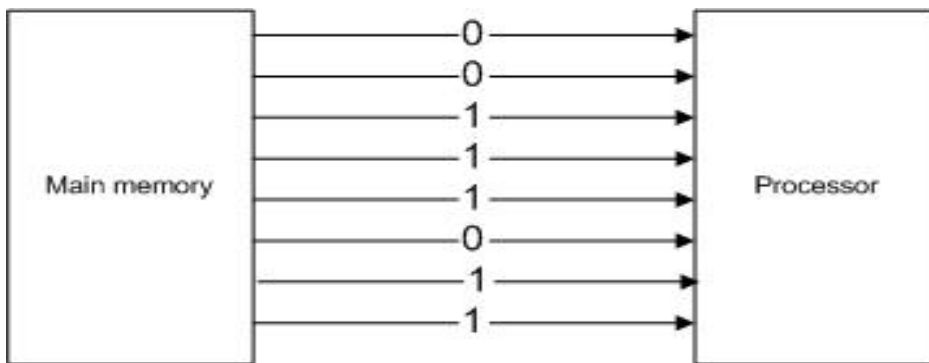
        (ii)

        diagram has 8 lines ;
        diagram has the correct 1 bit per line ; A. pulses to indicate 0/1's   2

        A. either 'top to bottom' or 'bottom to top' labelling of the bits
        I. the direction of any arrows

(b)   *Interpretation …*
        • program instruction/command ;
        • character / ASCII code / 7 data bits + parity bit ;
        • integer / 59 / number;
        • real / number;
        • byte/pixel from a graphics file ; **R**. 'part of'
        • byte/sample from a sound file ; **R**. 'part of'
        • an address ;   MAX 3

        R. BCD digits

Total 6

7. (a)   Browser / web browser / Internet browser;   1

(b)
- forwards/backwards a page ;
- address bar for the display of the URL ;
- setting up/organising 'Favorites' pages ;
- setting up of the Home page ;
- move to the Home page ;
- refresh the current page ;
- stop loading the current page/ download ;
- history – show a list of the last (say) 20 pages displayed ;
- security - change settings / e.g. enable/disable graphics/pop-ups/other content/plug-ins ;
- browsing – change settings ;
- view (HTML) source (code) ;   MAX 2

R. HTML editor

(c)   StationeryIsUs.co.uk/default.htm // www.StationeryIsUs.co.uk/default.htm ;

A. StationeryIsUs.co.uk // www. StationeryIsUs.co.uk   1

I. http:// ignore case

(d)   IP address (which matches with this URL); R. IP number   1

(e)   uk / co.uk / com / gov / tv / biz / net / org / ed / mil / info or from any other country eg fr ,it
                                                                    any two for 1 mark

A. co.uk   / ac.uk / sch.uk   **Total 6**

8.
(a)   *Network card*
- allow the PC to <u>communicate</u>/send and receive/transfer data with other devices on the network / uses a standard protocol ;
- card holds the unique network address for that device / decides whether data sent along the cable has a destination of 'this' computer ;
- card <u>converts</u> parallel data from the PC to a serial stream of data (for sending on the network) / or vice versa ;

R. 'connnect'   MAX 2

(b)   *Benefits of having a network*
- provides for more effective data transfer / easier to transfer data ;
- provides for the centralised storage / management of data files / folders / documents / programs / e.g. improved management of documents/contract changes ;
- allows specialist applications to be used e.g. internal e-mail, diary scheduling applications ;
- more flexible work practices ;
- Internet access from any terminal ;
- central control over the security of data / backup of data / usage ;
- centralised management of software patches/upgrades ;
- create an Intranet site ;

- sharing files ;
- sharing of peripherals / e.g. colour printer ;
        MAX 3

    R. Sharing programs // Better communication between users

9.

(a)   *Serial transmission*
    Bits are sent along a single wire/line // bits are sent one after the other / 'bit by bit' ;   1

(b)   (i)   1 ;

    (ii)   (5 * 768 * 1024 / 1024) // 3840 Kbytes ;
        F/T from (i) ;   1

(c)   *Advantage:*
    The sound quality is higher/better ;
    1

    Disadvantage:
    The files will be larger / files take up more disc space ;
    1

    R. anything which suggests 'data transfer'

                                                                Total 5

10.

(a) (i)

- poorly <u>structured</u> code ;
- uses GoTo statements ;
- the flow of control jumps out of a loop ;
- nothing reported to the user when no matching name found ;
- abbreviated variable for 'position' variable ;
- ReadLn is better than Read ;
- Program only iterates once / considers only the first array element ;
- (if duplicates) only the first matching surname is found ;
- (loop terminates at 20) does not allow for additional array/name entries ;

    A. poor layout – excessive indentation used ;
    MAX 2
    I. variable declaration // reference to the syntax

(ii)   *All statements must have*
    correct identifier name
    correct data type (String / Text // Integer / Byte / Word / Int / ShortInt / Short as appropriate) ;

    In addition, either array must have
    brackets to indicate an 'array'
    19/20 to indicate a range ;
    MAX 2

(b)

Intialisation of counter or Boolean variable

  P := 1 / P := 0 / For P := 1 to 20 // IsFound := False ;

Looping

  LOOP UNTIL // DO WHILE // WHILE DO // REPEAT UNTIL and used at the beginning/end
  of a code block as appropriate ;

Some loop condition is met

  (P = 20/21) OR IsFound = TRUE / P = 20/21 // IsFound = TRUE / IsFound ;

IF with use of the array

    IF NoOfClaims[P] ;

Selection condition

  >4 / >=5 ;

 Loop counter incremented

  P = P+1

Final output

  Correct logic followed with OUTPUT 'Yes'
  A. multiple times
Final output

  Correct logic followed with OUTPUT 'No'
  R. Multiple times
  R. 'Prose' scores 0

Total 9