

Surname						Other Names					
Centre Number						Candidate Number					
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General Certificate of Education  
 June 2004  
 Advanced Subsidiary Examination



**COMPUTING**

**CPT1**

**Unit 1 Computer Systems, Programming and Networking Concepts**

Friday 11 June 2004 Afternoon Session

**No additional materials are required.**  
 You may use a calculator.

Time allowed: 1 hour 30 minutes

**Instructions**

- Use blue or black ink or ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided. All working must be shown.
- Do all rough work in this book. Cross through any work you do not want marked.

**Information**

- The maximum mark for this paper is 65.
- Mark allocations are shown in brackets.
- You will be assessed on your ability to use an appropriate form and style of writing, to organise relevant information clearly and coherently, and to use specialist vocabulary, where appropriate.
- The degree of legibility of your handwriting and the level of accuracy of your spelling, punctuation and grammar will also be taken into account.

For Examiner's Use			
Number	Mark	Number	Mark
1			
2			
3			
4			
5			
6			
7			
8			
Total (Column 1)	→		
Total (Column 2)	→		
TOTAL			
Examiner's Initials			

Answer **all** questions in the spaces provided.

1 A computer system will use *system software* and applications software. In order to solve a business problem a company may use *special purpose applications software* or *general purpose applications software*.

(a) Give **one** example of a type of system software.

.....  
(1 mark)

(b) What is meant by **each** of the following terms?

(i) Special purpose applications software;

.....  
.....  
(1 mark)

(ii) General purpose applications software.

.....  
.....  
(1 mark)

(c) Give **one** advantage of each of the following:

(i) Special purpose applications software;

.....  
.....  
.....  
(1 mark)

(ii) General purpose applications software.

.....  
.....  
.....  
(1 mark)

2 (a) What is a:

(i) first generation programming language?

.....  
(1 mark)

(ii) second generation programming language?

.....  
(1 mark)

(b) Name a third generation programming language.

.....  
(1 mark)

(c) Give **two** advantages of programming in a third generation programming language over programming in either of the first two generations.

1 .....

.....

2 .....

.....

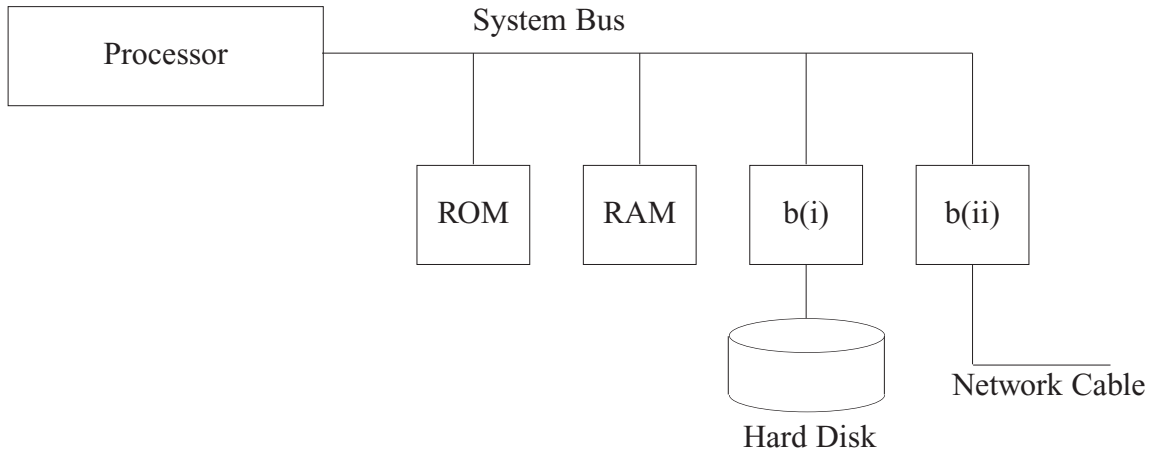
(2 marks)

5

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ►**

3



**Figure 1**

(a) **Figure 1** represents part of a computer system. Give the full name of **each** of the following:

(i) ROM ..... (1 mark)

(ii) RAM ..... (1 mark)

(b) In **Figure 1**, what are the parts labelled (b)(i) and (b)(ii)?

(i) ..... (1 mark)

(ii) ..... (1 mark)

(c) The system bus normally consists of three buses. Give the names of each of these **three** buses.

1 .....

2 .....

3 .....

(3 marks)

(d) What is meant by the stored program concept?

.....  
.....  
.....  
.....

(2 marks)

(e) Parity bits are used to ensure the accuracy of stored data.

(i) What is meant by even parity?

.....  
.....

(1 mark)

(ii) Briefly describe how parity bits are used.

.....  
.....  
.....

(2 marks)

4 A binary search tree is a data structure where items of data are stored such that they can be searched for quickly and easily.

The following data items are to be entered into a binary search tree in the order given:

Louise, Peter, Robert, Christine, Alan, Leslie, Maria

(a) Draw a diagram to show how these values will be stored in the tree.

(4 marks)

(b) Circle the root node in your diagram.

(1 mark)

(c) If Maria is being searched for in this binary tree, list the data items which have to be accessed.

.....

(1 mark)

Turn over ►

12

6

5 (a) In the context of networks, give the full name of each of the following:

(i) LAN;

.....  
(1 mark)

(ii) WAN.

.....  
(1 mark)

(b) Give an example of the use of a:

(i) LAN;

.....  
(1 mark)

(ii) WAN.

.....  
(1 mark)

(c) What is meant by **each** of the following terms?

(i) protocol;

.....  
.....  
(1 mark)

(ii) BAUD rate;

.....  
.....  
(1 mark)

(iii) bit rate;

.....  
.....  
(1 mark)

(iv) Bandwidth.

.....  
.....  
(1 mark)

(d) What is the relationship between bandwidth and bit rate?

.....  
.....  
*(1 mark)*

(e) (i) Define serial transmission.

.....  
.....  
*(1 mark)*

(ii) Define parallel transmission.

.....  
.....  
*(1 mark)*

(iii) Give **one** advantage of serial transmission over parallel transmission.

.....  
.....  
*(1 mark)*

(iv) Give **one** advantage of parallel transmission over serial transmission.

.....  
.....  
*(1 mark)*

**TURN OVER FOR THE NEXT QUESTION**

**Turn over ►**

6 (a) Sound can be stored in a computer system. In order to store signals from a microphone in a form that the computer system can use, a special piece of hardware is needed.

(i) Give the name of this special piece of hardware.

.....  
(1 mark)

(ii) Describe the way that sound is coded in a computer system.

.....  
.....  
.....  
(2 marks)

(b) Graphics can also be stored in a computer system. What is meant by **each** of the following terms?

(i) Bit-mapped graphics;

.....  
.....  
(1 mark)

(ii) Vector graphics.

.....  
.....  
(1 mark)

(c) Give **two** advantages of vector graphics over bit-mapped graphics.

1 .....  
2 .....  
(2 marks)

(d) (i) How are alphabetic characters represented in a computer system?

.....  
.....  
(1 mark)

(ii) Name **one** character coding system.

.....  
(1 mark)



7 The following algorithm uses an array **Values** containing four numbers.

Values	
1	24
2	13
3	57
4	45

```

Result ← 0
Index ← 0
Repeat
  Index ← Index + 1
  If Result < Values[Index]
    Then Result ← Values[Index]
  EndIf
Until Index = 4
  
```

(a) Dry run this algorithm by using the trace table below.

Result	Index
0	0

*(5 marks)*

(b) What is the purpose of this algorithm?

.....  
*(1 mark)*

6

**TURN OVER FOR THE NEXT QUESTION**

8 The following code is part of a high level language program:

```
Const MaxChars = 5;
Var
  Message : Array[1..MaxChars] Of Char;
  LastChar : Integer;
  Position : Integer;

Procedure Insert (c: Char);
Begin
  If LastChar < MaxChars
  Then
    Begin
      Position := Position + 1;
      Message[Position] := c;
    End;
End;

Function Find (c: Char) : Integer;
Var
  Found: Boolean;
Begin
  Position := 0;
  Found := False;
  While (Position < LastChar) And Not Found
  Do
    Begin
      Position := Position + 1;
      If Message[Position] = c
      Then Found := True;
    End;
  If Found
  Then Find := Position
  Else Find := 0;
End;
```

(a) In **each** case, identify the following by copying **one** relevant statement from the code opposite:

(i) constant definition;

.....  
(1 mark)

(ii) variable declaration;

.....  
(1 mark)

(iii) assignment statement;

.....  
(1 mark)

(iv) selection statement;

.....  
(1 mark)

(v) iteration.

.....  
(1 mark)

(b) In **each** case, from the code opposite, identify a:

(i) local variable;

.....  
(1 mark)

(ii) global variable;

.....  
(1 mark)

(iii) parameter.

.....  
(1 mark)

(c) Functions and procedures are both subroutines. Give **one** difference between a function and a procedure.

.....  
.....  
(1 mark)

**END OF QUESTIONS**

**THERE ARE NO QUESTIONS PRINTED ON THIS PAGE**